

DO 3-MONTHS-OLDS BABIES WHO HAVE BEEN EXAMINED OSTEOPATHICALLY IMMEDIATELY AFTER BIRTH AND / OR HAVE BEEN TREATED OSTEOPATHICALLY AS A RESULT SHOW DIFFERENT PATTERNS OF BEHAVIOUR CONSIDERING SLEEP, CRYING FITS AND DIGESTION THAN 3-MONTHS-OLDS BABIES HAVING HAD NO SUCH TREATMENT.

A COMPARISON STUDY



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1. Concept for my Master Thesis:

TITLE:

DO THREE- MONTH- OLD BABIES WHO HAVE BEEN EXAMINED OSTEOPATHICALLY IMMEDIATELY AFTER BIRTH AND/ OR HAVE BEEN TREATED OSTEOPATHICALLY AS A RESULT SHOW DIFFERENT PATTERNS OF BEHAVIOUR CONSIDERING SLEEP, CRYING FITS AND DIGESTION THAN THREE- MONTH- OLD BABIES HAVING HAD NO SUCH TREATMENT.

A COMPARISON STUDY

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STARTING POINT

The newborn tissue is of extremely tender nature thus, optimizing it for pressure and for gliding along the birth canal. Pressure as it occurs during birth and tension, can cause osteopathic lesions - changes.

Such disturbances for example around the spinal cord and the head can - more often than not - be traced down in completely different regions of the body. As it is a fact that osteopathy birth anamnesis is often relevant both not only for kids but for adults as well. I would like to suggest to have babies examined osteopathically right after birth.

I've been working at *Geburtshaus Nußdorf* and I have studied the whole procedure for over ten years as a gynaecological doctor and now also as an osteopath. Naturally I can't supervise all the deliveries, but I am absolutely certain that the other gynaecological doctors and midwives are very competent and working accordingly.

STEP 1 :

Anamnesis and osteopathic examination

STEP 2 :

On indication osteopathic treatment especially taking into consideration the factors sleep, crying fits and digestion together with their respective osteopathic chains of lesions



From an osteopathic point of view this topic of mine is definitely most intriguing as obviously great forces do have an impact on the newborn; this is why birth itself is of considerable importance for later state of health with (older) children as well as adults when treated osteopathically. Also in the articles published lately in newspapers and magazines (like „Eltern“) for pregnant women an osteopathic treatment immediately after delivery is recommended more and more.

RESEARCH QUESTION

Do three-month-old babies who have been examined osteopathically immediately after birth and / or have been treated respectably osteopathically as a result show a different pattern of behaviour, considering sleep, screaming fits and digestion than three-month-old children having had no such treatment?

0 -HYPOTHESIS:

Osteopathic treatment of babies within 24 hours period after birth shows no relevant advantages in respect of digestion, sleeping infirmities and screaming fits in comparison to three-month-old babies without undergoing such treatment after three months.

HYPOTHESIS:

Osteopathic treatment of babies within 24 hours period after birth brings about significant advantages in respect of digestion, sleeping infirmities and screaming fits in comparison to kids without such treatment after three months.

From an osteopathic point of view the lesions mentioned above originating from birth (like side bending, torsion, flexion, extension, strains....) can be normalized within a period of two to three months by the human body's self-healing capacities.

However, I strongly believe that osteopathy can minimize those problems (sleeping infirmities, bad digestion, colics, screaming fits, and more).

Having the chance to examine a newborn and find a reason for osteopathic treatment I can assist the baby's self healing mechanism to normalize the lesion pattern from birth in order to avoid or, at least help minimize possible problems mentioned earlier.

CHOICE OF PROBATIONERS

To minimize errors I chose women who had their babies in a natural way together with their partner at *Geburtshas Nußdorf* - after having been prepared comprehensively - provided there were no pathological problems (vacuum, obstetrical forceps, breech delivery, caesarean section) - no medication during delivery, no induction or birth, normal Apgar.

The couples are prepared on the premise in the course of 10 evenings on preparatory-weekend and 9 hours of compulsory consultation with the midwife in the delivery rooms.



The *Geburtshaus Nußdorf* supplies preparation for expectant mothers and fathers including personal contact to „their“ midwife and features being looked after during birth and lying-in, hence the probation group is a most homogeneous one.

The whole set up seems to be an excellent prerequisite for the „new family“.

I am extremely interested, if the babies are more settled for the first weeks in the behaviour of sleeping, crying and digestion on naturally way born children, when they are getting osteopathically treated immediately, so that I can't frontloading the study.

PROCEDURE

PHASE 1:

10 newborns are being checked by me within 24 hours after delivery and being treated immediately if appropriate.

PHASE 2:

After two weeks, in the course of the final visit at the attending midwife, I once more check osteopathically and if necessary give treatment once again.

PHASE 3:

When the babies are three months old another check-up is being administered and a detailed questionnaire is filled in by me, together with the mother. The questionnaire's focal points are again sleeping behaviour, screaming fits and digestion problems apart from more general questions.

CONTROL GROUP

10 babies who have not had immediate osteopathic treatment after birth are being treated osteopathically after three months. Like before the questionnaire is filled in together with the respective mother, focusing on the points mentioned above.

EVALUATION

Finding out about differences in the three crucial areas (sleeping, screaming fits, digestion) and interpreting them. Every single child is monitored (taking into the questionnaire, the examination and the treatment).

Statistically speaking (computer program) 10 babies are enough for this study. (I spoke with Prof. Szekares, Vienna AKH, who is a medical statistician.)



Enclosed is a copy of the questionnaire for both groups.

For the research group which I see just after the delivery I fill in the first part of the questionnaire at my first or second meeting with the mother and after three months I ask just the special focused questions about the sleeping behaviour, the screaming fits and the digestion.

The control group, which I meet the first time three months after delivery I fill in the whole questionnaire with the mother.

1.1. Prologue

The so called *Geburtshaus Nußdorf* was an extraordinary place to have your child there. For 18 years it has helped many women with facilities to give birth and to have their babies in a secure surrounding. Originally a small „Heuriger“ in Vienna's 19th district, its shape consisted of a u-shaped building around a yard, which was turned into a garden. Build up right to the main road, open end towards the vineyards. Approaching the yard you felt like entering paradise, secluded from the rest of the world.



Fig.1: .Privat (2002)



Fig.2: Privat (2002)

Three great rooms were used for giving birth; each featured a king-size double bed in warm colours and with all the necessary medical equipment hidden away in the wooden cupboards. There was also a conservatory, a special bathroom with a round tub. In fact it was the first of his kind in Europe and a number of changes concerning birth made its way into the state hospitals. For example the last couple of years all the delivery rooms were supplied with bathtubs, ropes and wall bars. In many a field of obstetrics *Geburtshaus Nußdorf* pioneer things so that women nowadays can have a word in decisions taken in many state hospitals. However as the place was run privately and young mothers obviously had to pay for themselves rather than exploiting the National Health Service, *Geburtshaus Nußdorf* eventually had to be closed in November 2002. For 12 years I had the privilege to work there as a gynaecologist which was really great and provided me with lots of experiences for my further career. The last few years I also looked after pregnant women and their babies, working as an osteopath.



Fig.3.:Privat (2002)



Fig.4.:Privat (2002)

Women could choose their midwife. There was a choice of two, who were available for them from the 28th week of pregnancy on. They were there and every two weeks in the respective rooms, they could talk about their fears and problems and at the same time got acquainted with the place where they would give birth in a couple of weeks. Thus facilitating things and eliminating respective fears.

On top of that the parents to be were well prepared for the day giving birth and were able to consult midwives, doctors on several evenings. Things concerning to their birth and the time after.

Women could have a word in the decisions like which position they prefer for birth and where their husbands and brothers and sisters of the baby to come could be present during birth. Four midwives worked together in teams of two, six gynaecologists who could be consulted as well and five neonatologists who were present during birth or checked the newborn after birth. In a different part of the building an operation theatre was housed but there was no real award. The young families were able to leave for home a couple of hours after birth. The midwives suggested the mothers to decide on how they would like to have their deliveries and rather than medicine the women had all sorts of support and attention. Midwives were specially trained in acupuncture and homoeopathy as well as quite a long career behind them. Most of the women decided to give birth crouching or in the tub. The light in the rooms were dimmed and once the baby was born it was rapped in warm napkins. The umbilical cord was only cut when pulsating no longer. Parents could get in direct contact with the skin of the newborn when ever they wanted. Bonding meant holding the baby next to the mother's naked body and if the baby felt like sucking of course it was allowed to do so. After the umbilical cord was cut and while the after-birth came out, the father could place the baby on to his exposed chest.

Babies were allowed to lie naked next to their parents as long as they wanted in the double bed which they sometimes enjoyed for a whole night -all night long for being washed and dressed.



Fig.5: Privat (2002)



1.2. Why I chose this topic

Going from Frymann's osteopathic study (1966) and the fact that in Maine, USA, newborn babies have been checked osteopathically ever since 1970, as well as my seeing the babies right from the beginning (and, also seeing mother and child for the first months) I was able to draw conclusions by myself of how crucial the process of birth is and how important the feeling of being welcome in this world really is for the baby's well-being and it's future life. In everyday experience I could watch the babies' change when treated osteopathically after stressful births. I became anxious and the challenge, whether a baby's well-being (and that of its families) could still be improved, really got me interested – in spite of the fact that they already had found an ideal situation at *Geburtshaus Nußdorf*. Could one even think of taking this development further if checked and treated osteopathically in order to eliminate possible strains and thus, provide a better start for the baby, yet? Probably, improvements would be little and difficult to prove – but there is no harm in trying?! Well, this is the basic idea of this study and me being so interested.

The sooner you treat the baby the easier it is, and you never say, 'there is nothing that can be done.'
No matter how much or how little progress is made, it is worthwhile.

VIOLA FRYMANN⁶
Internet Research 2006-09-09

This is my thesis, hence: Checking a newborn osteopathically within 24 hours means a better start in life.

Though there is proof that many osteopathic disturbances dissolve within the first three months anyway I still believe that it is a fight the baby has to come to terms with. For example, colics (in their first three months), difficulties in suckling, sleeping problems, phases of crying, slow development and psychic balance are things that come to mind. My tutors have always been fantasizing that it would definitely be best to check a baby as early as possible – so that their growth may be like a beautiful straight flower.

'Really, when one considers the mode of entry into this world the wonder of it is that there are as many heads functioning normally as there are. The tendency of Nature toward the normal, and the vital elasticity of these structures is demonstrated every day. Each of us has seen heads that appeared extremely misshapen in the delivery room, although they remoulded with remarkable little trouble even before we knew what to do to help. Now, that we have some idea about guiding the moulding we still find those that come along smoothly we want to pinch ourselves. There are also many that are slow. But all along we are aided in our efforts by Nature.

RACHEL WOODS¹⁹,
Cranial Trauma in the Newborn, (1953) p.26 - 28



PROCEDURE

I examined 16 children osteopathically within a period of 24 hours after delivery. Once I spotted an osteopathic lesion they were treated accordingly. If necessary I examined them again after two weeks and a third time when they were three months old – on which occasion a questionnaire was used to record details of their development and their performance during those three months with an emphasis on crying, sleeping and passing faeces.

As monitoring group 16 three-month-old babies who had not undergone osteopathic treatment were checked by me and again using the questionnaire (cf. above). I was able to compare their stages of development and their performance regarding crying, sleeping and faeces.

I chose to research crying, sleeping, and passing faeces as the special topics of my study simply because these developments are quantifiable and I could then read and compare the results of the two groups.

The bases for my research were children born ‘normally’ at *Nußdorf*. They all shared common preconditions and the preparation for birth was the same for everyone, which led to a very homogeneous group.

The term ‘normal’ regarding their births for me refers to births without any pathological problems and if medication was necessary the mother was only given homeopathic medicine or acupuncture.

Pathological cases would be premature birth, vacuum-assisted birth, usage of forceps, section, or epidural anaesthesia.

All the children had a good Apgar- index and there was no need of treating them neonatologically. However, all of them had been examined by a neo-natologist after delivery (as mentioned in the prologue).

It is a pity that, after *Geburtshaus Nußdorf* had to close down, there is hardly any hospital in Austria where women are not made to take medicine while giving birth and where they can have their children either squatting or in the tub.

2. Birth and aspects of bonding

2.1. Bonding

In this chapter I want to comment on *bonding* as I believe it to be of crucial importance for the baby’s future life and, because it is something we, osteopaths can ‘feel’ with our hands.

The process of bonding, baby and parents, starts right at the beginning of pregnancy. It is the secure feeling of being taken care of, a feeling that is transmitted from the parents to the child – important for the child’s later activities and the ability of spontaneous healing.

When a baby is born many a trauma resulting from birth are resolved in a very natural way: Love and support experienced at that time is having a major impact on the baby's ability to heal themselves; lack of bonding may well result in not being capable of regeneration.³⁶

Usually breastfeeding is considered a very important key feature for the bonding process and studies have shown that babies permitted to rest on their mothers' belly immediately after birth, interestingly enough, find their own way to mother's nipple to cater for their first supply of food; they 'sense' what to do. Trusting these instincts and letting the baby go makes the baby explore and succeed for themselves to have their needs fulfilled. It has also been proved that even a short time of being separated from their mother after birth has its impact on the way the baby starts suckling - just as the usage of medicine (medication in general) clearly impairs sucking.³

Stroking, hugging and bonding are of unique importance for the child. As little as one hour of mother and child being together after birth can indeed prove life-long consequences for both of them. Quite a number of studies have shown that, women who bond become better mothers and their babies are less prone to illnesses, are more stable emotionally and intellectually acute – as opposed to infants taken from their mothers right after birth.

We already know that breastfeeding is biologically relevant for two reasons:

- the baby's cries activate mother's milk glands and
- being in touch with the bare skin of mother's breast reduces after birth-bleeding hormonally by producing Oxytocin.

Obviously it is not far -fetched at all to say that maternal instincts are biased by the baby's presence. Behavioural research and biological testing, however, seem to deny this fact.⁴⁰

Bonding immediately after birth can definitely draw a mother closer to her child than bonding that only happens 12 hours after delivery.

Looking at one group of women a year after their delivery shows the women who bond are touching, holding and stroking their children more often; they even talk to their children differently: very few of them yelled or shouted. A mother might gently suggest to her child that it was time for bed or that they should pick up their toys; rarely such a request was denied. The way a mother talks influences her baby – it kind of envelops the child in a rich, nurturing swirl of soothing, ego -building words. Simply by the way a baby is addressed, the toddler knows that they are wanted and loved.²⁸

Certainly on seeing her new -born for the first time a mother will instinctively reach out to hold her off -spring. This most natural reaction, like any other aspect of bonding fulfils a child's essential and specific needs. At birth, love is not only an emotional requirement, but a biological necessity for the baby. Without it, and the cuddling and hugging that go with it, an infant will literally wilt and die.²⁸

In a Seattle hospital they selected a particular group of infants in their unit and asked the staff to stroke them for five minutes every hour around the clock for ten days. Five minutes is not a lot of time and a nurse cannot replace the mother, but for all that, the stroking



produced dramatic results: The babies gained weight faster, grew more quickly and were physically stronger than the babies who had not been touched.²⁸

Matching the breastfeeding experience of bonding women and non-bonding ones, a Seattle investigator found some striking differences. By the eighth week after delivery all but one of the non-bonding women had given up breast feeding as it was too much of a bother to them. The bonding women, on the contrary, found the experience so exhilarating they all breastfed their babies until they were at least eight weeks old.²⁸

A father's love is just as important and complex as a mother's. Given a chance, a man can be just as 'motherly' as a woman: protective, giving, stimulating, responsive to his children's needs, caring.²⁸

Many investigators now believe that each parent makes a unique but complementary contribution to the infant's physical, emotional and intellectual development.²⁷

The example below shows - quite impressively - a correlation between the birth itself and breastfeeding: There is a pattern between the production of Oxytocin two days after birth and the age until the baby is breastfed. It shows that, two days after birth pulsing (when Oxytocin is produced) was clearly less in case of a section as compared to a spontaneous vaginal delivery.

Tactile sense, olfactory sense as well as sight are used by the baby to recognize their mother - both before and after birth: The new-born actually cannot focus their eyes on different distances; it can only see things (relatively) clearly that are a distance of 30 centimetres. This is an indication of establishing eye contact between mother and child is quite important for the relationship. Mother's big eyes act as a kind of signal. Vision - the least archaic sense - is probably quite relevant for the communication between mother and child.

An hour after birth the Noradrenalin level in the baby's blood is extremely high - about 20-30 times higher than in later life) - indicating a very active *locus caeruleus*. The *locus caeruleus* is situated in a very old - phylogenetically the oldest - part of the brain closely connected with smelling (bulbus olfactorius). This seems to confirm findings that Noradrenalin - produced at the *locus caeruleus* is involved in learning (especially through smell), is responsible for the sleep-wake rhythm, reinforcement processes and nociception: Thus, recognition by smell obviously has an important place in the bonding process between mother and child, too.⁴⁰

Babies that try to avoid touch, who cry a lot and do not gain weight may well try to convey that there is something wrong in their world of feeling.



INTRA-UTERINE BONDING

Just as important as the bonding immediately after birth is *intra-uterine bonding*.

Intra-uterine bonding as compared to bonding after birth is broader and deeper. Love is a good example. How does a 6-months-old foetus know they are loved. Because their mother strokes her stomach, eats sensibly or, simply reacts to her baby? This may be part of the answer, but it's not all of it.

Ultimately, the success of failure of bonding before birth, like bonding after it, lies with the woman's messages she sends her child and vice versa. That requires knowledge of the routes along which they communicate and knowledge of the messages that travel along the routes. It also requires a willingness to listen: Her child has a great deal to say and he should be listened. This phenomenon is known as *sympathising communication*.²⁷

A mother who cannot cope with her problems (frustration, fears) will not be able to start a relationship with her baby, no matter how hard she is trying.

Very often things desired by the mother are found impressed on the child that the mother is carrying at that time (of desire)... one strong will, a supreme desire, a fear that a mother has, or mental pain... has more power over a child than over the mother, and, frequently the child loses its life thereby.²⁷

Some of Cohen's findings (1976), an American psychologist, are also related to bonding, though less directly. A woman who is occasionally preoccupied by the way she looks; or who thinks she looks ugly; or whose mood changes are abrupt; or who cannot seem to make preparations for the child's birth is not acting in a way that will actively or passively damage her baby. But Dr. Cohen believes that when all of these behaviours are present throughout the pregnancy they can be indicative of a subconscious rejection of motherhood with consequent impact on bonding.

If a mother finds it difficult to prepare herself for birth Cohen finds negative consequences in the behaviour of the new -born. He assumes that, whatever happens during pregnancy, may well go back to a refusal of motherhood, the results of which will have an effect on the bonding process. The (psychological) danger arises when the sudden loss of financial and psychological independence created by leaving work causes resentment, anger or dissatisfaction.³⁶

Some forms of depression can also originate in utero. Usually, these are produced by a major loss. For whatever reason – illness or a distraction – a mother withdraws her love and support from her unborn child, the loss of which plunges the foetus into a deep depression. You can see the after-effects of this in an apathic new -born or an absent-minded, distracted sixteen-year-old.²⁷



Stirnimann's study (1979), a Swiss paediatrician, shows that even months before birth, mother and child are beginning to match their rhythms and responses to each other which leads to the following conclusion: Bonding after birth – always considered as a singular and isolated phenomenon – is in actual fact a continuation of a bonding process that began long before – in the womb.²⁷

In his work he basically wants to make us aware of how pre-natal events connect to the process of giving birth. 66% described their mother as being under a lot of stress during pregnancy; 47% said 'she was seriously unhappy'. The ratio with fathers was only slightly narrower: 51% claimed, their fathers did want the child, whereas 49% said they did not.²⁷

A number of studies show similar results. Kids, whose mother tried to have an abortion, were examined. Their life histories go as far as their 35th year and the results very clearly show that socialization was less distinct – even at age 35!⁴⁰

During that time (of intra-uterine bonding) the baby does sense their mother's feelings, impressions that stay and eventually are brought to the surface.⁴⁰

The oldest respective study comes from Finland (1960). 167 kids whose fathers had died before they were born were compared with a group of 168 the fathers of which died during their first year.

Although all of them grew up without their father an evaluation of their doctors' records (over a period of 35 years) proves that, those who lost their father before birth showed a higher risk of getting involved in crime, having emotional problems, or, indulged in alcohol. Quite an impressive example of long-term consequences of a mother's emotional state and its relevance to her baby. Especially as these count higher / are stronger than emotional problems encountered in the child's first year of life.

It seems very likely that the emotional state of pregnant women has long-lasting consequences regarding aggressiveness, being able to socialise ... in other words relationships and love are at stake.

2.2. Development of psychic patterns and their stages

For a long time psychotherapy has claimed that early experiences in one's life have an impact on the emotional development of an individual. However, quite a number of psychotherapists do admit that the time preceding birth may be of importance too. William Emerson, an expert on pre-natal traumata was able to identify key experiences going back to the very beginning of our lives that influence the basic group identity both intellect and body.



Enlarging on the above theory that claims our first years to be most important, Emerson expands that period as far back as conception. He is talking about *primary patterning* of the time between conception and birth. It is then that the basis for our future life is formed, the way we develop and function. Experiences of that time are the keys regarding our conditioning.

Secondary patterning refers to the time between birth and age five approximately.

Last but not least we talk of *tertiary patterning* for things happening from age five onwards. Physiological and psychological tendencies of us are set during this period; any later patterning than primary will either cover up the former or may be seen as a reaction.³⁷

Otto Rank is talking about *the womb paradise* which is lost at one's birth. According to studies both physiologically and psychologically, birth seems to be such a trauma that, in order to survive, we come forward with an amnesia. Arthur Janov indeed proves relevance between experiences during birth and later physical and emotional problems. In fact intra-uterine erections, dreams, a smile or crying have been observed and recorded. Psychologist Leslie Lecron has also quite comprehensibly proved the connection between happenings around birth and (later) illnesses.

David Chamberlain has come to the conclusion it actually is the embryo that is responsible for the birth itself and the way the pregnancy goes. It is them who produce the right (dose of) hormones to change a mother's physical state. It is them who decide to settle in her womb or not and for how long. It is them to tell the mother when to prepare for delivery.²³

PAPUA NEW GUINEA

In the 30ies of the 20th century Margaret Mead, a pioneer of modern anthropology came across a very special tribe while doing research in Papua New Guinea's jungles. This tribe obviously was very aware of how pregnancy and birth determine our development. They were known as being very peaceful. They were not bothered by more aggressive tribes, simply because there was no danger about. Margaret Mead found that, once a woman became pregnant she was considered being 'a queen'. It was the others who took care in order to shield her from stress and tension. A mother-to-be was meant to be very important socially, carrying within her the semen of the whole tribe. Quite extra-ordinarily, none of the tribe's new-born was traumatized through birth, hence the tribe's social interactions proved to be in pleasant harmony.³

We have indeed outgrown - 'gone astray' - those 'primitive' views about pregnancy and birth. Women today, whether pregnant or not, have to work full power both socially and professionally. Pregnancy and respective feelings come at last; they even have to be covered up in their jobs.



2.3. Natural birth

In the last 20 years a strong interest in the accessibility of natural births has surfaced. It means to create conditions that are less frightening, less of a trauma for the mother and her baby. A natural atmosphere can make them trust in their natural instincts. Which in fact is not what is practised in many hospitals; quite to the contrary: Mothers-to-be will have to lie on their backs during birth, and not only medication is applied, babies are often born quite forcefully. The newborn's first impression is the bright light of the operating theatre, its loudness followed by the experience of having the cord cut. No wonder the newborn wants to close up and fight these negative feelings.

More careful ways of delivery were claimed by two gynaecologists, Frederick Leboyer and Michael Odent. Rather than having the mother be a patient who actually leaves everything to the doctors, they support the mother to take responsibility in the birth process herself and just follow her own and her baby's needs. Their suggestion is that the mother chooses her position herself, instead of the common assumption of having to lie on her back. Usually it is more difficult to give birth lying on one's back or in a half-sitting position as the sacrum as well as the pelvis are less mobile thus making it difficult for the baby to enter this world. Squatting, however, facilitates birth a lot as sacrum and pelvis can open up and gravity can have its way.

Originally coming from Russia, giving birth under water was found to reduce delivery pains and allow the baby a soft transition leaving behind the liquid home of the womb when coming into this world.

However difficult to grasp, water possesses erotic powers that also facilitates the birth process, labour is easier to bear, just as there are hardly any breastfeeding problems. Water, indeed, by lots of people is seen as a symbol that conveys safety and security in many situations.⁴⁰

Especially during labour water can help in a unique way. Women at home in tropical regions that have access to still waters frequently deliver their babies near a river, a lake or the sea.

Let's have a look at physiological connections when experiencing birth. It is a woman's primitive brain that is in action when giving birth – this part of the brain functioning as a gland producing hormones. (In case of stops and/or interferences it is always the highly developed parts of the brain that are responsible – the neocortex.) In the physiology of birth a lowering of neocortical activities (women giving birth often appear to others like 'aliens') is utterly important for practical reasons.

Each time the neo-cortex is activated – you try to talk to the mother-to-be 'sensibly', have bright lights all around her, give her the feeling of being observed or to be without protection, anything that might get the adrenalin flowing in one way or the other – and the process of birth is disrupted.⁴⁰

Dimmed lights, soft music playing in the background, a warm room and the touch of supportive and caring hands help create a pleasant atmosphere - the right welcome for the newborn. A relaxed mother would most certainly be able to be in touch with her natural instincts, thus experiencing a fairly easy birth – without medical intervention.



A father's role is quite important as well. His mere presence and mutual engagement can be beneficial for the birth, and – provided he is sensitive and prepared to take part of the challenge the mother and her baby are facing - he may indeed have his share in the process and experience enthusiasm and joy, too. ³

If a mother is relaxed, confident, and looking forward to giving birth, chances are very good that her delivery will be simple and bare any problems. If she is racked with doubts and worries or in conflict about the prospect of motherhood, the risk of complications rises accordingly.

I have come across a number of complicated cases, like a deformed baby's head. If forceps had to be applied quite often both mastoid bones were crushed – leading to endless complications. Vacuum sucking at the skull can elongate the baby's head, causing all kinds of problems as well.

Remember, few NATURAL births are happening nowadays. The standard birth at a hospital does not exactly cater for the needs of mother and child. Works by French gynecologist Dr Leboyer are largely ignored, as are many others who do natural births. The so-called 'savages' of the jungle have more common sense about childbirth than conventional medicine. I am not saying that all medical interventions are bad, sometimes they are necessary. However, adding to acknowledged treatment we have begun to puncture the womb, induce birth by injections, use ultra sound, etc. Next it will be immunisation while the baby is still in the womb! Great changes for (more profitable) medicine, but less of a profit for the child.

The whole structure of the baby including the cranium should be checked as soon after birth as possible. If inherited faults were corrected immediately they would not have a chance to develop this or another syndrome. Many foot- and hip socket problems could be discovered at an early stage. However, as I live in an idealistic world within, I know and realise that the masses of the world are not ready for this sort of thing, but then, were human beings ever ready?

ARTHUR LINCOLN PAULS ⁵

The Philosophy & History of Orho-Bionomy 1960, p76

Statements like the above occur from time to time and at *Geburtshaus Nußdorf* we did our best to make provisions and create such positive surroundings to make the newborn entering this world really feeling welcome.

The respective management meant to give children all the chances in the world to live a happy and content life and I did come across VERY HAPPY BABIES INDEED.

2.3.1. Effects of Birth

Birth is a process that has quite a determining influence on our lives. During the birth process we are subjected to great forces on our journey through mother's pelvis – something that does have a considerable impact on our primary respiratory mechanism and can form patterns that stay with us through life. Think of a young tree exposed to the winds blowing from all sides – growth will be influenced accordingly. The same is true with us humans: when being exposed to stress and strain during birth without the chance of having these problems solved, our whole life will be influenced respectively.



As osteopaths we look at alternative things when your baby is born because we consider the process of being born as the probably most traumatic experience that people ever come across.

In a San Diego study of 1250 newborns the leading cranio-osteopath, Viola Frymann, demonstrated that 88% of the babies obviously carry a trauma from birth: not all of the cranial bones relate to each other and do not move in the way they should. This has been double-checked in a number of studies: About 8 - 10% of the babies reveal a deformity of the cranial mechanism – an abnormally formed head that is easily recognizable.

Frymann's Study of 1250 children (1966)

Flexion	10, 04 %
Extension	4, 13 %
Torsion	28, 50 %
Side bending Rotation	12, 15 %
Strain	4, 86 %
Compression	17, 49 %
free	22, 83 %

The most drastic example of how birth can influence later life is shown in a Swedish study that shows a high correlation between birth and suicide. Bertil Jacobson from Sweden analysed documents of 412 cases of suicide that had been examined in forensic medicine, which at the same time could be followed back to their respective births. These were tested against a monitoring group of 2901 individuals: It became quite obvious that suicide by suffocation correlates to a high extent to near-suffocation at birth; people who committed suicide by mechanical means always had to 'fight' with 'mechanics' during birth. Jacobson's latest study proves that men – not so women – whose births were traumatic carry the likelihood of violent (mechanical?) suicide that is 5 times higher than using any other means. Another study of Jacobson looks at drug addiction. By examining 200 addicts' histories and their brothers or sisters who did not share this addiction, he found that, statistically spoken, teens whose mothers had taken drugs (certain painkillers to minimise labour pains) were put at risk a lot more.^{47/17}

Hypnosis and birth was the topic Czech psychiatrist Stanislav Grov worked on intensively. In more than 2,000 cases he was able to go back as far as people's births. Not only did they 'remember' their birth, they reported that they had overheard and understood their parents' conversations with their doctor, midwife, or assistants. [Negative statements were to change the course of their lives accordingly.] Apart from the fact that they 'understood' what was said, they tried to communicate how they felt and what they were experiencing.⁴⁴

I fully agree with the above as I made similar observations when treating kids and sometimes I was indeed able to cater for the children's needs thus shortening long births and bringing them to a positive ending.

Along similar lines David B. Gee 'asked' men and women in hypnosis to describe their posture (especially head and shoulders) during birth. The result: They came forward with



minute descriptions of their heads – whether twisted or just (slightly) turned, the angle of their shoulders, and other details about their births.⁴⁸

A different example: Studying the histories of 33 schizophrenic youngsters showed a 40% rate of birth complications of all types. The rate for their mentally healthy brothers and sisters was, in contrast, only 10 percent.²⁷

Not quite as dramatic, though, one study claims that babies whose cords were wound round their necks did suffer from problems with their throats, dysphasia, or speech impairments whether as children or grown-ups.²⁷

By treating a child osteopathically psychic traumata in their tissue can be cleared and reading through this paper one can easily conclude that it really is worth your while to treat newborn babies as soon as possible in order to avoid them being burdened (throughout their lives) with whatever negative experiences.

2.4. Birth

Learn to respect this holy moment of birth, a moment that is so very fragile, so fluffy, so light and soft as thistledown. The child's has arrived, yet wavering and a bit unsafe, it is wondering which way to go. It is caught between two worlds.

FREDERICK LEBOYER²²
Birth without Violence, 1991, p. 70

Most of the babies that are born come with the back of their heads in the lead. That is, the baby's back of the head is the leading part to enter and to leave the birth channel and thus the back of the head is produced first. In this paper, as I mentioned earlier, I will only consider those.

Of course there are cases when the front of the head is leading, sometimes it even is the forehead. 'Face first' is actually against nature and usually needs a Caesarean section for delivery. Other than head first 5% of the babies are born in a breech delivery. Cross births happen very rarely (especially when the baby is born prematurely and the longitudinal turning has not taken place yet). This again, is against nature and a section is necessary.

We assume the children feel nothing - that they are an innocent bystander at the celebration. This is simply not true. For their mother, for their father, their birth may represent an imperishable memory, the fulfilment of a life-long dream, but for the children themselves, it is painful or easy, smooth or violent- and thus, largely determines who they become and how they will view the world around them. Whether five, ten, forty or seventy, a part of them always looks out at the world through the eyes of the newborn child they once were.²⁷

These moments, however, alternate with others of great pain and fear. Even in the best circumstances, birth reverberates through the child's body like a seismic shock of earthquake proportions. One moment they are floating blissfully in a pool of warm amniotic fluid, the next they are suddenly thrust into the birth canal: the beginning of a trying experience that



may last many hours. For most of that time, maternal contractions will push and pinch at the child.²⁷

Birth also produces a pleasant amnesic effect; there is good reason to believe that it does so because of the oxytocin (the female body's principal hormone for inducing uterine contractions and lactation) produced by the mother during labour and birth.²⁷

Right after delivery oxytocin (an altruid hormone) and prolactin (a hormone that starts the motherly breastfeeding) have quite a complementary relationship. In 1979 the production of endorphins - morphine-like hormones – during labour (and the following process of birth) was proved.⁴⁰

The baby produces endorphins, too. There is no doubt today that, both mother and child are swamped with opiates for a short time. We know that people get addicted and in fact it is very likely that, given this special situation, some kind of 'addiction' – a binding, rather – is developed.

Even hormones that belong to the adrenalin group (and often are used to promote aggression) can influence the way the mother and her baby communicate immediately after birth. The level of hormones is highest at the last stage of uterine contraction. And this is why; once this 'foetus- ejection-reflex' is happening the woman searches with energy, straightens up and suddenly has an urge to grab hold of someone or something. Or, she feels she needs a glass of water, just like when giving a speech in front of a big auditorium. The production of adrenalin, anyway, helps her to be fully conscious for her baby. A surge of noradrenalin helps the baby to cope with the shortcoming of oxygen that is quite normal at this last stage of birth. The visible proof is the baby's open eyes with dilated pupils and a state of being fully awake. Mothers usually are intrigued by their baby's eyes. For them they are like a signal and, indeed, play an important role in a mother-child relationship.⁴⁰

As I have already mentioned, situations that make the neocortex produce hormones from the adrenalin family disturb and bar the birth procedure. That means a woman in labour does need a feeling of security, it even is a prerequisite for the change of consciousness typical for a woman giving birth. At all times, all over the world women followed this strategy to keep the level of adrenalin as low as possible in order to be able to give birth properly.⁴⁰

Increasing the sensibility by doses of oxytocin obviously results in producing more places where oxytocin can be absorbed. A Swedish team of scientists extracted a tiny piece of uterine tissue from 50 women who for different reasons had to have a Caesarean section. They found that the number of places where oxytocin could be absorbed was less with those women whose labour had not started before. The same was true with women who did have a section.⁴⁰

During the process of birth the new human being experiences extreme physical obstruction for the first time. On this journey into the world the baby has to really force its way through the mother's pelvic channel. Parts of the baby's head at that time are not really osseous yet – however, there is a wonderful balance between protecting on the one hand and



being able to form itself on the other. Deformability at that time is necessary for the head to adapt to the immense forces present. The bones at the top of the skull mostly consist of (not yet) linked membranes that allow deformability.

The parts between these bones where the membranes stay soft are called fontanelles. The bones at the skull's base are usually loose cartilage – not only highly flexible but at the same time protecting the (inner) organs of the skull's base ideally.

Viola Frymann thinks that basically every single part of these bones could functionally be regarded as one bone able to move towards its neighbourhood.

The joining process of these individual, loosely connected bones is an ongoing process during childhood.^{3/6}

PHYSIOLOGICAL EVENTS DURING BIRTH

This is how an ordinary birth is divided up:

- 1 The mouth of the womb gets shorter and expands
- 2 The transitional phase (the baby's lowering in their mother's pelvis)
- 3 Birth itself, followed by the afterbirth – the placenta expelled from the uterus⁹

Due to labour and intrauterine pressure the baby's head is optimised for passing through the birth canal.

Lowering in the pelvis for the child means adapting to physical laws (of gravity) as well as organism and the need to turn in the pelvic cavity to minimize resistance.

THE HEAD ENTERS THE PELVIS

When the head enters the pelvis it is - still quite casually - either sideways or sloping. The first lowering means the baby turns around the axis navel-coccyx, the top of the head is in touch with the front of both the os sacrum and the os coccyx pushing the latter backwards.¹

THE HEAD'S PASSING THROUGH THE PELVIC CAVITY

The head's circumference has passed the terminal line and is sitting at the pelvic entrance. The baby's head is bent, i.e. the chin goes downwards (towards the chest) and the fontanella minor is taking the lead.⁹

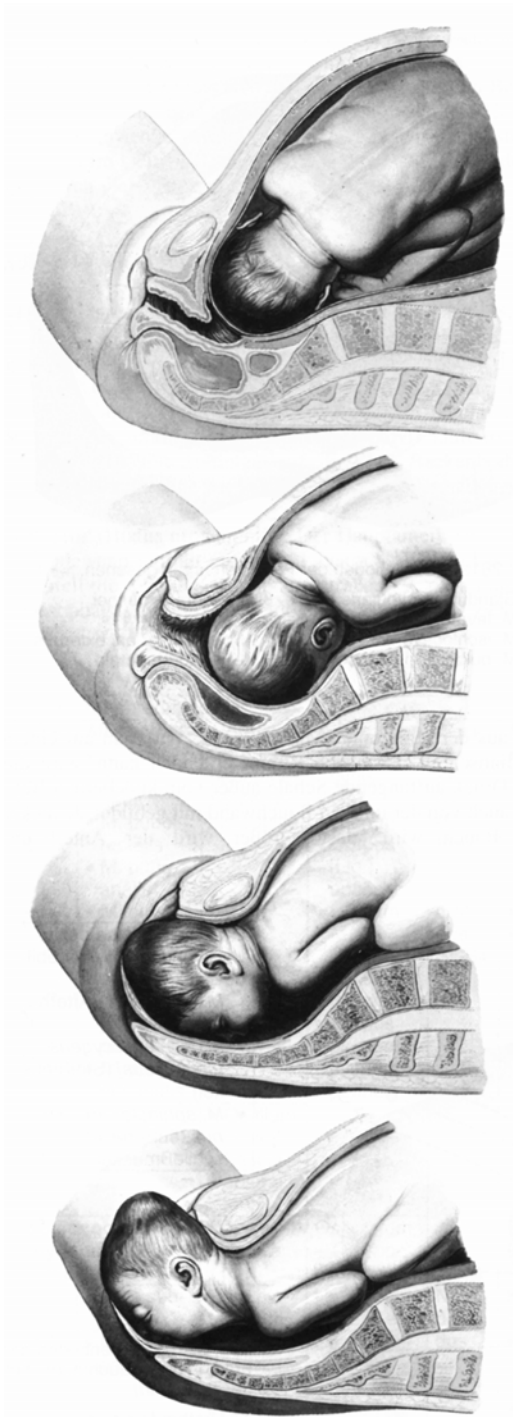


Fig. 6. Lippert - Lehrbuch Anatomie, p. 175

Passing through the pelvic cavity actually is the result of progression, flexion and rotation. The casual – not yet defined – position of the baby's head turns backwards to an occiput-anterior position - assuming a normal birth. Thus the round (circle-like) planum



suboccipito-bregmaticum of the bent head and the circular cross-section of the pelvic cavity become congruous.¹⁰

The head actually performs three moves on its way through the pelvis's cavity:

- (1) Progression = Change of place (lowering)
- (2) Flexion = Change of position (bending)
- (3) Rotation = Moving into right position

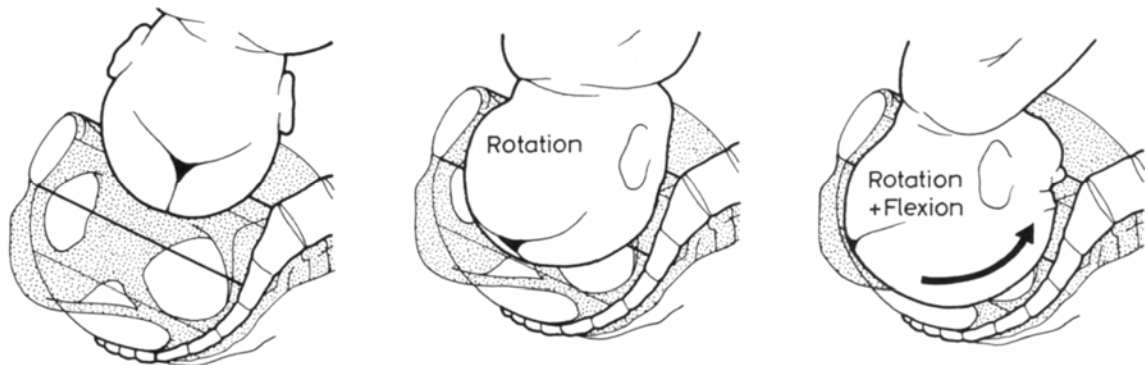


Fig. 7: Schmidt - Matthiesen - Gynäkologie u. Geburtshilfe, p. 274

Once the coccyx' backward movement has reached its highest amplitude the head rests against the dorsal perineum and is now quite taut. This tension together with the perineum's possible contractions work against downward movement of the axis mentioned earlier; it leads the baby forwards.

THE HEAD'S EXITING THE BIRTH CHANNEL

The rotation of the bent head is finished and has reached the pelvic bottom from where the head is passing the birth canal's sharp bend by just changing position, a mere stretching, really (Deflexion). As a matter of fact all the space as well as the whole range of the motion is made use of before the baby is delivered. The pubic bone acts as a pivot around which the head is deflected.

This final phase often is the reason for a dysfunction of the cranial base - especially the foramen magnum – since the os occipitale may be exposed to a lot of pressure.

Passing through the pelvic cavity actually is the result of progression, flexion and rotation. The casual – not yet defined – position of the baby's head turns backwards to an occiput-anterior position - assuming a normal birth. Thus the round (circle-like) planum suboccipito-bregmaticum of the bent head and the circular cross-section of the pelvic cavity become congruous.¹⁰

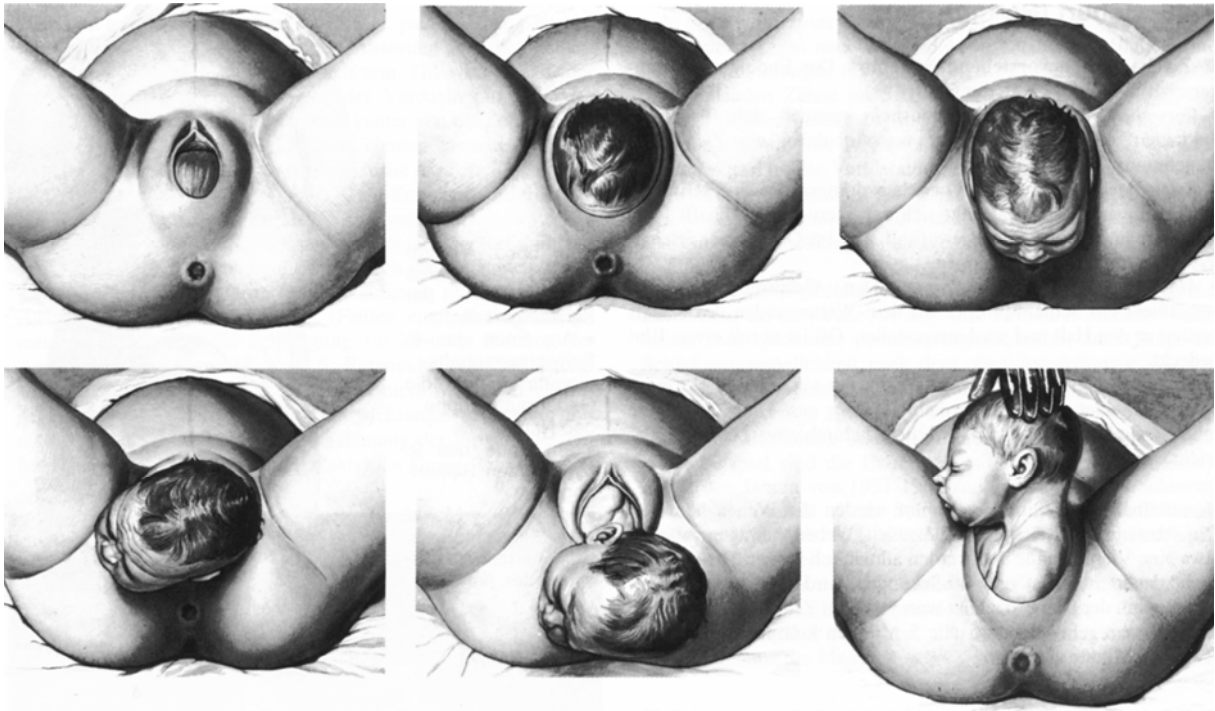


Fig. 8: Lippert - Lehrbuch Anatomie, p. 408

A CHILD IS BORN

The head uses the perineum for support around which it starts turning; a rotation in order to match the head's widest part with the widest part diameter of the exit of the pelvis. In other words the head's axis moves toward an anterior-posterior axis as the oval exit is longitudinal.⁴⁰

The dorsal perineum seems to assist by strongly resisting the movement. Thus the tension of the bottom of the pelvis really is crucial for the baby's head as it needs to be directed and can synchronize with labour contractions.

We need to remember that this rotation is only possible through counter-pressure. The occipital bone has to bear a lot of tensions – a fact that explains intra-osseous dysfunction after birth.

Passing the dam, the back of the head, the top, forehead, face and, eventually the chin are delivered – in that order. Now the head is fully out of the vagina. With the fontanella minor leading the stretching movement round the interpubic disk is finished. In most cases the face is born slightly inclined and features a sloping diameter.



THE HEAD'S ROTATION OUTSIDE THE BODY

The shoulders start turning from a sloping diameter to match the straight diameter of the pelvis's exit. Now one side, i.e. the shoulder nearest to the pubis is born following the pubic arch. When the outside turning of the head is done the hind shoulder is born crossing the dam.⁹

Once this movement is finished there actually is a kind of turning back again as the back of the head returns to its original position; the baby faces one of the motherly thighs.¹⁰

The baby's head is connected to the body – in a very compact way – by the extremely versatile cervical spine. Once the head is through; the shoulders widest span has to turn to an anterior-posterior axis. The turning of the head helps with this movement. The ventral shoulder gets through, the head is slightly lifted and the cervico-thoracal spine leans sideways. After that the dorsal shoulder follows. Too much of a turning movement (even from outside assistance) during this phase can well lead to a first strain of the cervico-thoracal joint. This may easily happen if difficulties (due to shoulder size or a dystokia of the shoulder) are encountered.⁹

MATERNAL COMPONENTS

As can be seen, a lot depends on how the osseous pelvis is formed: the nature of the oval, transversal entrance to the pelvis, the pelvis's cavity and the longitudinal exit of the pelvis and how easy the baby can adapt to this situation. All of the pelvic bones need to be able to move freely, just as the coxo-femoral joints and the passage between L5 and S1. Dr Sutherland thinks the most important of the bones that are involved in the birth process is the coccyx with its movability.

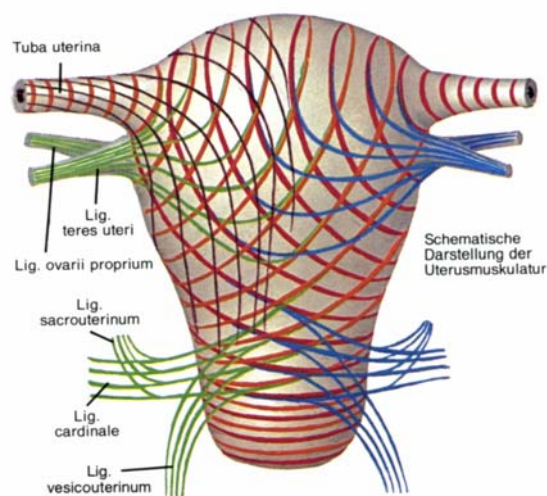


Fig. 9: Netter – Genetalorgane, p. 111



A lot, naturally, also depends on the shape of the womb and the muscular layers thereof. The uterus which eventually features a right turn around a vertical axis consists of the collum uteri (that gets shorter and opens up), the lower segment, and the corpus uteri.¹

THE MULTITUDE OF THE WOMB'S LIGAMENTS as well as the peritoneal duplications directly connect to the pelvic bones and thus determine the movements of the uterus. Talking about ligaments: The lig. sacro-tuberalis and the sacro-spinallis are involved in the process too. The same is true for the quality of the sacrum, the pelvic and pubic bones, the lower part of the lumbar vertebra and the joint between the lumbar spine and the sacrum. During the birth process the womb gets its supplies via the spinal nerves sympathetically and parasympathetically via the sacral part of the spinal cord.¹

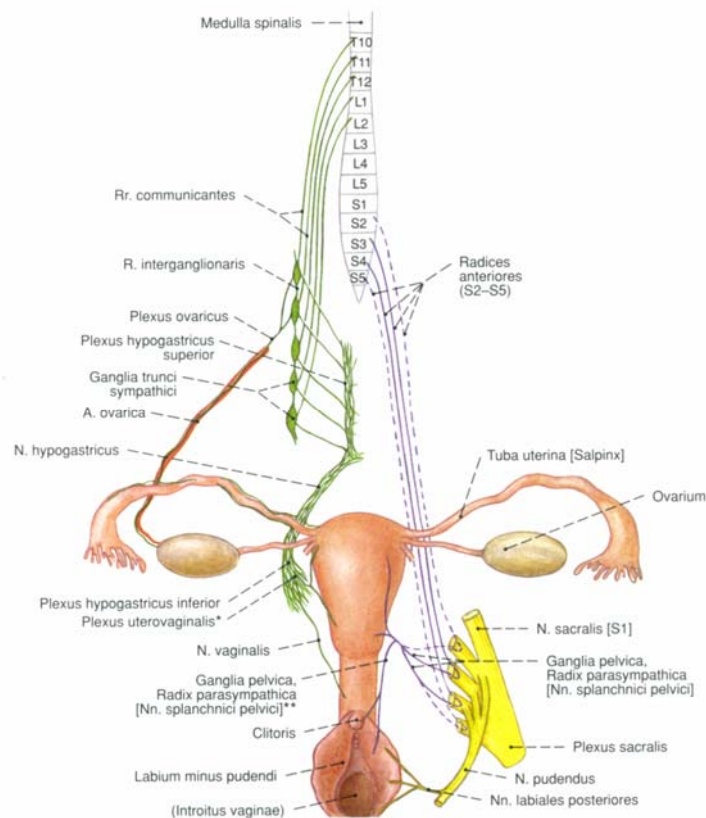


Fig.10: Sobotta - Anatomie 2, p. 215

Furthermore the SOFT TISSUES OF THE PELVIS are important. The baby's head is protected by muscles. To facilitate birth the muscular lining of the pelvis needs to be balanced concerning tensions. The m. psoas, by its size in a way, is responsible for the pelvic size; it reduces the transversal diameter widening the pelvic entrance's diagonal diameter. This explains why the baby's head is tilted when entering the pelvis. The m. iliacus, the m. obturatorius internus and the m. piriformis support this process. The muscles round vagina and vulva make up the perineum. The m. coccyges, m. levator ani and the posterior parts of the m. gluteus maximus form the perineum's bottom. A trouble-free interaction of all the pelvic bottom's muscles is utterly important.²⁴



Fig. 11: Rohen – Anatomie, p. 310

On lowering of the foetus in the pelvic cavity the coccyx is pushed backwards. When the amplitude of this movement is highest, the baby's head goes forward and, before leaving it glides along the dorsal area.

Due to the woman's hyperlordosis round the lumbar that develops rather fast, problems arise quite frequently at the dorsal spine. Tensions can occur - definitely not solely emotionally - at the mediastinum, followed by a strain of the diaphragm. This can happen both unilaterally and laterally.

Then, there is a connection to the psoas' muscles via the crura, which forms the leading muscles that are in action at the uterus' downward movement.²⁴



CHILDISH COMPONENTS

Hints, that it is the baby who actually initiates labour to commence, are frequent. When ready, the baby triggers oxytocin to be released which results in the uterus to contract. Sometimes, however, when time is pressing doctors prescribe medication to artificially start those contractions. The baby literally gets pushed through in one big movement - too fast for the newborn.³

The only joint of the head – so far developed – is the one of the occipito-atlas. It seems to me that „intelligent” nature created this bony mechanism in order to cater for a safe and sound journey through the birth canal and that delivery can happen smoothly.²

The skull consists of three parts: the top of the head, the head's basis and the part of the face. Whereas the bones at the top are of membrane origin, those that belong to the head's base are originally cartilaginous. This is why the top of the head is able to deform quite easily, can adapt, as such. The bones at the top adapt to the ones at the bottom. Quite an important factor we need to realize: the head of a newborn child consists of several individual bones still, bones that only become osseous in the course of childhood.

The os occipitale of a newborn has got four parts: the squama (originally 4 ossification centres), the partes lateralis and the pars basiliaris.

The os sphenoidale consists of three parts at birth: the corpus, both of the alae minores and the two alae majores together with the processi pterigoidei.

The os temporale has two parts (at birth): the squama, the pars tympanica (that has become osseous ever since the 8th lunar month) and the pars petrosa.

The frontal bone consists of two parts as well: it is separated by the sutura metopica.

The os parietale stands on its own.

The os ethmoidale has three parts: two partes lateralis and the lamina perpendicularare.

The maxilla is two-fold; there is the pre-maxilla and the maxilla proper.

Two parts form the mandibula.

The two condyles at birth have three parts: both massae lat and the arcus anterior

The pelvis consists of the ileum, the ischium and the pubis.

The sacrum has 5 parts.¹

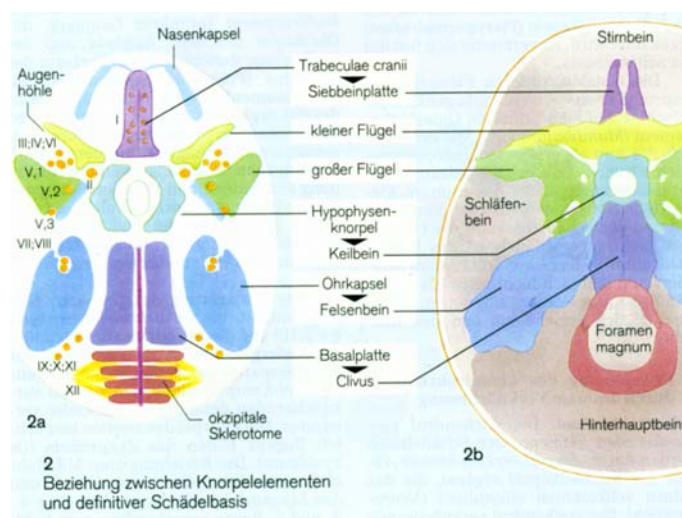


Fig. 12: Ulrich Drews – Embryologie, p. 351



During the birth process there is a possibility of some bones becoming strained if obstructed which can lead to a compression and disturbance of the tissue below. For instance, if the different parts of the occiput are distorted, the size of the foramen magnum is subject to change. Thus, both the brain stem and the upper part of the spinal cord are under pressure because both of them go through this opening. The cranial nerves, coming from the small openings through (or, between) the bones of the head, may be irritated. The bones at the bottom of the head consist of individual parts the connecting of which takes most of the childhood.³

The subject „bent twigs” arises from Dr. Still’s phrase „the hole in the tree”. I suppose the foramen magnum to be that „hole in the tree” and the reference is to the fact that the occiput is in four parts at birth – namely, the two lateral or condylar parts, the squama, and the basilar process. These parts are located around the foramen and contribute directly to the shape of the „hole”.²

Movements of cranial bones during the birth process

The fluid environment of the amniotic sac acts as a sensory deprivation to the environment. It provides protection from gravitational mechanics and allows the body to develop in a buffered environment where little or no sensory stimulation is present. Wave pressures are subdued as they pass through the fluid med. so that tactile stimulation is minimized. The amniotic fluid is at body temperature which buffers temperature receptors from stimulation much like the sensation one gets when soaking in a warm bath. Sound waves, which pass through amniotic fluid, are mildly distorted but provide some auditory stimulus for developing baby.⁴

During the process of delivery the bones of the cranial vault „fold up” upon each other like petals of a rosebud. After delivery, the normal processes of crying, respiration and suckling will resolve many of the stresses and strains absorbed by the tissues.⁴

Frequently certain patterns of adaptation take place as a direct result of a trauma of the head’s top or back, either from before or after birth. During a normal birth – with all mechanisms working accordingly – the os frontalia is moved under the os parietale, both of the parietale move on top of each other and over the inter-parietal parts of the occiput so that the form of the head changes. Thus there are no problems to pass the maternal pelvis. These adaptations are then revoked and the head goes back into normal position.

Occiput and sphenoid consist of epiphyseal units, quite important for the concept of cranial studies. These intra-osseous epiphyseal parts are often dislocated thus can disturb the central nervous system quite a bit – if not taken care of.

For instance there are 3 intra-osseous units or connections in the sphenoid: one between the upper part of the body and the little wings, the second one between body and the big wings (pterygoid part). If the little wings shift their part of the eye socket in relation to the frontal bones cross-eye may result.²

The brain is contained with the bony skull, which at the time of birth is designed to accept the temporary compression of the birth canal, and expand fully when the baby cries



immediately after birth. The low end of the central nervous system is located within the coccyx, the large bone forming the back of the pelvis. This, too, is designed to absorb the compressing forces of the contracting uterus, and then be restored by bodily movements after birth. The vertebral column protects the spinal cord connecting the head and the pelvis.⁴

The chemical environment of intra-uterine life differs from life outside the womb. The developing neonate is exposed to maternal hormones that are higher levels than they would be in the baby. Maternal sympathetic stimulation affects vasomotor control of the placenta and the foetus. Adrenergic effects in the lungs and gastrointestinal tract are also probable. During labour, the head descends through the bony pelvis and its soft tissues.⁴

Problems of labour and delivery may compromise these structural areas and thus, disturb the nervous system within, thus interfering with its physiological development. Any of the following could be problematic

- o False labour before real labour began
- o Premature rupture or leakage of membrane
- o Induction or acceleration of labour by use of medication
- o Presentation of the baby in another position than head down
- o Very long (>18 hours) or very rapid (<3 hours) labour
- o Epidural anaesthetic
- o Forceps or vacuum extraction
- o Cord around the baby's neck/body once or more times
- o Severe slowing of baby's hear
- o Period of uterine inertia, i.e. contractions stopped or slowed
- o Caesarean section delivery because of lack of progress.⁶

The processes of labour and delivery affect systems other than the musculoskeletal system. The mechanical forces of labour impact on the foetal head, cerebral circulation, heart, umbilical cord and placenta. Valkeakari (1973) has reported echographic changes in the foetal brain as a result of normal cephalic delivery. Echography demonstrated midline shifts, which developed three hours post-birth and resolved by 24 hours.⁴

3. Anatomy

3.1. The baby's head

Advances in medicine using new technology have helped to make births safer for both mother and baby. However, safety seems to have its price: Due to using machinery and drugs - sometimes quite unreasonably - new problems arise. We suddenly find ourselves confronted with complications interacting with the ordinary physiology of mother and child.

YEHUDI GORDON⁴⁵

The Encyclopedia of Pregnancy and Birth, 1998, p. 127

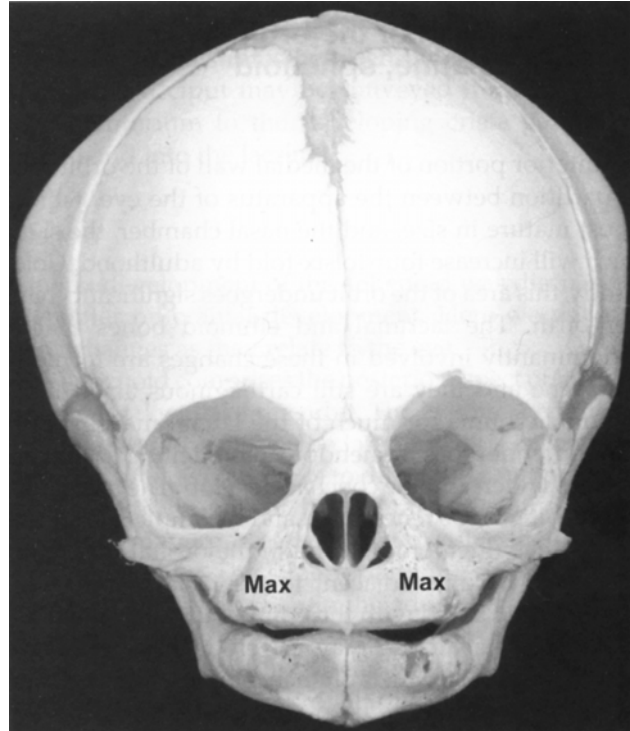


Fig. 13: Carreiro, An Osteopathic Approach to Children p.143

3.1.1. Cranial Moulding

A baby's head – on its 'unpleasant' journey through the birth canal is compressed in a form that is determined by the maternal pelvis. The head's bones must bend and move for and against, get squashed during this process, known as cranial moulding. Congestions that can be quite strong often last for a number of hours. Furthermore the baby's body has to finish its 90° rotation before reaching the exit. Of course this can lead to a trauma; on the other hand it may well be exciting. It is these forces that are preparing the baby's coming into this world as well as the child's later performance.³

In any case, the way children are born brings about a real big challenge. Most babies – yet, not all of them – carry a trauma of one way or another. But, as mentioned earlier, they often balance out within the first ten days or so, trusting nature.⁶

This is where spontaneous healing comes in. Primary breathing supported by actions like sucking and crying can balance out some of the consequences of compression, as long as they're not too serious, for instance, the baby's head gets a chance to unfold to normal size and position.⁶

This last phase in the birth process- obviously, the transition from intra-uterine to a life outside- usually lasts for about two weeks. It starts with a shock in connection with the somewhat dangerous delivery, eventually followed by the newborn baby's detachment from the mother. Adapting to the world outside and the option of taking over the placenta's function - by some functionally not exactly working organs - (kidneys, liver, bowels,



respiratory organs), not to forget the adjusting of the blood circulation indeed represent additional strain. The result of which is the baby's physiology.¹⁴

Extraordinary misshaping frequently leading to cranial traumata may happen when:

- 1 — too rapid descent
- 2 — too slow descent
- 3 — abnormally shaped maternal pelvis (which may slow down total descent, or may already have produced pressure during carrying time)
- 4 — improper application of forceps.¹⁹

During birth the tissues reflect the compression forces of labor and the shape of the head changes. When this is extreme, the structure within the skull may not adapt well to the relative changes. The resulting pull on the cranial membranes can distort the blood vessels contained in them and may also affect the nerves as they exit the cranium.

The head's adjustment to the size and shape of the birth canal is known as cranial moulding. In the majority of cases the distortions correct themselves within a few hours to days, thanks to the forces of crying, breathing, yawning and suckling. As the skull expands, the changes in the shape of the head become noticeable and the baby settles.

The process of birth constitutes the biggest stress that we undergo in our lives and the effort required is phenomenal. The baby has to adapt to the mother's pelvis and accept the compression forces of labor. Having emerged they have to expand yet more energy to resolve these compressive forces and set in motion what they now need to survive in the outside world. The first breath starts these processes by expanding the lungs and switching on the breathing mechanism. The breath will open up the air spaces in the lungs for the first time and in doing so every single cell in the body is animated: surfactant is spread over the internal wall of the alveoli. In turn, the body opens and spreads. As the baby cries and yawns, the cranial base and vault release their compression strains of the pelvis, the spine and the entire body.⁸

The tissue - as far as the sacrum and the coccyx - is mobilized by the rhythmical work of palate and tongue once the baby has commenced suckling.

This process of unfolding is visible as the head changes its form and the body relaxes, just as a rose-bud opens up to bloom. The baby usually settles within a period of about two weeks.

The adjustment of the blood circulation in order to fully change to a worldly life means the newborn's bilirubin is (slightly) raised. Osteopathic treatment usually has a favorable influence on the primary respiratory mechanism, abdominal strain and other functioning of organs and thus can help to get rid of this (too much of bilirubin).

Quite frequently parents are really amazed when, while looking at their offspring in the first days, the form of the head goes back to normal and the newborn changes on the whole within hours. Taking photos you can spot these changes of these first days... the baby



appears 'different' each time. This spontaneous healing is what nature can achieve but at the same time also indicates what great forces the baby is confronted with.

3.2 Mother Dura

The (living) human head is a remarkable structure at birth, when you come to think about it. At this stage it is easy to see it as a soft-shelled egg, or a modified sphere, while later in life it is harder to visualize it as such. All these bones are held together by the dura mater, dura mater functioning as an inter-osseous membrane. Because of this the new-born head holds together and at the same time can adapt to the maternal pelvis in order to allow a safe journey through the birth canal. Think of it!

W. G. SUTHERLAND²

Teaching in The Science of Osteopathy, 1990, p. 107

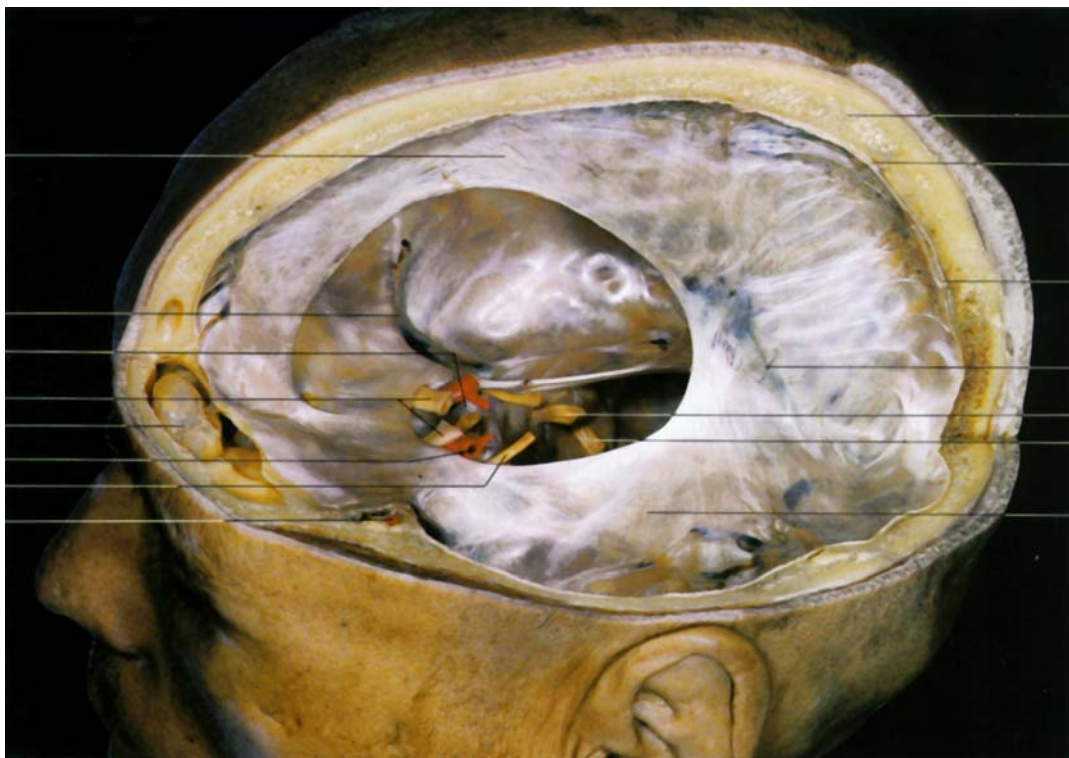


Fig. 14: Rohen - Anatomie des Menschen, p. 87

At the time of birth the human brain weighs about a quarter of an adult's. This is to say that growth in general takes place outside the womb. The brain growing, the reciprocal tension membranes as well as the bones of the brain help to determine its later format. If lifeless matter remains in the tissue, of course, the way the brain develops may be affected. As a result the nervous system's primary respiratory mechanism may be impaired and cause



irritations of the brain and its respective nerves. The functions of the nervous system may also be affected if the system has been under shock due to a long and difficult birth.

As osseous structures and cartilage of the baby's head still consist of many thin and flexible parts, "Dura Mater" takes an important role at the primary respiratory mechanism of the new-born. It acts as a link holding together the different individual parts of the head and is responsible for their floating around, their correct movement. In order to work properly a certain tension is necessary. The cranial membranes branch out as a duplication of the outermost layer lining the inner skull, the area of the falx (as vertical axis), tentorium cerebelli, which has its role in connecting the temporal bones transversally. The intra-cranial membranes continue as the dura mater of the spinal cord, sticking to the foramen magnum and some other points (level with C2 and C3) and go down as far as level S2. In this way not only the head and pelvis are connected but the tentorium, the diaphragm and the perineum are linked up too.⁴

The membranes protecting the brain as all the other (inner) parts (known as pia mater) are full of blood vessels. A trauma therefore brings about a haematoma. Some of the symptoms of such a meningeal irritation produce reactions concerning the sucking reflex, swallowing and result in crying bitterly. Isolated movement of just one part hardly ever happens. If it does – it again appears to be due to traumata – either local or cranial.¹⁹

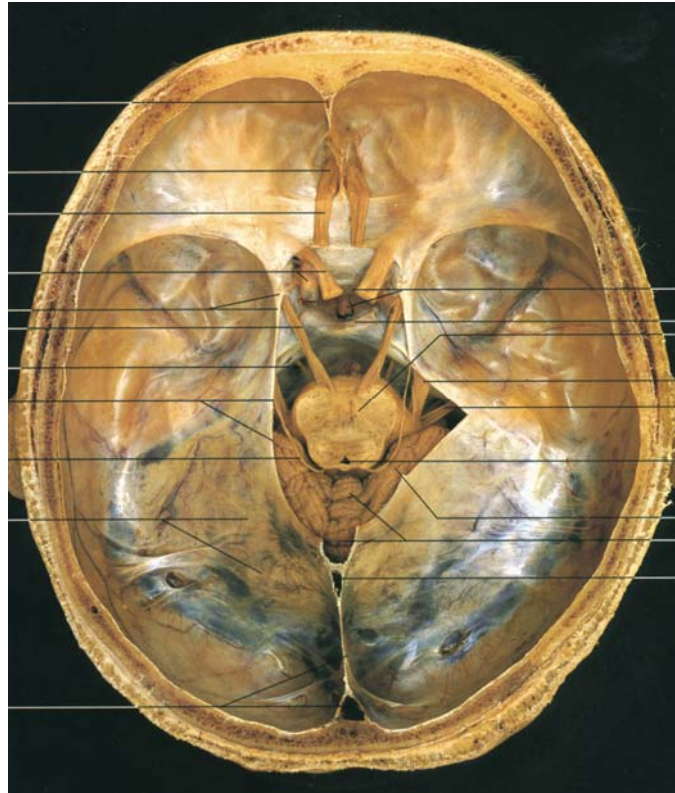


Fig. 15: Rohen - Anatomie des Menschen, p. 66



3.3. Interventions during the birth process

Most certainly the ideal situation is of course a natural birth taking place at home, in familiar surroundings, and without complications. Children, who have experienced this kind of birth, often are described as 'alert, coordinated and happy'. Should complications arise during the process of birth immediate medical reaction is absolutely crucial, it can even save lives. At modern hospitals interventions are often used defensively because of fear something could (could not) happen. It obviously is in our heads: a deep mistrust in our natural instincts and abilities is the reason; maybe it's the lack of recognition that the birth of a child basically is something absolutely natural. The doctors' worries something might go wrong and therefore bring about legal action often prompt them to use invasive treatment instead. Medication given to the mother-to-be, either during pregnancy or when giving birth directly, enters the baby's bloodstream and can have strong, negative effects. Effects that will stay within the child's system for many years (cf. bonding).³

Painkillers, opiate drugs, given during labor do influence the baby, who often are reported as subdued, easily irritated and their tissue often feels kind of spongy. Many women who have had an induced birth (I just want to point out that most induced labor is performed at the obstetrician's suggestion or insistence) describe the experience as something that is "done" to them. They feel that the contractions do not originate inside themselves, but that they are imposed on them from the outside. As a result, they lose control of their bodies and it is much more difficult for them to push in rhythm with their contractions. The mother is neither in harmony with her own body, nor with her baby. It would be highly desirable to separate birth from technology and go back to the roots (i.e. restore it to its rightful place in the family).²⁷

Epidural anesthetics may not harm the baby, but, obviously, if the maternal pelvis is numb, further interventions (e.g. forceps) may be necessary to deliver the baby. And, on top of that, such anesthetics often cause long-lasting back pains for the mother. Even difficulties when urinating or passing faeces might occur.³

3.4. Patterns unresolved

The baby's unfolding process may be inhibited as a result if a labour that is contracted, complicated or even too quick... As a result the newborn is either subdued or irritable, will not settle, is wakeful and over alert or hyper- responsive to sensations. The sense of shock and fetal distress is deeply intertwined: it can be visualized as a rosebud prevented from opening because it has been caught by an unexpected frost. Once released, the tissues can expand and open up more freely.⁸

Birth stress usually triggers patterns of damage which can be the reason for many a physical problem. These structural strains may cause difficulties, ranging from brain damage, epilepsy and autism to 'problems' that might even be considered 'normal'. Usual symptoms



include difficulties with feeding, colics, excessive crying, sleeping as well as developmental problems, being irritated easily or emotionally unbalanced or they may encounter problems with their ears and sinus. Such traumata very often change movement patterns which then are actually acquired causing trouble again later. However, such patterns are ignored as they are considered to be movement asymmetries or just a posture idiosyncrasy.

If a baby prefers to suckle on one breast only, this may well come from a strain in the neck. Or perhaps parents find their babe is uncomfortable on one side...

Such preferences eventually result in changes of developmental patterns. According to Ray Castellino (1999) these patterns – adopted by a baby – are more often a mirror of events of traumatic births. He claims that patterns of movement, posture and cranial successions will later be reproduced by the child: They will move and keep positions that are remembered from birth or even before.³⁸

The fact that the baby was spitting up in that early period after birth, or that the baby did have difficulty learning to suck, is very important to us from a diagnostic viewpoint because it tells us that there was a degree of compression within the baby's head that irritated two of the important nerves that come out of the base of the skull - one being the 12th nerve, the hypoglossal nerve, which is responsible for the activity of the tongue and therefore is important in the sucking process, and the other the 10th cranial nerve that is concerned with the activity of the digestive tract.⁴

While the head of the baby is passing through the pelvis - a possibility that presents a opportunity for study in child development. One may reason that expansion of the cranial articulation is primary to restriction in the cranial or basilar articulate functioning, or that cranial or basilar expansion is primary to restriction in the facial region.¹¹

Sometimes unresolved cranial base restriction and compression may interfere with the function of the brain and the emerging cranial nerves. The symptoms depend on which cranial nerve is affected. Difficulty in suckling, for example, can be a direct effect of distortion disturbing the passage of the hypoglossal nerve, which affects suckling, tongue movements and the development of speech. Irritation of the vagus nerve that supplies the gut can be the cause of the colic, with the baby being distressed feeding times.⁸

There may be problems with sucking if the nervus hypoglossus has been irritated – very often the result of functions concerning the occiput. In such cases the baby swallows a lot of air; the consequence of which is flatulence and/or colics.

If openings for the nerves to get through are too tight (entrapment) the cranial nerves are compressed. For example, when the connection between occiput and temporal bones is strained the vagus nerve may be irritated: colics may be encountered.³

Irregular heartbeat, breathing disturbances and such of digestion may crop up in case of a compressed vagus nerve. The same goes for the above mentioned opening (foramen jugulare) the route which is used by the nervus glossopharyngeus, catering for the throat muscles and the saliva gland. If irritated there may be problems when swallowing and feeding. It may result in a stiff neck as well (nervus accessories).



If other cranial nerves suffer compression this may lead to eye problems, such as sudden eye movement or cross-eye. Distortion in connection with the temporal bones may cause ear problems (infections, hearing impairment, chronic otitis, ‘Glue ear’). The tuba eustachii, responsible for the right ear pressure, can be blocked; a pressure too high may result in an ear infection.

Every single one of these disturbances relating to bone movement can be detected through palpation and can hence be treated.³

3.5. The occipito-atlas joint

Even following a normal delivery, there is a situation that calls for attention. The baby’s head has adapted mechanically to all the obstacles along the birth canal during delivery. When the baby cries and inhales air, aided by atmosphere pressure, the cry is usually vigorous, a special cry, with or without a spank on the sacrum. The process fluctuates the cerebrospinal fluid. Then the membranes go to work to go and pull the bones into position.

W.G..SUTHERLAND²

Teachings in the Science of Osteopathy, 1990, p. 108

The occiput consists of 4 parts: the squama (supra-occiput), the two lateral parts and the basilar process all of which are linked by cartilage. The condyles of the occiput have not reached their correct form – the head’s weight has not yet changed them.⁴

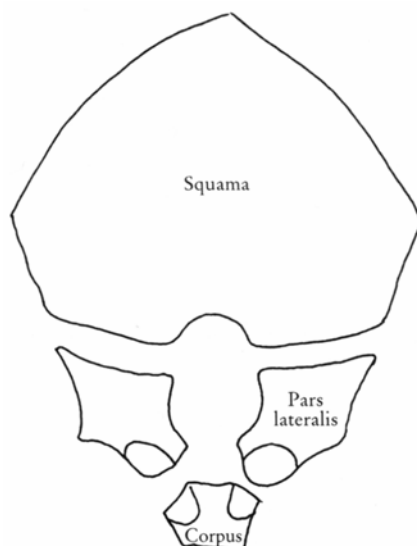


Fig. 16: Sergueerf ,Cranisacral Osteopathy by Children, 1995, p. 34

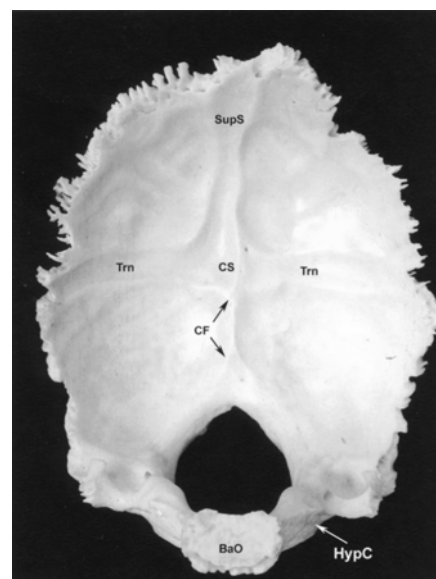


Fig. 17: Carreiro, An Osteopathic Approach to Children, p.172

The characteristics of the atlas-occiput joint has its rather important role in this process. This meeting between the anterior ends of the condyles and the posterior end of the basilar process is not a transverse articulation; the facettes are concave and run together towards the front, widening at the rear end. The joint on the basilar process faces laterally; the one of the condyles faces medially. The basilar part is fairly well formed at birth; it is ossified, but there is cartilage between the three parts. When the lateral parts come together by the convergence of the pits of the atlas, the condyles are going to squeeze in against the intervening cartilage between the basilar process and the condylar parts. They tend to slide together. The condyles are separated in two parts: the front third is the pars basilaris, the twoback thirds is the pars condylaris/lateralis. Between them there pass the 12th brain nerve (n. hypoglossus)^{2/4}

Distortions of the foramen magnum frequently appear as a narrowing of the anterior part. Sometimes the distortion is minimal; at other times the contours show various twists with considerable warp. These are directly influenced by the position taken by the basilar process, when the head was squeezed⁴

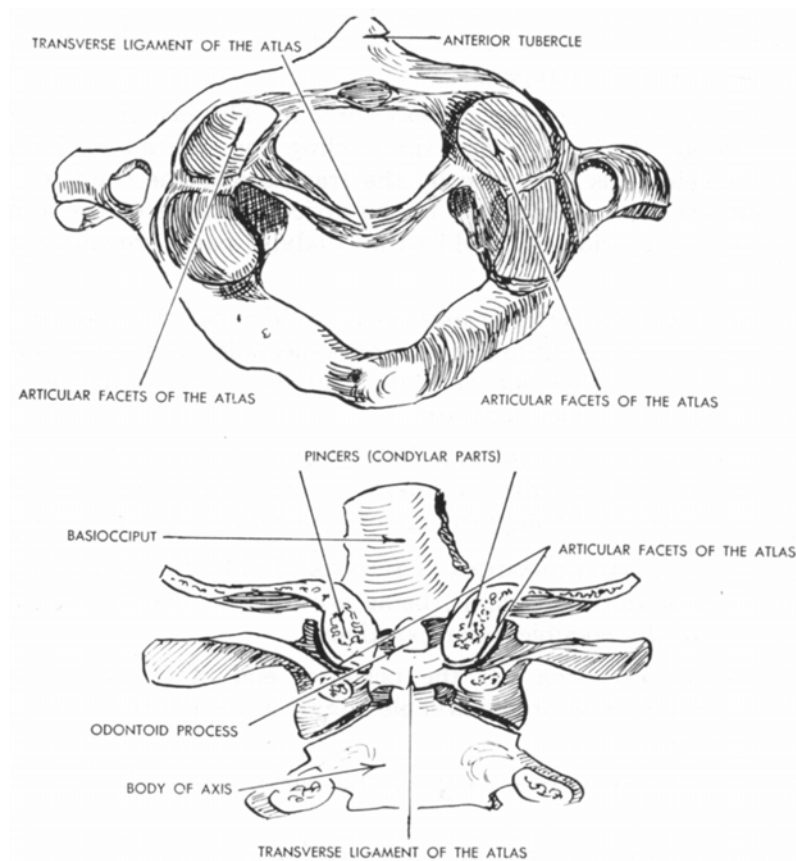


Fig. 18: Magoun - Cranial Field, p. 253

Compression or angulation can also occur at the posterior end of the condylar parts, at the condylosquamal junction. The shape of the squama of the occiput is circular with the inion at the center. The landmark at the center of the posterior rim of the foramen magnum is located at the end of a radius from the inion. It is named opisthion. The squama may turn



clockwise or counter-clockwise around theinion. That action moves the opisthion either to the right or to the left. This information should be part of any structural examination.⁴

Depending upon how the squama has turned, the pressure on the posterior end of the condylar parts can be analyzed. There is antero-posterior pressure on one side and medio-lateral pressure on the other. The condylo-squamal junction may also be angulated in relation to the condylar parts. That is, the angle between the squama and the condylar parts may be more acute or more obtuse than the usual normal curvature. The squama influences the partes lateralis and consists of 3 axes, a transverse, a sagittal and a vertical axis.⁴

The articulation between the condyles of the occiput and the facets of the atlas is the only established joint at birth. It seems that the Master Mechanic provided for a moulding of the osseous mechanism so that - in a normal delivery - a safe passage through the birth canal could be achieved.²

The various conditions that may arise in the relations between the four parts of the occiput are sufficient to account for the various shapes of the foramen magnum and the head of the baby. Should these distortions persist during growth both as a baby and during childhood, they manifest the principle described by the saying, „as the twig is bent so is the tree inclined.”

It is of great importance, therefore, to examine newborn babies with care and precision. At that time it is easy to assist the powers in the primary respiratory mechanism that are already in action, to establish normal positions and relations among the cranial bones, especially among the four parts of the occiput.^{7/2}

As the baby „is forced” down the birth canal, the pressure of the uterus is directed normally along the spine to the occiput, which in turn is responsible for the dilating of the cervix. So there are actually two forces: the direct rotating pressure plus, lateral resistance. These produce a twist towards the condylar parts of the occiput and to the squama, and if they get locked out of line symptoms follow just as dramatically as from any other traumatic lesion.¹⁹

To get back to the occiput, the four parts mentioned make up a formation of the foramen magnum. Rotation of the squama which may be produced by intra-uterine traumata through the position of the placenta, the pressure of uterine fibroids, or of trauma from external forces such as falls in which the force is expended upon the abdomen of the mother, can and does produce compression of the condylar parts in an anterior-posterior direction and/or a slight displacement in a medial direction. It is the distortion of the foramen through (serious) injury, both prenatal and at birth that enters into the pictures of the spastic case.¹⁸

Within the occiput there also is that large opening through which the brain stem exits and becomes the spinal cord. All of the nerves' pathways going to every structure in your body below the skull pass through that hole in the occiput. Therefore, if the occiput is deformed by pressures we have described, an injury of the nervous system may occur. This applies for the child who suffers from mild spitting up to the child who is hyperactive, the uncontrollable child, is aggressive, and who eventually has learning as well as behavioral problems and the whole gamut. So this is a most critical area.⁶



Now we must consider the relationship between the foramen and the parts of the nervous system. The medulla oblongata with the pyramids on its anterior surface lies directly upon the basilar portion of the occiput. The pons rests upon the dorsum sellae of the sphenoid. The cerebral aqueduct (aqueduct of Sylvius) is immediately superior to the junction of these two parts and lies directly above the spheno-basilar articulation. The squama of the occiput is probably the greatest troublemaker in the formation of these occipital lesions. Due to its position, it is exposed to external forces which are transmitted to the condylar parts and through them to the basilar part. The squama is quite mobile in the fetus and in the full term infant. It can be rotated around an axis represented by the inion or the occipital protuberance. It can be lipped forward at its apex, producing a hinge - like action at its cartilaginous articulation with the condylar parts. And it can be turned forward under the parietal bone at the lambdoidal suture line on either side. We also see the superior sagittal sinus, the straight sinus, the occipital sinus, and the two lateral sinuses as well as the confluence of these sinuses at the internal occipital protuberance. The rotation of the squama can produce a twisting of all of these structures; this is also true for the falx cerebri and the tentorium cerebelli. That changes the flow of the venous blood through them. Both hemispheres of the cortex and the cerebellum are also subjected to a twisting. The cisterns of cerebrospinal fluid are altered in shape and function and lead to a distortion of the subarachnoid space.¹⁹

Mothers are often shocked psychically at seeing their baby's head immediately after delivery. They need to be calmed by midwives and/or doctors by telling them that the head will change considerably within the first few days. And indeed, it does happen – and their baby's head develops accordingly.

The baby's crying and sucking has got an important function: it helps to shift the bones of the head into right position. This, in turn, influences the baby's breathing and eventually leads to a correct fluctuation of the liquor fluid, the hydraulic shift which forms the baby's head in quite a powerful, yet tender way.²

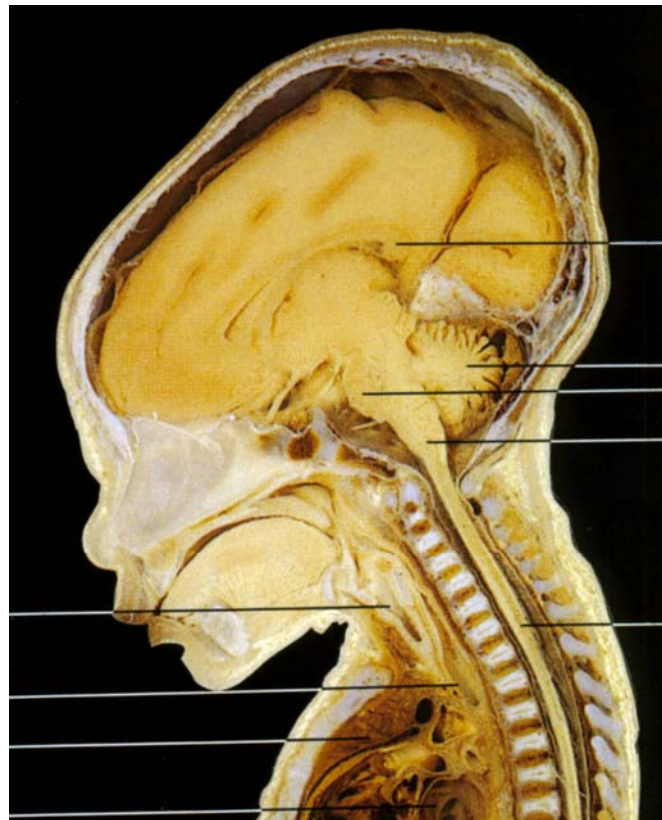


Fig. 19: W. Rohen - Anatomie des Menschen, p. 219



3.6. Cranial compression

Every excessive cranial moulding retained from birth (and has not been worked on osteopathically) can put nerve tissue under pressure and even cause damage. Brain paralysis can have lots of reasons. However, according to Dr. John Upledger it may, more often than not, go back to extreme tensions of the dura mater membrane or the cranial sutures may have been jammed. A jamming of the coronal suture – at the roof of the head, between the frontal and the parietal bones, and the belt of the dura – very often results from birth traumata, too. In some cases a cranial-sacral treatment can improve the situation. Dr. Upledger points out that ‘serious membrane restriction of the dura within the cranio-sacral system’ frequently can be found with autistic children.³⁹

Insomnia, headaches, or even banging one’s head can result from high pressure in the baby’s head. Thumb-sucking, in fact, seems to be an action where the child is – subconsciously - trying to get rid of the hard palate’s restrictions. A lesion, maintained deep down in the hard palate eventually leads to problems with the teeth, e.g. superposition. Sinus problems may be due to compression of the frontal bones of the head. If there is an irritation at the ganglion sphenopalatinum - a bundle of nerves between sphenoid and hard palate - running noses, hay fever, problems with the tear tracts or facial pains can be the consequence.³

ASSYMETRIES AND BODY PATTERNS

Traumata resulting from birth often lead to problems and can be seen as head or face asymmetries. In fact there are but a few people whose right side very obviously differs from the left. Anomalies of our head can be made visible by copying a respective picture (photo) on two transparencies. When you cut it you will end up with two pictures of our left side and two of the right. If you take one picture of your left side, turn it upside-down and put it next to the other left side you will see yourself consisting of two left sides. It simply is not you. The proof is in the pudding.³

The compression forces of birth may also affect the abdomen, pelvis and the spine. The baby can get compressed through the spine which has many implications. If it affects the neck then the baby may prefer lying on one side only or have difficulties in turning one way; as the baby’s head can be very sensitive there may be a yell each time the head is touched. A common feature you can see is a wry neck (torticollis) that usually originates from a compression inside the womb affecting the sterno-mastoid muscle at the front of the neck, though distortion and compression within the bones of the cranial base can also affect the attachments of the neck muscles.⁸

Especially the nervus accessories is prone to get jammed during these twists.

N. ACCESSORIUS

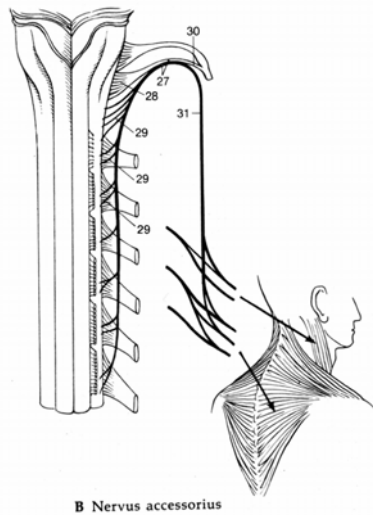


Fig. 20: Feneis - Anatomisches Bildwörterbuch, p. 297

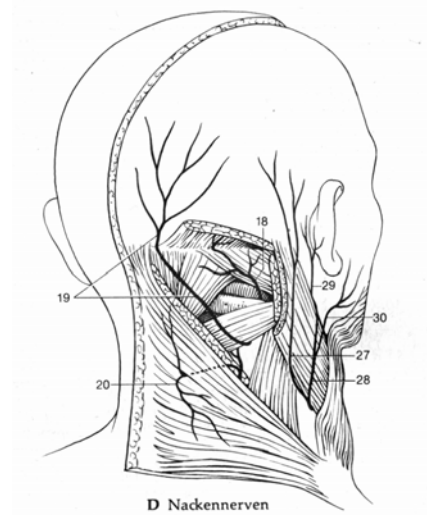


Fig. 21: Feneis - Anatomisches Bildwörterbuch, p. 299

The roots of the 9th brain nerve temporarily merge with the nervus vagus and the nervus glossopharyngeus in order to exit the head through the foramen jugulare. This 9th nerve supplies the sternocleidomastoideus and the musculus trapezius.¹²

Uncoordinated and sudden, nervous movements could also be a symptom of a trauma. Or a baby doesn't fancy having its legs lifted (when changing nappies for instance). Sometimes the babies seem to get disoriented. This may become obvious in situations when they do not turn their attention to one side. Another trauma hinders the normal steps of development; e.g. the baby is late in sitting up, crawling, walking and talking. Later the symptoms may include learning difficulties, reading problems or being hyperactive.³ Spinal deviations may develop through the cranial base's patterns like side-bending rotation, torsion, intra-osseous lesions, however, compressions happening while the baby winds its way through the birth canal to the exit, might also be the reason. Lesions in the chest and the ribs can affect the draining of the lymphatic fluid as well as the function of the thymus – fundamental elements of the human body's immune system. This can result in a predisposition to catching infections. Asthmatic babies and children often show signs of traumata that go back to a compression of the chest or a drop in oxygen during the birth process. The nerve centers that control the lungs sit in the myelencephalon (back part of the brain) and can also be influenced through compression. Tensions that are maintained in the baby's stomach and diaphragm may well cause colics.³



The lower end of the spine is very important because as the baby is descending through the birth canal - the head already opening the mouth of the womb - it is the pelvis and the buttocks that get all the pressure, due to uterine contractions. If, for some reason, the baby doesn't descend smoothly and progressively through the birth canal its spine has to negotiate its way around the mother's sacrum. If the baby gets held up in that position, a side-bending of the lumbar spine may be produced. This, of course, does not show for some time, as it will be a while before the baby is standing up. The spinal curve may not develop properly either and a deformation will only become visible when the baby begins to stand up. That twist which has already become locked can be detected easily during an osteopathic check and can be removed.⁶

Any distortions or compression of the pelvis and sacrum can affect the growth and development of the spine and thus the developing posture. In this region, the spine carries the nerves of the automatic system by which the organs are taken care of. After some time, symptoms may arise that tell us whether, where and how much the spine has been affected. When the nerves of the gut are disturbed, this is echoed as a tension in the fascias and the abdomen. Unresolved birth strain can also be manifested in the abdomen. The guts and intestines will normally expand into any space available in the abdomen and pelvis, but when there has been a compression the availability of space for the digestive organs can be reduced considerably. A variety of non-specific symptoms such as colic, constipation or wind can result. The baby is unhappy, does not settle and this in turn often leads to problems with sleeping patterns.⁸

Injuries of the infant's sacrum may result from the mechanics of labor, uterine forces on the fetal head, uterine forces transmitted to the sacro-occipital unit, rough handling of the infant after delivery - like dropping the baby into a basket occiput first (jack-knifing the spine and the ilium), occipital rotation leading to anterior occiput, posterior occiput, ect.²⁰

3.7. Sucking and Swallowing

In this chapter I would like to look in detail at nerves of the brain that can get jammed (resulting from traumata at birth) and that are of importance for my own research; especially those that relate to digestive problems, crying and sleeping. And I want to have a look at nerves that suffer 'entrapment' - nerves that, by the movements of occiput and temporale narrow down one side of the foramen jugulare as well as nerves mentioned below that are responsible for sucking, swallowing and digesting.

NERVUS HYPOGLOSSUS

The hypoglossal (or 12th brain nerve) exits the brain – together with a multitude of roots – between pyramid and olive, runs through the canalis hypoglossus of the occiput and continues forward in an arch between v. jugularis interna and a. carotis interna reaching as far as the neck area into the trigonum caroticum. It caters for the muscles of the tongue.¹²

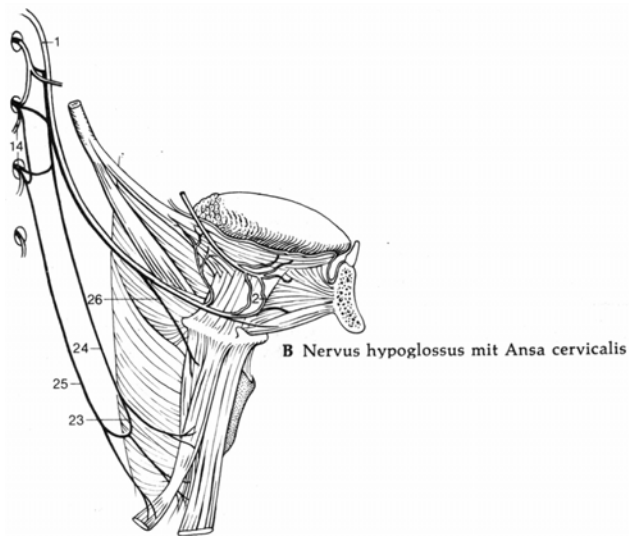


Fig. 22: Feneis - Anatomisches Bildwörterbuch, p. 299

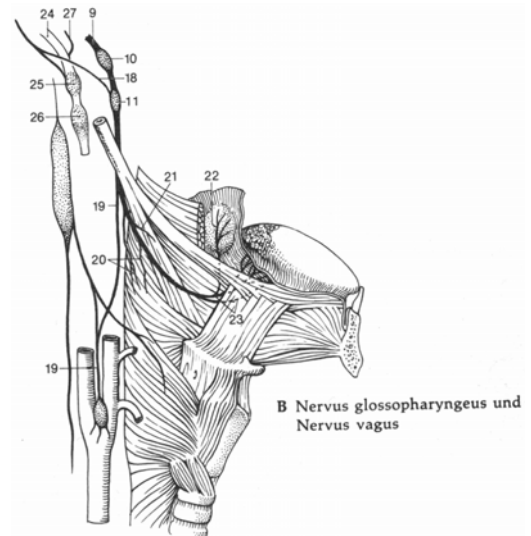


Fig. 23: Feneis - Anatomisches Bildwörterbuch, p. 295

NERVUS GLOSSOPHARYNGEUS

The glossopharyngeus (or 9th brain nerve) exits the brain behind the olive, goes through the foramen jugulare and transverses downward behind the *M. stylopharyngeus*. It contains motor fibres the muscular system of the pharynx and the *M. stylopharyngeus*. Besides, there are sensitive fibres for the throat's mucous membrane, tonsils and the hind part of the tongue and, there are parasympathetic ones via the *n. tympanicus* and the *n. petrosus minor* to the ganglion oticum.¹²

NERVUS LINGUALIS

The nervus lingualis is a branch of the trigeminus and enters the regio submandibularis at the frontal rim of the *M. pterygoideus medialis* spreading across the tongue's membrane. It consists of sensitive as well as sensory fibres catering for the front two thirds of the tongue. The tongue's arteries are innervated by *a. lingualis* from the *a. carotis externa*.¹³

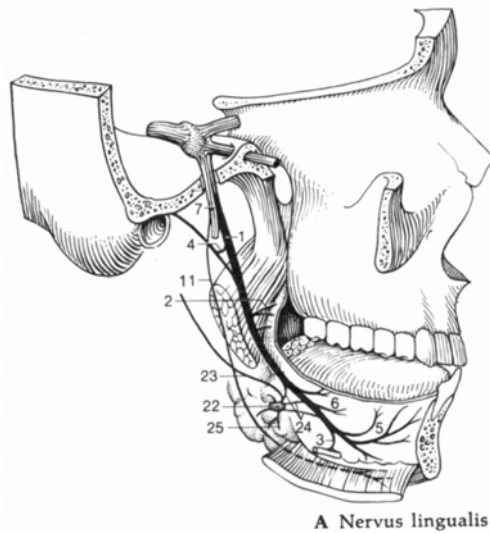


Fig. 24: Feneis - Anatomisches Bildwörterbuch, p. 291

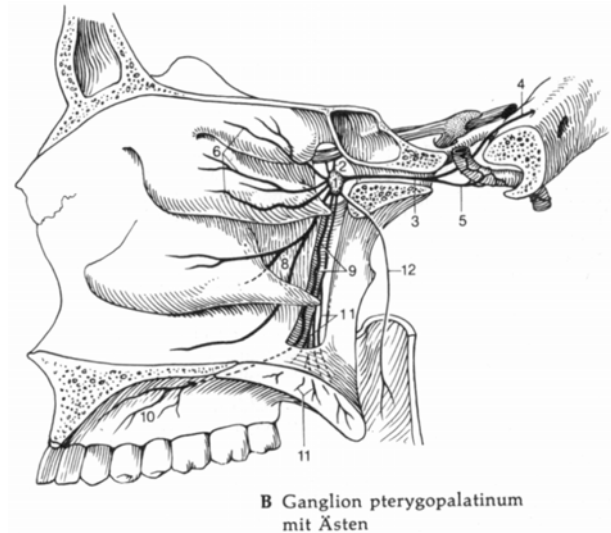


Fig. 25: Feneis - Anatomisches Bildwörterbuch, p. 289

NERVUS PALATINUS

The nervus palatinus major is the continuation of the trigeminus leading from the ganglion pterygopalatinum to the hard palate via the foramen palatinum majus. The hard palate is innervated by the arteria palatinus majus.

The pharynx is maintained by the nervus glossopharyngeus which on the pharynx' back forms a plexus pharyngeus. Blood is supplied by the a. pharyngea ascendens (coming from the a. carotis externa) as well as small branches from the a. palatina ascendens (from the a. facialis) and the a. sphenopalatinum.¹³

NERVUS VAGUS

The nervus vagus (11th brain nerve) exits the brain together with nervus glossopharyngeus in the sulcus lateralis and runs through the foramen jugulare. It nurses the regions as far down as the chest and stomach.¹²

Together with the nervus accessories the vagus nerve runs through the foramen jugulare in a dura sheath. It goes downwards to the cavity of the chest and the stomach. At the same time leaving fibres for the meninges, for the outer auditory channel, for the pharynx, larynx, branches for the bronchial tube, the lungs, the heart, stomach, diaphragm, spleen, kidneys, bowels as far as the flexura coli sinistra.¹³

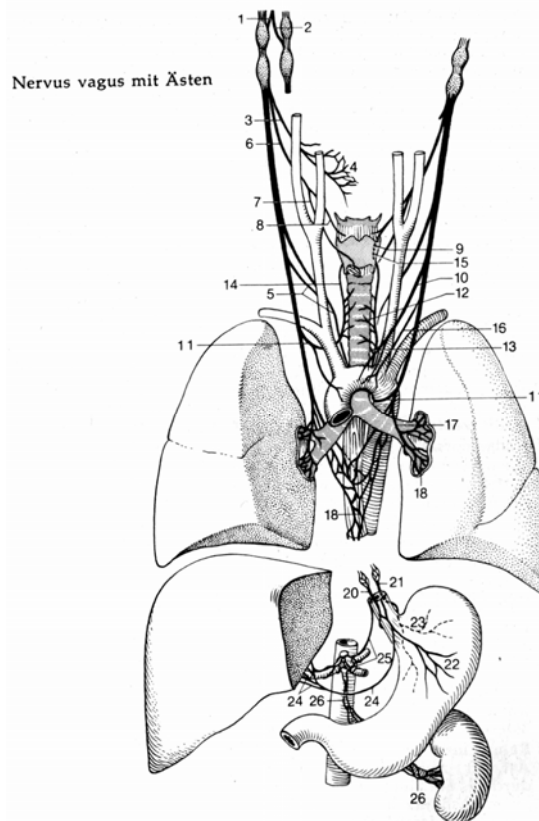


Fig. 26: Feneis - Anatomisches Bildwörterbuch, p. 297

If we have a close look at these nerves - perhaps the above graphics help to understand the paths the relevant nerves run along – we become aware of how important it is for the baby that all these bones of the head are functioning properly - both synchronized and symmetrically. Visualizing that a part of the occiput works differently we may grasp how the nerves get jammed – especially in the foramen jugulare and the foramen magnum, as each of these nerves features a sheath of connecting tissue that can get compressed easily. This in turn can lead to problems with swallowing, for instance. It is not only the position of the occiput that can bring about consequences; it is all the other bones that are important too – like the sphenoid and the temporale with the canalis pterygopalatinum and the ganglion pterygopalatinum.¹⁹

When sucking the hard palate needs to function properly, i.e. the synchondrose sphenobasilaris (SSB) needs to move freely and it needs the support of all other bones of the head. In the case of spitting, a shifting of the different parts of the occiput to their respective places can improve the situation. A mouthwash with ordinary saline solution to get rid of the amniotic fluid (which may be disturbing and irritating) can be quite efficient. Unfortunately there are still babies that spit.¹⁹

However it's not only the nerves that are responsible for sucking. Quite as important for the child's successful sucking is a sufficient blood supply, the flow of blood and lymphatic liquid must not be blocked.



A smooth functioning of the gas management is also responsible for the smooth functioning of the nerves. Our brain features a respective centre which checks the current oxygen in our blood and a pressure which is too high triggers a reflex in this 'breathing centre' that makes us start, resume or intensify breathing. Through uterine muscle contractions when in labour, actually all the time during the birth process, the gas exchange that is taking place between the mother and her baby is impaired and shifts towards a higher percentage of carbonic acid. Thus, during labour, and especially so in the final stages, carbonic acid is accumulated in the baby's blood (leading to 'acid blood') - a factor determining the ratio of gas - which eventually triggers off the baby's own breathing.¹⁵

Anyway, too much of this acid makes it difficult for the nerve tissue to work properly, just as under normal circulatory circumstances.

Besides, we have to think about the fasciae when treating children that have problems with sucking. Considering all those cases where the umbilical cord was wound round the baby's neck, the circulation obviously suffered. Not necessarily do they affect the a. carotis, but the neck being full of fasciae, tensions are likely. Pulling extensively at the baby's head at birth, or by torsions of the thorathic inlet and the pharynx (passed on through fasciae) more often than not lead to difficulties of swallowing. Even a fracture of the collarbone - something that does occur with difficult births - can lead to restrictions of the neck.

Difficulties in feeding - according to medical literature - may be seen in connection with a naso-pharyngitis.¹⁴

Well, I believe that these 'infections' very rarely have to do with viruses or bacteria; it rather has to do with the circulation in the head or a respective blood congestion.

3.8. The stomach

The stomach - situated in the middle of the upper belly - temporarily stores the food before passing small doses into the bowels. Hydrochloric acid in the stomach is used as a disinfectant, so that digestion can commence. Besides, an 'intrinsic factor' is produced that is necessary for absorbing vitamin B12 in the duodenum.³¹

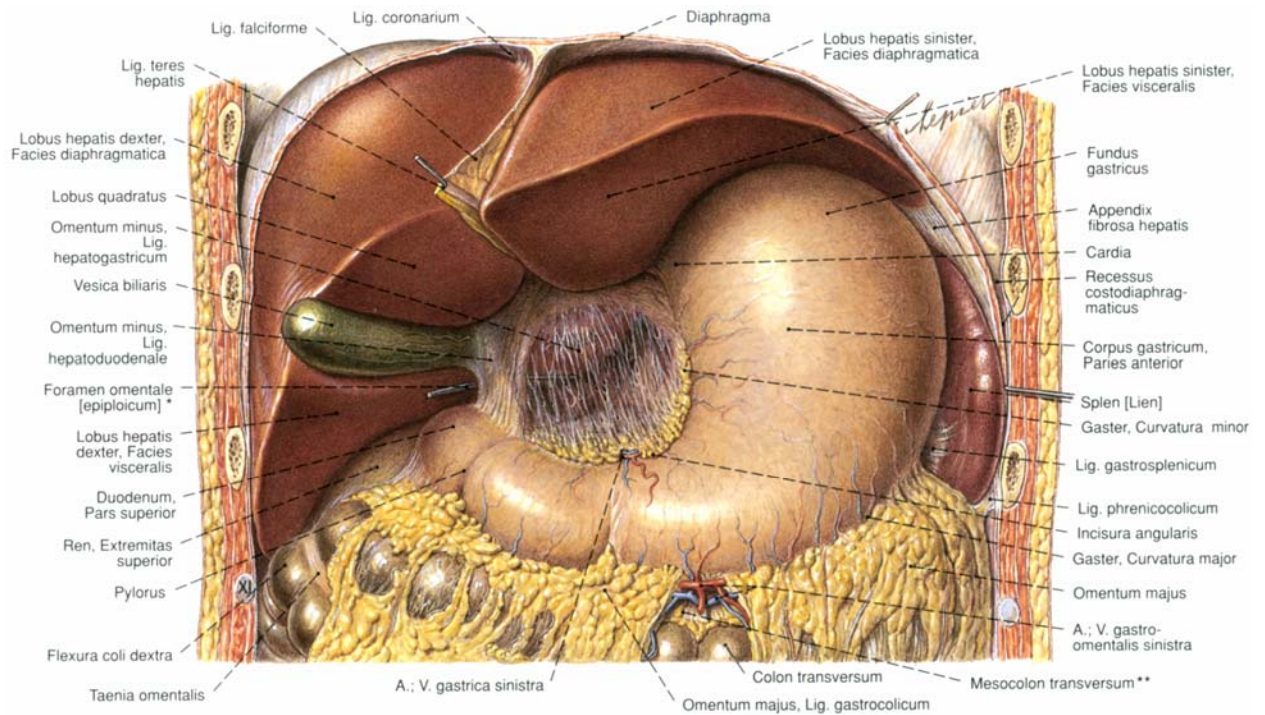


Fig. 27: Sobotta - Anatomie 2, p. 158

There are four parts of the stomach: the cardia, the entrance to the stomach, the fundus, the corpus and the pars pylorica, separated from the duodenum by a sphincter. The stomach lies below the diaphragm and actually starts from the gullet. There is a connection to the liver via the omentum minus, connections to the spleen, the pancreas, the colon, that is lying in front and the far end leading to the duodenum and the aorta abdominalis. Due to its place there is a relation to the left kidney as well.³¹

The relating segments of the vertebrae are Th11-L3 and another connection goes to the lower left costal arch.

The stomach is animated sympathetically by the nervus splanchnicus major (from Th 5 - 9), parasympathetically by nervus vagus (C0 - C2).⁸

We can see a close relationship to the diaphragm and organs of the thorax, to the abdominal organs via a nerve enervation to the occiput and the cervical function. The connection to the thoracic organs runs via the fasciae or ligamental, there is a direct way into the organs of the belly (see above). Obvious is the close relationship of the motility of the stomach with all its anatomical structures, the position of the occiput and also the upper cervical segments. (The latter being of importance after birth!)



4. Inner Organs

4.1. Colics

Colic is a symptom complex in infants consisting of

- Crying or irritability, which does not respond to soothing,
- Signs of gastric discomfort, including gastric distension and pulling legs to belly
- Excessive gas and facial expressions indicating discomfort⁴

In most infants signs of colic begin sometime in the first months of life with a peak at two months, and even if untreated, resolve by 4 or 5 months of age (Wessel et al 1954). Colic is a diagnosis of exclusion, so other aetiologies for the presentation must be ruled out through history and physical examination.⁴

Theories concerning the aetiology and pathophysiology of colic are broad and varied, ranging from food sensitivities to gut and nervous system immaturity to poor care-giving techniques.

Children with colic fall into three groups based upon osteopathic evaluation

- Findings, suggesting persistent nociceptive or painful stimuli,
- Findings, suggesting functional gastrointestinal disturbance, and
- Findings suggesting some combination of the two⁴

Functional gastro-intestinal disturbance include strains in the thorax, abdomen or pelvis which could be equated with irritable bowel, constipation or dietary sensitivity. Commonly, there is also dysfunction at the cranial base suggesting vagal irritation. When babies gut motility and function are immature so that increased transit times and immature hormone and enzyme function may promote the production of intestinal gases. The function of the colon is not well developed at birth which may affect gas absorption. A poor mucous barrier function may lead to antigen exposure and subsequent inflammatory response in the gut wall, affecting peristalsis, digestion and absorption.⁴

One hypothesis might be the engagement of the posterior cervical muscles exacerbates minor tissue strains in this area. A second group demonstrates a high level of irritability in the primary respiratory mechanism, which can interfere with the central nervous system (CNS). Incidentally, the medical literature also recognizes a subgroup of infants with colic whose symptom complex suggests immaturity or irritability of the CNS.⁴

Palpatory findings in some children suggest nociceptive or painful stimuli, usually involving dysfunction in the thoracic, cervical or cranial areas, which would be equated with headache in an older patient. Primary afferent nerves carry nociceptive information to the brain of the newborn responding by increased activity and irritability. However, how and why the immature brain interprets the signal is unclear. Modulation of many of the neurotransmitters and hormones involved in this mechanism is immature in the newborn and may not be able to compensate nociceptive input. Furthermore, as already mentioned, sleep and waking states are yet poorly organized. A 'colicky' infant demonstrating hyperacusis or photophobia in the absence of signs of true CNS irritation actually has a headache.⁴



It also regulates the body's digestion and elimination processes, so that if for any reason the autonomic nervous system (ANS) or its control centre, the hypothalamus, malfunctions gastrointestinal or bowel problems may occur. This is why I think many of the seemingly non- diagnosable cases of gastric distress after birth are due to hypothalamic or ANS disorders.²⁷

4.2. The liver

The liver is the body's central laboratory. Being the biggest gland of our body it takes up about half of our stomach, and thus, actually makes our abdominal wall bulge out. In newborn babies the liver is – relatively speaking – bigger than in grown-ups: 1/25 of the weight (of babies) vs. 1/50 (of an adult). In a foetus, around mid-pregnancy, it is even bigger: It is 1/10 of the foetus's weight, since it has to cater for producing new blood. The liver is also responsible for the protein metabolism, the metabolism of carbohydrates, the lipids, the formation of the biliary fluid and it inactivates and detoxifies hormones and foreign matter. Once born, the foetal erythrocytes, which can absorb hydrogen ions four times as much as in an adult, are redundant - since the baby starts with its own breathing. Hydrogen is being decomposed and in the process haemoglobin is turned into huge quantities of biliary pigment. This is achieved by the liver that is not fully functioning yet (insufficient activity of the gluconylferase), hence, more often than not, jaundice of the newborn is developed.³¹

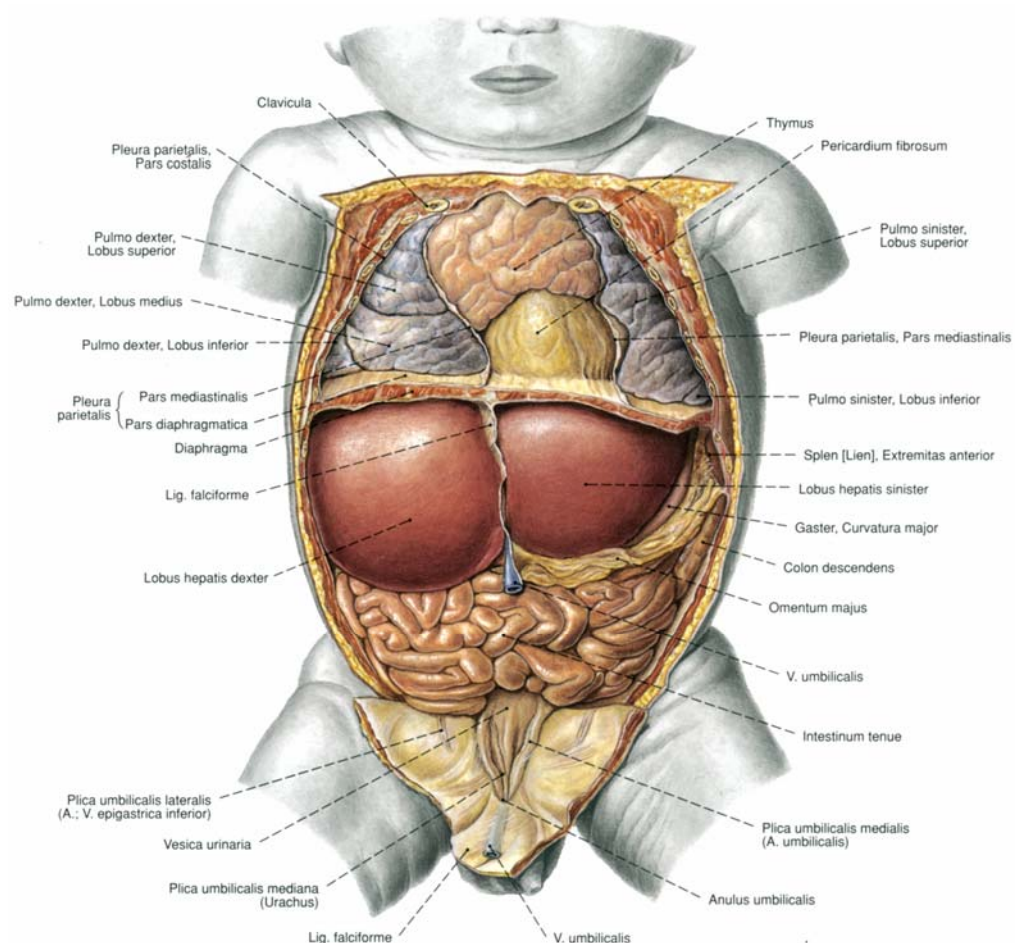


Fig. 28: Sobotta - Anatomie 2, p. 157

The liver lies in epigastrium (on the right) in a kind of hammock of ligaments directly below the diaphragm. It consists of two lobes grooved by the lig. teres hepatis. The cranial side, the area nuda - a non-peritoneous zone - grows together with the diaphragm. There is also another connection to the diaphragm on the side via the lig. triangulare dexter and sinister. A small net (omentum minus) at the back part of the liver is connected to the stomach and the upper part of the duodenum.

Via the lig. falciforme there is a relation to the anterior abdominal wall with the v. umbilicalis to the umbilical cord - a vein that obliterates when no longer needed after birth - continuing from the navel to the urachus and the fasciae of the pelvis.^{13/31}

The lig. falciforme, the lig. teres hepatis and a close relation to the liver and diaphragm, as well as the change of metabolism, make a thorough examination of newborn babies necessary and utterly important for osteopathic purposes.

By treating the connections to the anterior abdominal wall (via lig. falciforme) and from the navel up to the urachus, continuing to the pelvis osteopathically, it is possible, for instance, to avoid colics for a number of children.

Considering the fast process of the cutting of the umbilical cord or, the intra-uterine pull on the cord – due to a winding round the neck, a very short cord or an insufficient placenta with a very thin cord – it becomes quite obvious that this may be a burden for the newborn and consequently leads up to a strong metabolic restriction.

The liver is innervated sympathetically by the n. splanchnicus major (spinal ganglion Th7-10), parasympathetically by the n. vagus (C0-C2); the capsule of the liver by the n. phrenicus (C3-C4). Hence there is a nervous connection, apart from the one via the diaphragm and the mediastinum to the neck and the base of the head.^{13/31}

Due to its position – just below the rib cage – it also is connected up with the lower ribs (6th-12th), and the intercostal muscles up to the vertebrae of the chest between Th8-12. Through the small net* and the big net* it is also connected to all other organs of the belly – especially the ones responsible for digestion - the right kidney that comes to lie behind the liver and via the urachus to the genitals (on the right) and to the bladder.²⁶

* cf. next page



4.3. The bowels

The bowels are divided into the gut and the colon. Both lie in the cavity of the belly. The gut starts from the duodenum and eventually becomes the colon at the valvula ileocaecalis. In grown-ups the bowels measure about 4 to 5 metres. Even in babies after birth they measure nearly 4 metres.¹⁴

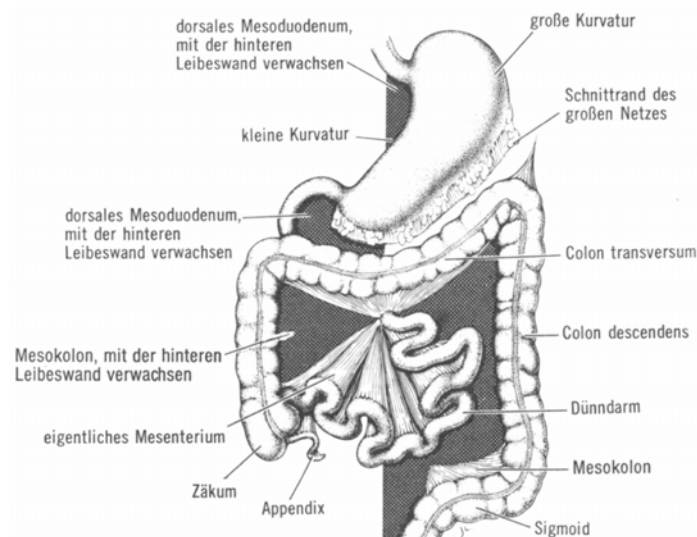


Fig. 29: Langman – Embryologie, p. 311

The bowels with all their orbicular muscles and haustrae as well as the order of those muscles play an important role in bowel movement. Hanging on the mesenterium, i.e. a duplication of the peritoneum, it is crisscrossed by a lot of vessels.

The gut moves easily as it is connected to the mesenterium only from where it is innervated (via the a. mesenterica sup.). There is another duplication in the abdominal region, called the big net (omentum majus). It protects all the bowels. And, again, in babies, is not fully developed.

The small net (omentum minus) starts at the diaphragm and is lying between the liver and the stomach. Both of these nets consist of fat, blood vessels, nerves and lymphatic tissue, especially macrophagen.⁴

Around the mesenterium there is an assembly of crowded lymph nodes responsible for the immune system. All of the mucous membranes of the gut are full of a variety of fine villuses differing in height. They feature a clever absorption mechanism able to deal with fats, protein and carbohydrates. The enlargement of the surface increases the absorption process drastically.³¹

The colon starts from the area of the coecum and is about 120 centimetres long. It builds a kind of frame around the belly and continues to the anus via the sigmoid and rectum. Through swinging and peristaltic movements the content of the bowels is mixed, both the gut and the colon.



At certain intervals the intestinal wall contracts and pushes the content into parts that are limp, i.e. not contracted. In turn these limp ones contract pushing the content further and so on. These contractions are controlled by the plexus mesentericus. In this way the contents of the gut are forwarded into the colon. Nervus vagus and sympathicus control the tension of the intestinal wall – the vagus promoting the peristalsis, the sympathicus slowing it down.¹³

Another function of the gut is to break up food components, with the help of enzymes produced in the intestinal wall. Food is secreted and thus, prepared for molecular absorption by the liver and the pancreas. These products are taken away in different directions: fats towards the ductus thoracicus via lymph channels, the others are transported to the liver in the blood stream. Content that cannot be absorbed is passed on to the colon.³¹

The bowels feature a physiological flora of anaerobic bacteria that can split proteins and carbohydrates. With babies this physiological flora of the bowels does not yet fully function, it will be populated after birth, both orally and caudally.¹⁴

The bacteria produce vitamin K and B 12, thiamine and riboflavin, but it will take a while after birth until they are established. These bacteria are missing, for the time being.⁴

Products that have been split are partly absorbed or destroyed through fermentation and rot. (Re-absorption).

The remaining chymus in the colon is thickened by withdrawal of water and, mixed with mucus, it is made slippery. Parts of the food (e.g. cellulose) that cannot be decomposed by the body's own digestive secretion are split and prepared for absorption, by intestinal bacteria. While both colon ascendens and descendens, as secondary retroperitoneal organs, are positioned relatively firm, the colon transversum and colon sigmoideum - depending on their mesenterium's length - move more or less.³¹

THE IMMUNE SYSTEM

The content of the bowels is basically a part of the environment. It consists of a number of antigens, which are controlled by the immune system. The whole of the digestive tract therefore consists of plenty of lymphatic tissue. About $\frac{3}{4}$ of all the body cells that can produce immune globulin are situated in the intestinal wall. They are called 'gut associated lymphatic tissue' (GALT). The lymph nodes are found singularly in the mucous membrane and – as a speciality of the bowels assembled in a plate-like form (Peyer's plaques). Besides there are „free” defence cells in the mucous membrane and quite a number of „intra epithelial” lymphocytes.³¹



Abb. 396. Schema der Verzweigung der großen Lymphstämme sowie der Lymphbahnen von Brustorganen, Brustwand und Arm. [1/3]

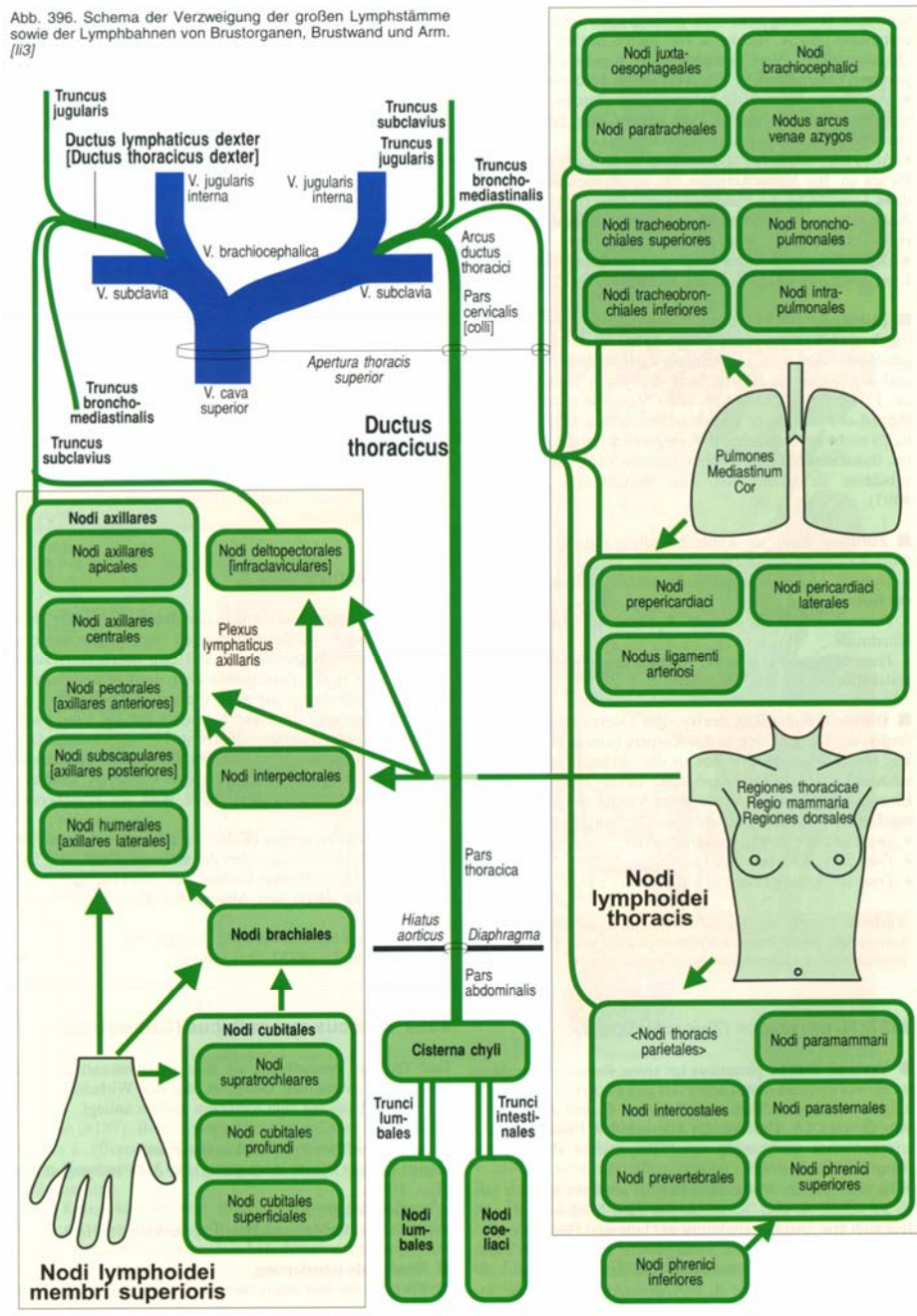


Fig. 30: Lippert – Anatomie, p. 247

Treating the bowels thus, it is possible for osteopaths to influence the immune system in a positive way.

DEVELOPMENT OF THE BOWELS

The embryologic development of the bowels is quite fascinating. First, around the 32nd day, a longish umbilical loop is formed consisting only of a dorsal meso, in which the a. mesenterica sup. runs. This is used as an axis for the rotation that follows. This rotation is



caused by the intestinal tube growing to different lengths, narrowing down from cranial to caudal and which is stronger at the gut than at the colon. The space for the baby's long gut in the baby's cavity of the stomach is scarce so it slides out into the umbilical coelom (round about the 44th day) forming a lot of loops (physiological umbilical hernia). Towards the 10th to 12th week of gestation – once the cavity of the stomach has gained size – these loops are moved back into the cavity of the stomach, loop by loop. The colon loop shoves over the gut loops forming a frame-like bracket to stop the extensive growth of the gut and to fix it. An anti-clockwise rotation of 270° follows. The loop of the colon moves upwards first (to the right below the liver), then there is a downward movement to the right as far as the pelvis. The colon ascendens and descendens is covered secondarily by peritoneum building a new point of fixation – radix mesenterii – running from top left (flexura duodenojejunalis) to the caecum, bottom right.^{33/34}

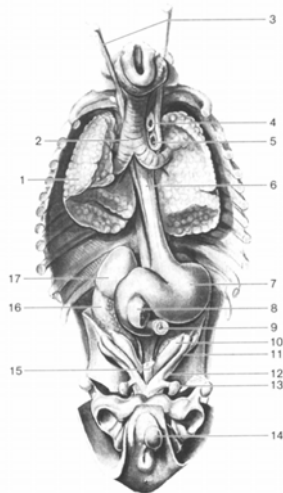


Fig. 31: Ulrich Drews – Embryologie, p. 109

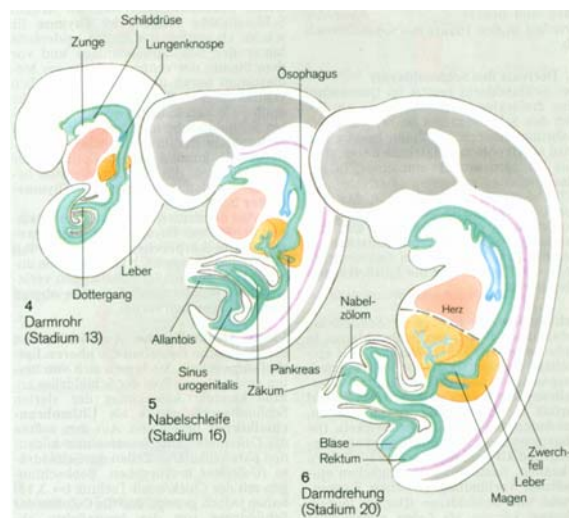


Fig. 32: Ulrich Drews – Embryologie, p. 305

The functional differentiation of the bowels develops fully after birth, which means the colon still has villous for re-absorption and the gullet still features ciliary epithelium. Special cells for the production of hydrochloric acid have already been established in the stomach, however, they will only start working in the first weeks after birth.

34 During pregnancy the foetus swallows amniotic fluid which is absorbed in the bowels.^{33/}

PROCESSES OF THE BOWELS, BLOOD SUPPLY AND NEURAL CONTROL

The bowels are innervated by both arteries mesenterica superior and inferior. From the left colon flexure up to the rectum the colon is innervated by the a. mesenterica inferior.⁴

There are nervous ganglion cells situated in the intestinal wall which control the peristaltic and the re-absorption autonomously. They are supported by nervus vagus, sympathicus and the sacral parasympathetic plexus.¹³



The gut's anatomical position is quite close to the diaphragm, the lumbar spine, the stomach, liver, kidney, gall bladder and the pancreas. There is a nervous connection to the spinal ganglion of the sympathetic between Th7-12, a parasympathetic connection from the vagus to the foramen magnum C0-C1-C2, also via the colon, with a connection to the right ileo-sacral joint at the coecum.^{33/34}

In addition, a connection runs from the colon to the uterus, or the prostate, respectively, the 10th rib on the right and the 8th rib on the left. Additionally to the connection with the vagus the left part of the bowels is innervated via the nervus pelvini and as such is linked to the sacrum, esp. S2-S4 and the ileo-sacral joints. Sympathetically it is the spinal ganglion (from Th10-L12) that caters for the colon.

Both parts of the bowels are linked to the ribs 9 to 12 and there is also a link to C3-C4 via the nervus phrenicus.²⁶

We can easily see that there may be manifold consequences concerning the peristaltic of the bowels, should there be an anatomical disharmony after birth. There may be consequences concerning bowel movement via the diaphragm, the pelvis, the liver and via the occipito-cervical joint, zones that can even be influenced at a normal birth.

And, of course, there is the transition phase when the flora of the bowels is coming to life, the change of the metabolism of the liver. Not to forget the diaphragm, that may influence the ductus thoracicus, a lymph channel responsible for the transport of fats.

Besides, we sometimes come across a misbalance in the development of the bowels resulting from a disruption hindering the 'sliding-in' of the intestinal loops, for instance by bleeding of the placenta in the early stages of pregnancy.

5. Connective Tissues

5.1. Fasciae

Fascia or connective tissue, which we shall be concerned with in this chapter, represents one great class of the soft tissues of the body. Even the word connective gives us a significant clue to their functions. More often than not we have begun to realize the importance of fascial drags and their relation to existing cranial lesions. Repeatedly, Dr. Sutherland has stated that fascial drags can and do cause cranial, spinal and appendicular lesions and that unless these drags are released correction of these lesions is impractical.²¹

Fasciae have to fulfil a multitude of tasks within the body since connective tissue constitutes a perfect connection between/to all the different parts of the body and its respective organs. Without any interruption, depending on each other, it provides a harmonious, perfect functioning.



Every part of the body features fasciae which actually means there is connective tissue everywhere, tissue, necessary for maintaining bodily functions. Something quite fundamental, as research regarding anatomical, histo-/physiological structures shows. A number of researchers have actually proved that connective tissue in a way guaranties that the body is functioning properly: highly important for our well-being.

Functions of the fasciae can be broken up into the following groups:

1. SUPPORTIVE

During the embryonic development the growth of the nerve- and vessel system as well as their moving about runs parallel – interlinked with the development of the system of the fascia. A good example is the fascia cervicalis profunda, strongly connected with the plexus cervicalis and the sympathetic cervical ganglion as well as the example of the mesos, real carriers of both vessels and nerves.²⁵

Naturally these structures are utterly important for this paper, as problems with swallowing, sucking, digesting may arise due to tensions of the neck or the belly resulting from birth.

2. PROTECTIVE

The fasciae protect anatomical structures against forms of tensions, strain, or, violence. Vital organs or vulnerable structures are protected extra-specially (e.g. radix mesenterii), sometimes surrounded by an integument (fascia of the liver). Important arteries, veins and nerves are imbedded in the tissue very deeply (e.g. aorta). The meninges even feature three(!) layers for protecting the brain. And in addition we find two buffers: the liquor cerebrospinalis and an extraordinarily ramified system of veins.²⁵

3. SHOCK ABSORBING

Especially at the area of the meninges is worth looking at: meninges form a kind of lining of the skull and the spine in order to stabilize the brain and the spinal cord. As mentioned earlier, the bones of the baby's head are not yet ossified and the fontanels are still open; thus, the meninges are really of great importance not only intra-uterine, during birth, but also for the period afterwards.

The liquor cerebrospinalis – a liquid shock absorber for the brain which, at the same time is capable of balancing out differences in pressure, is imbedded in the cerebral membranes. This fluid transports nutrients, hormones and substances of which we still are not sure what they are for.²⁵

Meningeal tensions are, of course, most interesting for my work but so is the resulting functioning of the liquor as a means of transport for hormones and substances - like melatonin (for sleeping) or catecholamins, which, secreted during birth due to strain, in turn have an influence on other hormones that are of concern regarding sleeping and crying.



4. DEFENSIVE

The fight against agents causing diseases and infections starts at the matrix and luckily so, before the general defence sets in (e.g. leucocytes, monocytes..) due to a local mechanism.²⁵

Is not it wonderful that in osteopathy we can support, sometimes control the baby's natural defence system via fascia techniques?!

5. COMMUNICATIVE

The connective tissue and with it, the matrix are in close contact with the cells of the human body. The cells are surrounded by extra-cellular liquid via which an exchange of nutrients and information is happening. These - nutrients and information - are taken from the periphery to the fasciae and, in turn information and waste is collected from there. For all the vessels, lymph channels and nerves terminate at this lowest level of the matrix - they do not continue into the cells to form a first defence barrier in order to protect the cells.²⁵

I think, if we influence the transportation of waste of cellular metabolism positively – and that, as early as possible after the baby's birth when the metabolism of the body is being switched to earthly matters we surely will also be able to take influence regarding patterns of crying, sleeping and passing faeces by not letting the tissue 'get acid'.

6. BIOCHEMICAL

Molecules of water in the fasciae are capable to move to the hydrophilic polar ends of the fibres and turn back to their original format with a minimum of energy. This means that all anatomic structures like the reciprocal membranes of tension (the dura mater spinalis and dura mater cranialis), the ligaments, capsules of joints, tendons, aponeurosis and cartilage – in other words, all the connective tissue of the human body - can contract, by minimally increasing the pressure, and relax as soon as pressure is back to normal.

(Pressure here refers to micro, nano and angstrom units.) These scientific findings (by Bourdin-Aud, based on Urry's research) very clearly support our teachers' theory that osteopathic treatment can influence the cellular metabolism.²⁵

Furthermore this does prove our osteopathical successes as well as the fact that due to outstanding powers that can restore the original state of matters, spontaneous healing (after birth) is possible and, is happening.

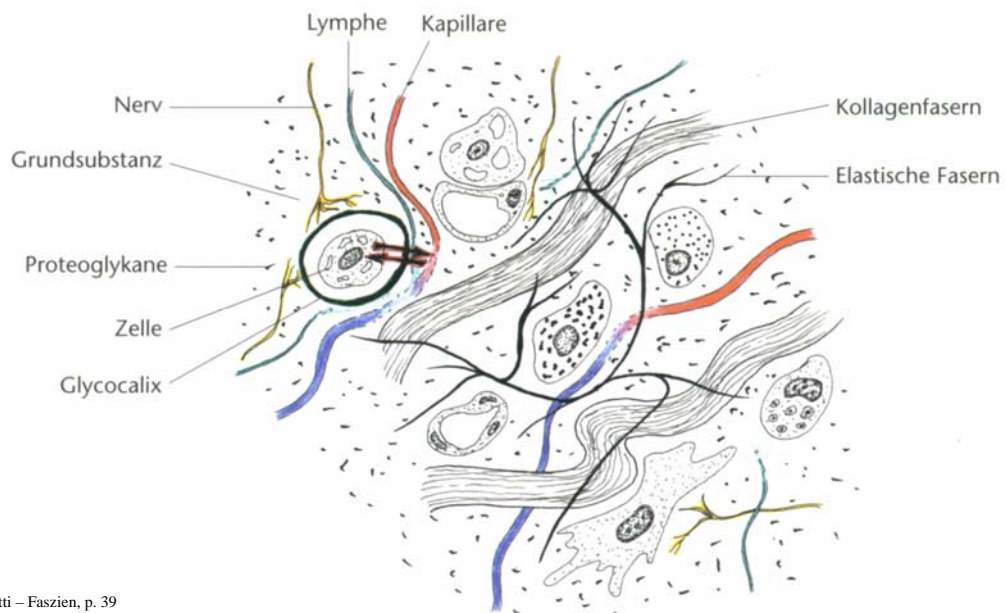


Fig. 33: S. Paoletti – Faszien, p. 39

7. THE ROLE IN HAEMODYNAMICS

As mentioned above, vessels and the lymphatic system are linked closely with the fascial system. The fascia support the backflow of both blood and lymph and thus also support the function of the heart.

5.2. Essential Fasciae after birth

THE DIAPHRAGM

We believe that the diaphragm has the key to all the breathing techniques. And it is the diaphragm in this case through which we can resolve the tensions in the tissue.

GEORGE A. LAUGHLIN²¹
Fascia Omnipresent, 1953, p. 90

For me the diaphragm, indeed, is a key structure of the infant's body, a structure that in most cases needs attention as the embryo in the womb has been in a flexion for a long time - only being able to stretch after birth. The diaphragm also comes in quite massively at the moment the child begins to breathe. Very often I could find tensions in the diaphragm of newborn babies I was working with. Most importantly we also have to think about the solar plexus (the area of the diaphragm), which is the great switch-board of nerves with all its intra-uterine information saved for later access – going far beyond birth. The diaphragm, at the same time, is a point of crossing between thorax and abdomen needed to cater for differences in pressure of the two compartments. If this pressure is not balanced during the whole development it is difficult for the abdominal organs and/or those of the thorax to function fully and correctly. The change of metabolism of a newborn is most certainly an additional strain. Problems arising thereof can include digestive problems, phases of disturbance and difficulties with sleeping.

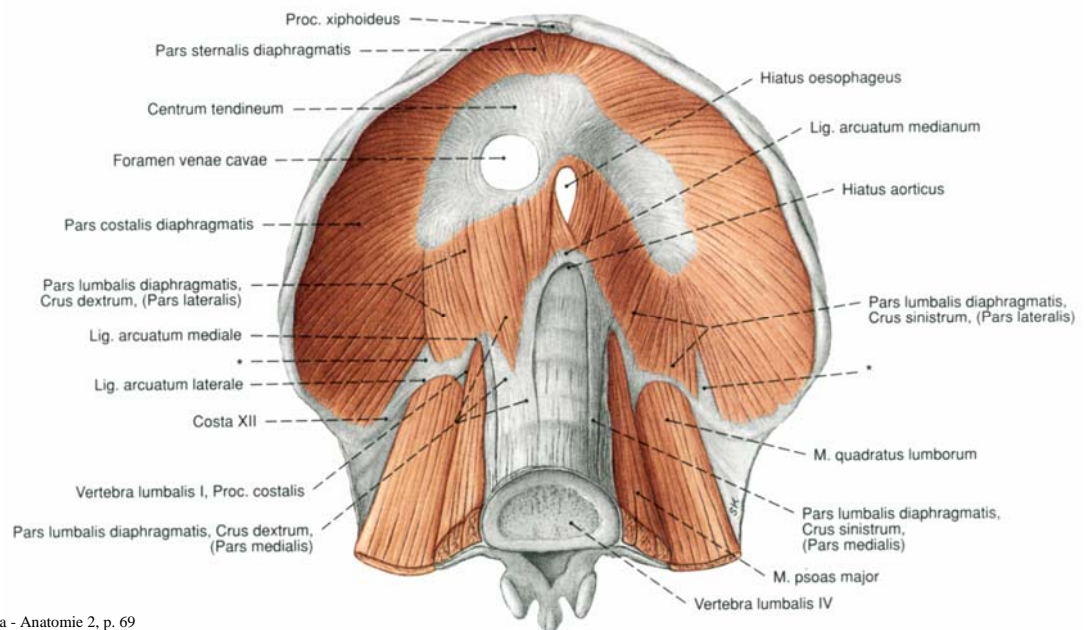


Fig. 34: Sobotta - Anatomie 2, p. 69

In fact, the diaphragm is the body's most important respiratory muscle but it also acts as a kind of fascia. During the embryo's development the central aponeurosis (centrum tendineum), deriving from the cervical part of the septum transversum, is dragging all the fasciae along in a kind of column on its way down. Its surface is covered by the fascia endothorathica and the pleura lying above, in the abdomen it continues as fascia transversalis. The diaphragm separates the thorax from the abdominal area. The renal fasciae start from the diaphragm's underside which is lined with the peritoneum, besides there is a connection with the fascia of the m. psoas. The liver and the stomach are connected with the diaphragm caudally via the peritoneum. Cranially, there is a connection with the cranial base via the pericardium, the fascia pharyngobasilaris and the fascia palatina. The diaphragm is stabilised by the fascial envelope of the thorax via the ligg. vertebropericardicae (posterior) and ligg. sternopericariae (anterior).

Another important function of the diaphragm is that of our body's shock-absorber.²⁵

When the diaphragm – during the embryonic stage - is descending, coming from the cervical region, it takes along the nervus phrenicus, needed for innervation. There are branches leading from the nervus phrenicus to the thymus, to the pericardium, pleura, the v. cava sup. and inf., to the capsule of the liver and with some of the fibres even reaches the coelical ganglions. Besides it inosculates with the nervus subclavius, nervus hypoglossus, nervus vagus and cervical segments of the sympathicus. Should tensions turn up in the cervical region, the original area of the nervus phrenicus in turn may influence the nerves mentioned above.²⁶



THE FASCIAE OF THE NECK

There are three of them:

1. The superficial cervical fascia (Fascia cervicalis superficialis)

The superficial cervical fascia is basically a downward continuation of the fasciae of the head that ends at the thoracic inlet leading to the arms and hands and the thorax (fascia endothoracica). The cervical fascia envelops the superficial collar muscles as well as the superficial veins and nerves. It is sitting at the outer rim of the m. trapezius linked with the medial and the deep cervical fascia; with the medial cervical fascia there is also a connection with the front of the neck.

2. The medial cervical fascia (Fascia cervicalis media)

Starting from the os hyoideum, which is fastened to the sternum, the cervical fascia is situated on the front side of the neck from where it continues as fascia endothoracica. It envelops the deep muscle structures antero-laterally and is linked with the thyroid fascia. Apart from that it is connected to the superficial cervical fascia and the deep cervical fascia and also links up with the fascia pharyngobasilaris.²⁵

3. The deep cervical fascia (Fascia cervicalis profunda)

Coming from the pars basilaris of the os occipitale the deep fascia continues down to the first thorax vertebrae and runs as far as the fascia endothoracica. It is fastened to the Th1 as well as the transverse processes of the cervical spine and envelops the pre-vertebral muscles forming the fascia mm. scaleni. It has a supportive function for the plexus cervicalis and for the cervical ganglions. Via the transversal septum there is a connection to the fascia pharyngobasilaris. And there is another connection to the medial and the superficial fasciae of the neck.²⁵

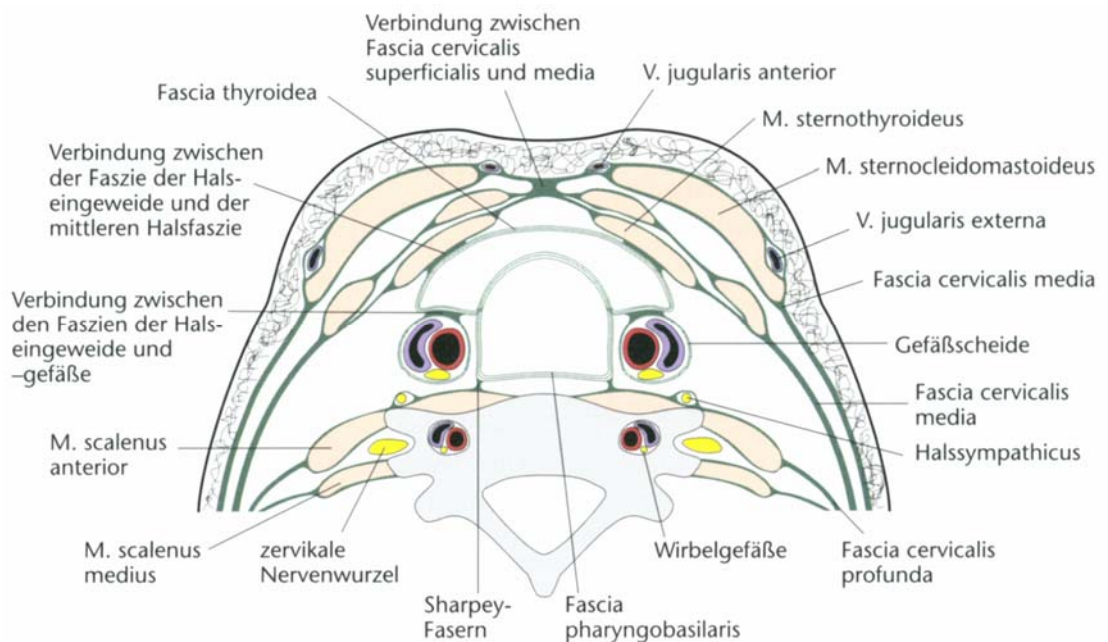


Fig. 35: S. Paoletti – Faszien, p. 51



Nearly every second child suffers from having its umbilical cord wound round its neck* or suffers injuries of the clavicles resulting from birth. Obviously this has extensive consequences concerning the nerve tissue of the head, the blood stream in the head, mobility of the upper extremities or the thyroid via the cervical fasciae. Via the connections caudally the whole torso and the abdomen can be influenced.

*Author's own observation and research, *Semmelweis and Nußdorf* 1982 – 2004

FASCIAE OF THE THORAX (FASCIA ENDOTHORACICA, FASCIA TRANSVERSALIS)

The continuation of the medial and the deep cervical fasciae is the fascia endothoracica going via the diaphragm, as meeting point, to the fascia transversalis. The fascia endothoracica on its outside has a connection to the inside of the chest cavity, on its inside to the pleura and pericardium, downwards to the diaphragm and from there to the fascia transversalis.²⁵

The fascia transversalis is linked to the diaphragm's top and the fascia endothoracica, with its outside connected to the deep abdominal aponeurosis and the fascia renalis; the inside has a connection to the peritoneum, the bottom to the fascia of the pelvis and via the lig. inguinale is linked to the fasciae of the lower extremities. And, the fascia transversalis features a connection to the outside of the body, too.²⁵

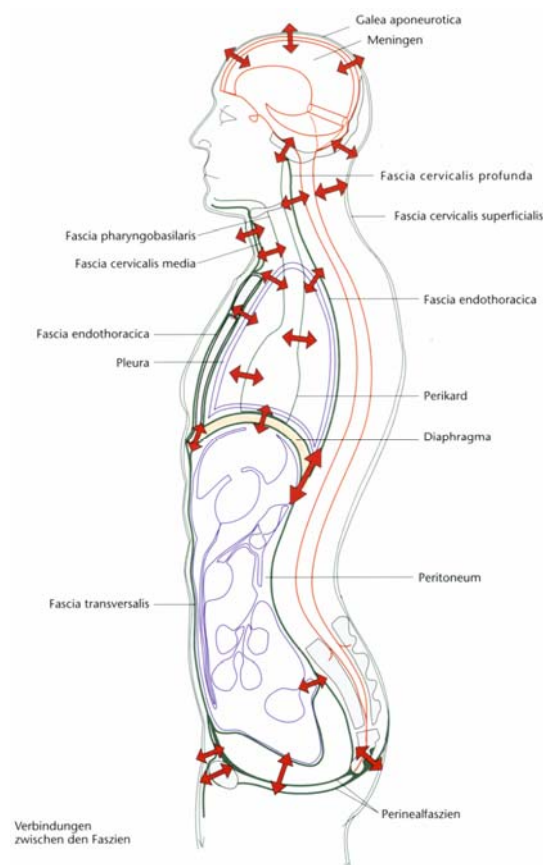


Fig. 36: S. Paoletti – Faszien, p.111

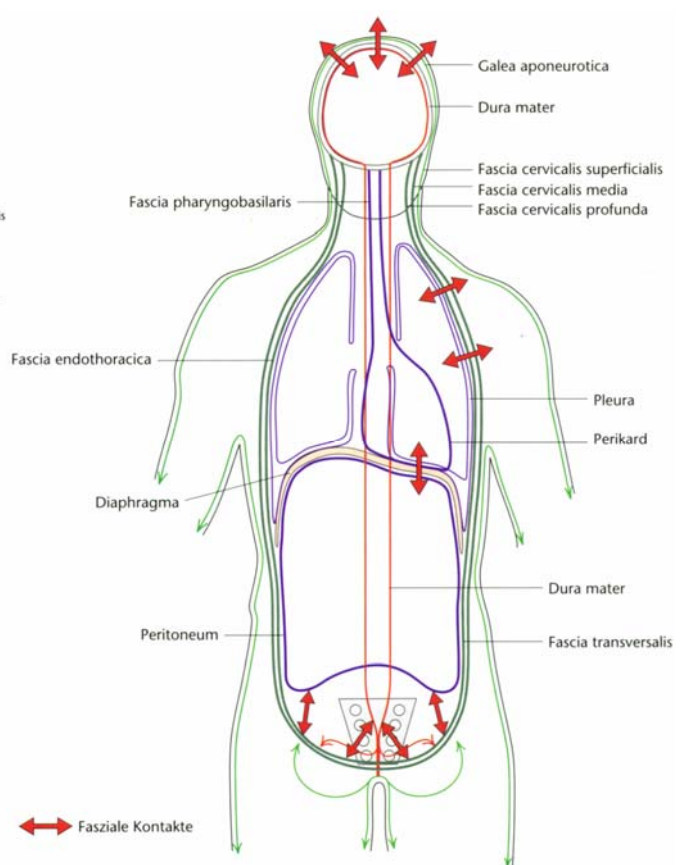


Fig. 37: S. Paoletti – Faszien, p.158



FASCIAE OF THE MIDDLE AXIS

These fasciae consist of the fascia pterygotemporomandibularis and the fascia paltina with a connection to the cranial base. They go on via the fascia pharyngea and the fascia pharyngeobasilaris continuing to the pericardium. Upwards there is a connection to the meninges and the cranial nerves, downwards to the fascia cervicalis profunda, forward to the fascia cervicalis media forming the fasciae of the thyroid and the thymus. Laterally it is linked to the pleura, anterior-posterior to the fascia endothoracia via the pericardium. Caudally it continues in the diaphragm.²⁵

The middle axis is also called 'central tendon' and is of importance after birth, as different tensions can have built up in the area of the diaphragm or the meninges - something osteopaths can spot with their hands. Displacement of the occiput (the guiding point at birth) can prove consequences on the organs of the thorax and abdomen, often causing distractions in the new-born - like problems with swallowing or digestion, breathing difficulties, restricted immune defence or even thyroid dysfunction (something that I have come across while preparing this paper).

THE FASCIAE OF THE TRUNK

The fasciae of the trunk continue from the superficial cervical fascia in the region of the shoulder. They go as far as the top of the pelvic entrance, and then continue down to the fasciae of the legs. In the middle they are attached to the sternum in the front, and posterior on the spinous process of the vertebrae.



Fig. 38: Rohen - Anatomie des Menschen, p. 275



Fig. 39: Rohen - Anatomie des Menschen, p. 275

They split up several times in order to envelop the muscles of the thorax and the abdomen. In the upper part of the trunk they continue with the fascia of the armpits and the arms.

In the abdomen the fasciae turn inward more and more where they link up with the fascia transversalis. The fascia iliaca forms the deepest section posterior. The region of the pelvis features the fasciae of the trunk and their connection with the fascia of the perineum muscles, especially with the fascia perinea superficialis and the fascia diaphragmatic urogenitalis. In the front they show a connection to the pelvic organs and the pelvic fascia via the fascia vesicoumbilicalis.²⁵

Tensions sitting somewhere in the region of the torso or the pelvis are quite obvious for us osteopaths. For instance, there may be sacral tensions or such of the ileum, or, perhaps a strong pull coming from the umbilical cord. These tensions may continue into the head or to the abdominal organs via the fasciae. This can, in turn, lead to colics, crying fits and sleeping problems. Also going down the fascial connection to the legs, tensions can lead to consequences all over the body. When working on this paper I have come across quite a number of shifts of one of the fibulae.

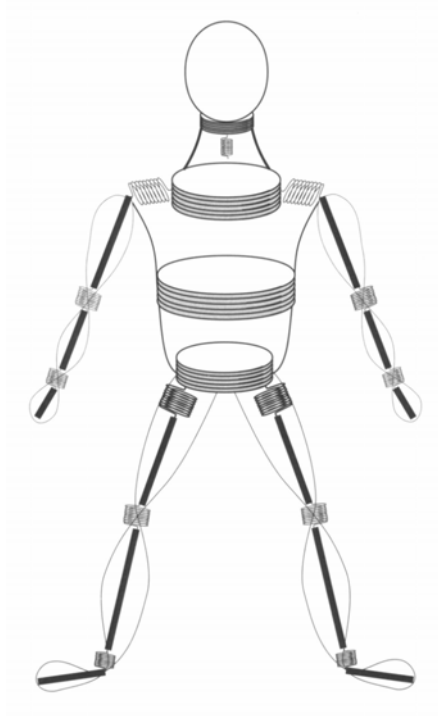


Fig. 40: S. Paoletti – Faszien, p.186



6. Aspects of osteopathy

6.1. Crying

Talking about crying fits – where parents have no idea why they happen or what their baby needs - I have learned the following osteopathic basics (Lecture Osteopathy in Childhood, S. Turner 2000, Vienna): Babies cry, if a part of their head or body - which has suffered strong tension and therefore most likely causes pain - is in touch with the bed, for example. Frequently, intra-osseous shifts at the occiput can be the reason when a child, for instance, objects to lying on one side or lying on its back. I am thinking of a twin boy whose head - at a very early point in the pregnancy – was already deep down at the maternal pelvis, which led to strong tensions at the occiput with a torticollis and an oblique presentation of the cranial bones. After the first treating by me, the mother noticed that her son was able to lie on his back for the first time without having a crying-fit. Before that, he used to cry each time, when he fell asleep in his pram and his head touched the mattress.

Not only the position of the cranial bones is of importance, it is also the meningeal tonus that after a strenuous or fast birth can be quite different. The meninges are full of nerves. In the course of this tension we may encounter an imbalance of the CNS (central nervous system) between sympathetic and parasympathetic, which might lead to an indisposition of the child.

Intra-uterine experiences can cause babies to have crying-fits too. These memories, saved in the solar plexus, the area of the sternum or the heart, have to be resolved after birth. Problems due to a traumatic birth or bonding are held in the tissues. The tissue remembers everything!

The diaphragm that has been mentioned before is definitely an important anatomic intersection. Intra-uterine the diaphragm usually has a different tonus than after birth, a tonus caused by the flexion position of the baby, the floating in the amniotic liquid at zero gravity, the „non-breathing”.

A consequence, quite naturally, can be a tension of the neighbouring organs, in particular the stomach, the liver and the spleen. Both before and after birth the liver is very busy and if its work cannot be achieved sufficiently because of no or too little bile production this can lead to digestive problems.



6.2. Sleeping

Apart from the tensions we have come across so far, covering those of the diaphragm, the liver, intra-osseous tensions of the head and the body, apart from an imbalance of sympathetic and parasympathetic and, apart from suffering from shock due to a birth trauma or before in the womb that needs to be worked on and resolved (cf. 6.1. crying, p. 63) sleeping is a mechanism that has to be attended as well.

Scientific research regarding sleep is still very young and at the moment we cannot, for instance, answer the question why we sleep at all. Of importance for sure, is the melatonin hormone - produced in the epiphysis that stops production in daylight. If, at birth, and with the baby's first cry regular movement of the SSB (synchondrosis speno-basilaris) has not been established and therefore tensions have materialised in this area this part of the brain (the epiphysis) cannot work regularly. Circulatory disturbances, e.g. venal blockage can disturb this hormonal axis. However, the secretion of melatonin is not the only factor that is responsible for sleeping.

During phases of deep sleep (REM-phases) neurons in the brainstem stop firing or at least firing is drastically reduced. In the brainstem, lying in the region of the occiput, so called REM-cells or sleeping cells have been found. The cerebral cortex and the forebrain show less neuron activity in deep sleep. During this REM-sleep the neighbouring nerve cells start firing in a synchronized way. Quite paradoxically, this uniform electric activity produces brainwaves whose amplitude is higher in a waking phase, although less energy is needed. Probably the sleep-on neurons are activated by a rise in body temperature, which may actually be the explanation why we get tired after a warm bath or when sunbathing. It is definitely the neuro-transmitters that pass on signals to the nerve ends (synapsis). The brain stops producing transmitters which stimulate the motor-neurons, i.e. nerve cells that activate the muscles with the exception of the eye-muscles. Some researchers think that the production of certain messengers during REM-sleep is cut down in order to give the respective receptors a chance to recover from metabolism.

In particular this can be seen in the animal kingdom where small animals with a lot of metabolic activity need more sleep than big animals where metabolism is slow.

They hypothesize that the brain cells that have been affected by metabolism have a chance to recover during the non-REM-phase. In such non-REM-phases (we sleep very deeply) the sleeping-neurons fire more extensively in the forebrain, more than in the brainstem. Most of the brain-cells become inactivated to help the membranes, hampered by free radicals, to recover. Free radicals are produced during metabolism, radicals that can damage cells or even kill them. A low count at metabolism and low temperatures in the brain during deep sleep seem to give those enzymes needed for repair a chance to heal the damage that has happened during waking phases.

Scientists found that rats deprived of sleep suffered damage on the outer membranes of the brain cells.^{29/30}

During REM-sleep messengers - like noradrenalin, serotonin and histamines are hampered in first place. The brain cells producing nerve transmitters seem to work continuously – at high speed - during waking, but stop working altogether during REM-sleep (Dennis Mc Gintey and Ronald Hapers, 1973). 1988 Michael Rogawski and Jerome Siegel found that continuous activation of neurons through monoamines render those cells blunt. The break in secreting monoamines during REM-sleep brings about a phase of recovery in order to regain full excitability in order to do their job, i.e. control emotions.^{29/30/46}

Testing animals shows that REM-sleep is highest in youth and is reduced slowly to a fixed level in adult life. An interesting study of water moles (duckbill platypus), showed that the ratio between the amount of REM-sleep in adults relates to the degree of maturity of their offspring at birth (Jack Pattigrew, Paul Maneger and Jerome Siegel 1999). The water moles need eight hours of REM-sleep and their little ones are extremely helpless when born: they are blind, cannot adjust their temperature and, are not able to feed themselves; they stick to their mother for weeks.^{29/30/49}

The other end of the cline is found with dolphins. They seem to need no REM-sleep at all: Their newborns leave their ‘nest’ early, they can swim immediately, can keep their body temperature, follow their mother and can avoid enemies.

Michel Jouvert found that REM-sleep with its intensive activity of neurons is important for a full development of genetically fixed nerve connections, nerves necessary for instinct. In the womb and, with young animals whose development is slow – the species man belongs to – the intensive neuron activity during REM-sleep could ‘replace’ those environmental stimuli that the developing nerve system needs; something that, those species that leave their nest early are exposed to from birth.^{29/30}

We can assume that in the early stages of life this intensive activity of the neurons during REM-sleep could produce stimuli necessary for normal brain development.^{29/3}

One region just below the occiput, the directing centre of the head, really ought to be examined osteopathically after birth as the brainstem has a highly important function.

6.3. Article in Eltern

A lot has been said about this topic – anyway, it does make us aware that birth can lead to a multitude of possible problems. Not only in the respective osteopathic literature do we learn about the importance of being examined osteopathically after birth, in specialist journals it is also suggested to future parents.



GESUNDHEIT

In the **HERE AND NOW**
Totally **RELAXED**

Tender touches that can heal
OSTEOPATHY AND CRANIO-SACRAL Therapy
can be astoundingly effective – especially with babies.

2/2003 **ELTERN** 63

Fig. 41: Eltern 2/ 2003, p. 63



Klappt auch auf dem Arm der Mutter:
Die Osteopathin Birgit Beinborn, im kleinen Foto rechts, kontrolliert bei Lukas, zehn Wochen, den cranio-sacralen Rhythmus zwischen Kopf und Kreuzbein.
Großes Bild: Behutsame Handgriffe lösen Spannungen

Stefan ist ein fröhliches Krabbelkind – mit einer ausgeprägten Vorliebe für links: Stefan dreht sich nur über links, krabbelt nach links, hält den Kopf eher auf die linke Seite, schläft auf seiner linken Seite. Der Kinderarzt meinte: „Das wächst sich aus“, aber seine Mutter gibt sich damit nicht zufrieden. Deshalb hat sie Stefan zu Birgit Beinborn gebracht, Osteopathin in Nürnberg.

Birgit Beinborn befühlt den Jungen, tastet ihn ab. Die Osteopathin: „Bei Stefan ist die einseitige Körperhaltung auf seine komplizierte Geburt zurückzuführen, in der er in dieser Haltung im Geburtskanal starken Druck bekam. Das kann man fühlen, die Spannung sitzt noch im Gewebe.“ Mit speziellen Griffen und ganz sanftem Druck löst sie diese Spannung auf, dabei weint der elf Monate alte Junge plötzlich jämmerlich wie ein Neugeborenes. Beinborn: „Weh tut die Behandlung nicht, aber es scheint, als würde er sich an seine Geburt erinnern.“ Die Mutter nimmt Stefan mit nach Hause – und sagt eine Woche später den nächsten Termin ab. Kein Bedarf mehr, die einseitige Haltung ist verschwunden. Der Junge ist wieder im Lot.

Luca ist ein fünf Monate altes Mädchen, ein Schreikind. Ihre Mutter, bei 14 Stunden Gebrüll am Tag mit den Nerven am Ende, bringt es zu Anne Mohr-Bartsch,

Cranio-sacral-Therapeutin in Haar bei München. Es stellt sich heraus, dass Luca mit einer Saugglocke auf die Welt geholt wurde. Auch Anne Mohr-Bartsch befühlt das Kind. Zuerst strampelt Luca bei den Berührungen der Therapeutin, aber dann wird sie ganz ruhig unter den erfahrenen Händen.

Anne Mohr-Bartsch kann die durch die Saugglocke verschobenen Scheitelbeine mit gezielten Griffen wieder vorsichtig gerade rücken. Noch zwei Sitzungen, und das Kind hat keine Schreie-Angriffe mehr.

Osteopathie, Cranio-sacral-Therapie – was ist das? Was machen die Therapeuten mit ihren Händen? Kann etwas wirken, das so unspektakulär aussieht? Und welchen Kindern können diese Therapieformen helfen? Viele Fragen. Doch der Reihe nach:

WAS IST DIE GRUNDLAGE DER THERAPIE?

Die **Osteopathie** vertritt seit knapp 150 Jahren einen ganzheitlichen Ansatz: Grundlage der Therapie ist die Überzeugung, dass im Körper alles mit allem zusammenhängt und dass der Körper nichts vergisst.

Ein Beispiel: Ein Knöchel ist gebrochen. Um ihn zu entlasten, hinkt man eine Zeit lang. Dadurch steht das Becken schief. Die unnatürliche Drehung über die Hüfte durch das Hinken setzt sich fort bis in die Halswirbelsäule, die sich in die Gegenrichtung dreht, um das körperliche

Gleichgewicht zu halten. Dabei kann ein Nerv beeinträchtigt werden – man bekommt Kopfschmerzen. Und die können anhalten, selbst wenn der Fuß längst ausgeheilt ist. Trotzdem bleibt er die Ursache der Kopfschmerzen.

Deshalb untersucht ein Therapeut grundsätzlich den ganzen Körper. Auch bei Drei-Monats-Koliken oder Bronchitis, bei Schulterschmerzen oder Tinnitus – bei Beschwerden also, bei denen ein Laie die Ursache der Schmerzen am gleichen Ort vermutet, wo die Probleme auch auftauchen. Das Ziel der Osteopathie ist, die Ursache einer körperlichen Schwierigkeit zu finden und aufzulösen.

Die **Cranio-sacral-Therapie** hat sich in den 20er-Jahren aus der Osteopathie herausentwickelt. Die Grundüberzeugung beider Therapierichtungen ist also identisch. Aber der Schwerpunkt der cranio-sacralen Arbeit liegt auf dem Bereich zwischen Schädel (Cranium) und Kreuzbein (Sacrum). Zwischen diesen beiden Polen fließt Liquor, eine Flüssigkeit, in der Gehirn und Rückenmark gelagert sind. Diese Flüssigkeit pulsiert etwa acht- bis zwölfmal in der Minute. Und wenn irgendetwas im Körper in diesem Bereich nicht funktioniert, wenn Blockaden da sind, Verletzungen, Traumata oder Narben, ist der cranio-sacrale Rhythmus, den ein Therapeut mit seinen Händen erspüren kann, gestört. Ziel der Cranio-sacral-Therapie ist es, diesen Rhythmus wiederherzustellen.

FOTOS: ELIAS HASSOS



WIE FINDE ICH EINEN GUTEN THERAPEUTEN?

Der Begriff Osteopathie auf dem Praxisschild muss nicht für Qualität bürgen. Diese Bezeichnung darf auch verwenden, wer nur eine kurze Weiterbildung absolviert hat.

Nur die folgenden Kriterien sind ein echtes Qualitätsmerkmal:

Der Titel D.O. für Diplom-Osteopath verweist auf eine fünfjährige berufsbegleitende Ausbildung. Diese Ausbildung kann nur absolvieren, wer bereits Heilpraktiker, Arzt oder Physiotherapeut von Beruf ist. Die Bezeichnung M.R.O. belegt, dass der Osteopath Mitglied im Register der Osteopathen Deutschlands ist. Hier werden nur hauptberufliche Therapeuten mit anerkannter Ausbildung aufgenommen.

Einen Osteopathen in der Nähe des Wohnortes kann man außerdem finden, indem man sich eine Liste schicken lässt vom **Verband der Osteopathen Deutschland e. V. (VOD)**, Untere Albrechtstraße 5, 65185 Wiesbaden. (Tel. 06 11/9 10 36 61, www.osteopathie.de). Die Liste wird gegen einen mit 56 Cent frankierten Rückumschlag verschickt oder kann im Internet eingesehen werden.

In Österreich: Wiener Schule für Osteopathie, Frimberggasse 6-8, 1130 Wien, Tel. 00 43 (0)1/87 93 82 60, www.wso.at.

Literatur zum Weiterlesen:

Birgit Beinborn und Christoph Newiger: „Osteopathie: So hilft sie Ihrem

Kind“, Trias Verlag, Stuttgart, 17,95 Euro. Die Ausbildung zum **Cranio-sacral-Therapeuten ist nicht geregelt, auch die Berufsbezeichnung „Cranio-sacral-Therapeut“ ist nicht geschützt. Manche Therapeuten haben Ausbildungen bei anderen Therapeuten absolviert, andere nur einen Wochenendkurs belegt – da hilft nur nachfragen. Cranio-sacral-Therapie wird manchmal auch im Wellnessbereich zur Entspannung angeboten – das sind dann oft Therapeuten ohne medizinische Vorbildung.**

Wenn die Cranio-sacral-Therapie aus gesundheitlichen Gründen eingesetzt werden soll, sollten Sie darauf achten, einen Cranio-sacral-Therapeuten zu finden, der auch einen Heilberuf (z. B. Heilpraktiker oder Krankengymnast) erlernt hat und über langjährige Erfahrung verfügt. Die Kosten für eine osteopathische Behandlung für Kinder liegen etwa zwischen 60 und 80 Euro, in Großstädten auch mehr. Eine Cranio-sacral-Therapie kostet etwa 40 bis 60 Euro. Die gesetzlichen Krankenkassen zahlen beide Behandlungsformen nicht, die privaten Versicherer übernehmen in der Regel die Kosten.

WAS MACHT DER THERAPEUT?

Osteopathen behandeln den ganzen Körper einschließlich der Organe. Cranio-sacral-Therapeuten konzentrieren sich auf den Bereich Kopf, Hals, Wirbelsäule. Die Art der Behandlung selbst unterscheidet sich nicht.

Osteopathen und Cranio-sacral-Therapeuten arbeiten nur mit ihren Händen. Mehr ist nicht nötig, weder zur Diagnose, noch zur Behandlung. Durch das sorgfältige „Palpieren“ – so heißt das Fühlen, Tasten, In-den-Körper-Hineinhorchen – findet der Therapeut die Ursache einer Störung. Und er behandelt sie auf genau die gleiche Art und Weise – durch fühlen, tasten und in den Körper hineinhorchen.

Diese Berührungen können so klein sein, dass ein Patient sie fast gar nicht bemerkt. Die Hand auf der Stirn bei Kopfschmerzen zum Beispiel, die mit einem Druck von nur 20 Gramm auf der Haut lastet – das Gewicht eines Briefes für 56 Cent. Hin und wieder sind die Griffe auch fester, die Finger schieben manchmal Haut und Gewebe mit Kraft um einen Zentimeter zur Seite, aber weh tut es nie.

Diese Therapien verlangen Geduld, vom behandelnden Fachmann wie vom Patienten. Der Therapeut sucht die betroffene Stelle, die verspannt, verkrampft, vernarbt, verletzt, verschoben, verhärtet oder auf andere Art beeinträchtigt ist, bringt seine Hände in Position und gibt dann dem Körper Impulse, seine Fehl-



Lukas hat einen leichten Schiefhals und überstreckt die Wirbelsäule. Die Osteopathin behandelt seinen ganzen Körper – das Darmsystem, die Lunge und die Hirnhäute

GESUNDHEIT

haltung aufzugeben und stattdessen eine neue, gesündere Haltung einzunehmen. Das ist alles.

Der Körper bekommt auf diese Weise eine Anregung zur Selbstheilung. Die Therapeuten vertrauen auf die eigenen Kräfte des Körpers und wollen ihm auch die Ruhe lassen, sich selbst neu auszurichten. Deshalb liegen die Behandlungstermine oft im Abstand von einem Monat, meist reichen fünf bis zehn Sitzungen insgesamt aus. Bei einem erfahrenen Therapeuten muss man sich übrigens nicht ganz ausziehen – er spürt den Zustand des Körpers auch durch die Kleidung hindurch.

WELCHE THERAPIE HILFT BEI WELCHEN BESCHWERDEN?

Typische Beschwerden, mit denen Kinder in die Praxis von Osteopathen kommen, sind Drei-Monats-Koliken, Schwallerbrechen, Schiefhals, Atmungstraumata bei Frühchen, Hodenhochstand bei Jungen. Die Osteopathin Birgit Beinborn: „Bei Hodenhochstand zum Beispiel kann ein Osteopath mit speziellen Handgriffen das Bindegewebe um die Nieren so lösen, dass sich die Hoden von selbst senken. Eine Operation ist meist nicht mehr nötig.“ Kinder, die schielen, Säuglinge mit Schädeldeformationen, Kinder mit Konzentrationsstörungen, KISS-Kinder, Schreikinder, Kinder mit Hüftdysplasien sind bei einem Cranio-sacral-Therapeuten auch gut aufgehoben. Die Therapeutin

Anne Mohr-Bartsch: „Bei einem Schreibaby kann leichter Druck mit beiden Händen auf Bindegewebe und Schädelknochen Blockaden in den feinen Membranen lösen, in denen Liquor fließt. So kann sich der cranio-sacrale Rhythmus einpendeln – und das Kind wird ruhiger.“

Jeder Osteopath verfügt durch seine langjährige Ausbildung über cranio-sacrale Techniken. Umgekehrt kann reine Cranio-sacral-Therapie ein Einstieg in die Behandlung sein. Wenn die Ursache für Probleme wirklich im Bereich von Kopf und Wirbelsäule liegt, zum Beispiel bei ständigem Schreien nach einer Zangen- oder Saugglockengeburt, kann Cranio-sacral-Therapie ausreichen. Sollten allerdings auch Organe betroffen sein, wie bei Drei-Monats-Koliken, oder geht es bei Erwachsenen um Rückenschmerzen, die auf einen Meniskussschaden zurückzuführen sind, wird Osteopathie umfassender helfen können.

SIND DIESE THERAPIEFORMEN FÜR KINDER GEEIGNET?

Ein klares Ja. Cranio-sacral-Therapie und auch Osteopathie sind wie für Kinder gemacht.

Gerade wenn der Kopf des Kindes betroffen ist, können die sanften, heilenden Griffe viel bewirken. Denn erst im Alter von ein bis zwei Jahren schließen sich die Fontanellen, mit drei Jahren ist das Hinterhauptbein zu einer Knochenplatte fest verschlossen. Solange der

Schädel noch nicht ganz verknöchert ist, lassen sich durch die Geburt entstandene Beeinträchtigungen unkompliziert lösen – das Kind hat einen leichteren Start ins Leben.

Ein weiterer Grund, warum die Berührungen bei Kindern besonders gut wirken: Die Beschwerden von Kindern existieren noch nicht lange und können daher auch nicht chronisch sein. Deshalb lässt sich eine negative „Körpererinnerung“ leichter lösen. Ein Kind, das drei Jahre lang Kopfschmerzen hatte, wird diese eher los als ein Erwachsener, der dieselben Beschwerden schon seit 30 Jahren mit sich herumschleppt.

In Amerika ist es vielerorts üblich, ein Baby kurz einem Osteopathen beziehungsweise einem Cranio-sacral-Therapeuten vorzustellen. Anne Mohr-Bartsch: „Ich würde mir auch für Deutschland wünschen, dass Eltern ihre Kinder vorbeugend behandeln lassen. Das kann eine Menge Leid ersparen.“

Viele Mütter hören aber vom Kinderarzt, wenn es um kleine Beschwerden bei ihren Kindern geht: Das gibt sich. Birgit Beinborn: „Sicher, vieles wächst sich aus. Ein Schreikind hört spätestens mit zwei Jahren auf zu schreien, aber bis dahin sind die Nerven der Eltern zerrüttet, manchmal auch die Ehe. Und die Ursache für das Schreien ist nicht behoben, sondern bleibt im Körper, der sich nun nur anders ausdrückt. Warum nicht helfen? Gerade bei Kindern ist die Wirkung sehr groß.“ **Petra Schrand**

Fig. 44: Eltern 2/ 2003, p. 65

These reports, indeed, triggered off my interest in this very topic and I thoroughly enjoyed doing this research in autumn 2002 and winter 2003.



6.4. Osteopathic Procedure

- To start with I observe the newborn - admiring its behaviour and assessing the general body tonus. The classical osteopathic treatment follows
- First the feet, then both fibulae and tibiae, the tension of the membrana interossea
- The hips, the position of the individual bones: pubis, ileae, os ischium, the position of the head of the femur
- The sacrum and coccyx
- Tensions in the area round the navel
- The spine and the diaphragm
- Position and movability of the sternum, the ribs and the clavicles
- The arms and the hands, and finally
- Examination of the head: PRM, SSB with its patterns of adaptation (flexion, extension, torsion, side-bending, vertical and horizontal strain), bones of the head and face
- Visceral lesions
- Myofascial tensions or lesions

An additional examination of the following (to find out about the stage of development) with the three-month-old babies:

- Supine position: Alignment of head?
- Prone position: Can the child lift the head?
- Balancing the baby on my hand lying on its belly: Does the baby keep straight or does it give in?
- Can the baby keep its head upright when pulled up to a sitting position?
- Is the baby attracted by voices and bells?
- Does the baby follow objects that move (with its eyes)?
- Does the baby establish contact with me?
- Does the baby smile/ smile back (4th month)?
- What kind of noises does the baby make (squeaking noises 4th-5th month)?
- Does the baby watch its open hands or are the hands still fistled?
- Does the baby recognise voices of familiar people?

6.5. The normal development of a three- month old baby

SUPINE POSITION

The baby can lie on its back symmetrically and is capable of turning to either side. The turning over follows a certain rotation pattern. The head can be aligned and be held in the middle. The baby can have its hands in a central position and can watch them. The baby can play with them, and can hold toys that are placed in its hands. The legs are bent slightly, held in an outward rotation and abduction coming from the hip.



Alternated kicking (and waving) is possible. All the movements already show some sort of coordination. The child can lie in a stretched position, however, changes of which are made all the time.^{4/35}



Fig. 45: Flehming -Normale Entwicklung des Säuglings p. 134

PRONE POSITION

The baby lies symmetrically and will go back spontaneously if turned to an asymmetrical position. It can lift its head to a 45° angle. The head can be moved from one side to the other. The hands are fisted, can be opened, however. The hip is nearly straight; sometimes it is still bent slightly – so the baby's bottom is raised. Alternating kicking along the torso's axis. The legs are in an outward rotation and abduction, the ankle joint moves freely. The knees are bent.^{4/35}

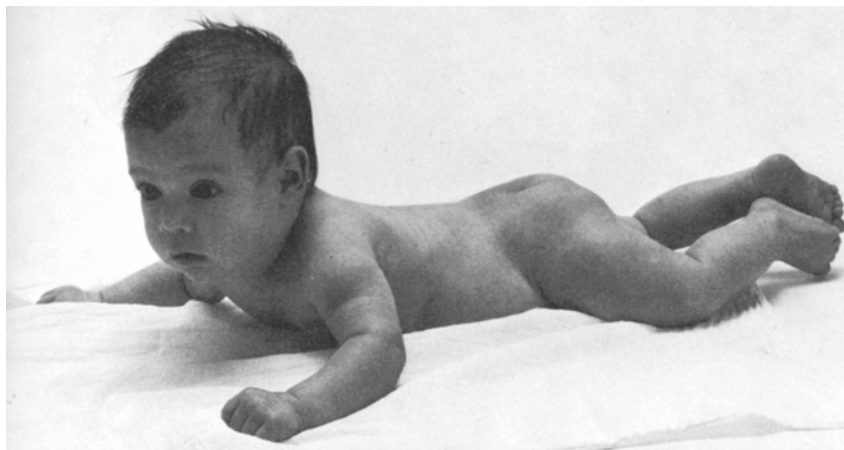


Fig. 46: Flehming -Normale Entwicklung des Säuglings, p. 135



PULLING UP FROM SUPINE POSITION

The child assists when being pulled up. The control of the head, however, is not yet a 100% stable.

Though the legs go along with the movement (forward) the knees are still bent. The elbows are in a bent position when pulled up.



Fig. 47: Flehming -Normale Entwicklung des Säuglings, p. 137

Helping the baby stand, supporting it under the arms, the child can put weight on its legs for a very brief time. The legs contract with the knees straightened. The hip is bent. The torso straightens. The head can be held quite stable in all positions.^{4/35}

However it will take time to be able to adapt to a (physical) condition. The flexion tonus is no longer prominent. The baby shows pattern of stretching.

There is a normal tonus of the muscles; good movability, no restrictions. The extremities, passively stretched do no longer swing back but stay in position.^{4/35}



Fig. 48: Flehming -Normale Entwicklung des Säuglings, p. 138



The baby enjoys being moved and smiles. For the baby, to be moved seems to be exciting or calming. In all positions certain symmetry is achieved, sometimes it will lie asymmetrically depending on the physiology. There is one 'favourite' side – mostly on the right.

We can still trigger the Moro reflex, the palmar grasping reflex is hardly detectable any more, and you can elicit the plantar reflex still quite easily. There is no stepping reflex when holding the baby upright.

Objects are held in the centre but can be seen clearly up to a distance of 30 to 40 centimetres on either side. An object will be followed with the eyes up to a degree of 180°. The child will keep its eyes on the object.

Watching its own hand is normal, individual fingers, rather than the whole hand are put in the mouth.

The child laughs out loudly, when addressed. The head moves in direction of the speaker – the baby squeaks spontaneously. Blowing fricatives are produced. The baby's crying has become more differentiated and you can identify moods. The child turns towards a noise, is quiet, and listens attentively. It stops in its movement when turning towards the noise. If the noise is too loud the child will start crying. The baby reacts towards the environment: like mother's being hectic, or anxious, loud crying noises... If uneasy the child can be calmed down fairly easily by taken onto your arms, stroking, talking, and radiation of bodily warmth. The child loves to be addressed, to be taken on your arms.^{4/35}

7. Method, results and discussion

7.1. Statistics of the groups

	Group	N	Mean	Standard deviation	Standard error of the means	
Weight	1 st group	16	6402,5	620,876	155,219	
	control group	16	6009,38	572,206	143,051	0,072
Length	1 st group	16	61,94	2,594	0,649	
	control group	16	60,5	2,191	0,548	0,101

Fig. 49.: Statistic 1



No significant differences between the two groups regarding weight and size (length) at birth.

Note: Statistical differences are only taken up if <0.05 . Only in this case we speak about statistical significance.

0.072 is very close to 'not significant' – hence there is no (significant) difference between the groups.

Calculated with T-test (assumed normal distribution)

	Group	N	Middle rank	Rank summation	T - Test for the mean equation
Breastfeeding	1st group	16	16,50	264,00	1
	Control group	16	16,50	264,00	
	Summary	32			
Breastfeeding in minutes	1st group	16	15,91	254,50	0,724
	Control group	16	17,09	273,50	
	Summary	32			
Number of breastfeeding	1st group	16	19,91	318,50	0,039
	Control group	16	13,09	209,50	
	Summary	32			
Waking phases during the night	1st group	16	14,31	229,00	0,196
	Control group	16	18,69	299,00	
	Summary	32			
Phases of disturbance	1st group	16	11,75	188,00	0,003
	Control group	16	21,25	340,00	
	Summary	32			
Crying phases	1st group	16	12,06	193,00	0,007
	Control group	16	20,94	335,00	
	Summary	32			
Number of faeces	1st group	16	18,09	289,50	0,341
	Control group	16	14,91	238,50	
	Summary	32			
Flatulence	1st group	16	20,50	328,00	0,015
	Control group	16	12,50	200,00	
	Summary	32			
Colics	1st group	16	21,50	344,00	0,002
	Control group	16	11,50	184,00	
	Summary	32			
Sickness	1st group	16	12,50	150,00	0,399
	Control group	16	15,20	228,00	
	Summary	32			
Jaundice in days	1st group	16	10,69	171,00	<0,001
	Control group	16	22,31	357,00	
	Summary	32			

Fig. 50. : Statistic 2



There are no statistically significant differences between the two groups in:

Breastfeeding	p=1
Breastfeeding in minutes	p=0,724
Waking up phases during the night	p=0,196
Number of faeces	p=0,341
Sicknesses	p=0,399

There are statistically significant differences between the experimental group and the control group:

Experimental group

Number of breastfeeding	more	p<0,05
Phases of disturbance	less	p<0,01
Crying phases	less	p<0,01
Flatulence	less	p<0,05
Colics	less	p<0,01
Jaundice in days	less	p<0,001

Remark:

This analysis was calculated with a non-parametric test, Wilcoxon rank-summatation test

A software package SPSS (Version 11.5) was drawn near for the calculation



7.1.1. Experimental group (1st group)

Babies, who were treated immediatly after birth

	Felix	Jonas	Katharina	Lara	Lew	Marius Yes+ feeding	Marlene	Max	Merlin	Moritz	Pascal	Penelope	Samaya	Sue	Tobias	Veronika	Results
Breastfeeding	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	96%
Breastfeeding in minutes	3-5 min	5-7 min	5-10 min	15 min	5-10 min	10-30 min	10 min	3-5 min	5 min	10 min	5 min	15-20 min	5-10 min	2-5 min	5-10 min	.-30 min	3,03 min
Number of breastfeeding sessions	8-10 times	8-10 times	8-10 times	5-6 times	8-10 times	5-6 times	5-6 times	6-8 times	6 times	6-8 times	5-6 times	6- 8 times	8-10 times	8-10 times	5-6 x	8-10 times	7,56 times
Sleeping position	good back	good back	good back or side	good back	good side	good side	good back	good back or side	good side	good back	good side	good side	good back or side	good back or side	good side	good back or side	100% good 62% back 68% side
Waking phases during the night	2-3 times	4-5 time times	/	/	3-4 times	once	once or twice	/	once or twice	/	once	once or twice	once or twice	4-5 times	/	twice	1,65 times
Phases of disturbance	/	/	/	/	0- once	/	/	/	/	/	/	once	/	once	/	/	0,18 times
Crying phases	/	/	/	/	0- once	/	/	/	/	/	/	once	/	/	/	/	0,12 times
Number of faeces	once or twice	once or twice	twice	once	0- once	.-8 days	once	once or twice	.-2 days	twice	once	0 once	twice	once	once or twice	once	0,86 times
Flatulence	/	/	0 - once	/	once	/	/	/	/	Yes	/	/	/	/	/	/	18%
Colics	/	/	/	/	/	/	/	/	/	Yes	/	/	/	/	/	/	6%
Jaundice in days	/	/	/	/	/	/	/	/	.-2 days	/	.-1 days	/	/	/	/	/	12% 0,18 days
Sickness	cauphing cold	bronchitis	cold	cold	/	cauphing cold	/	/	/	soor	subluxatio calcanei	checking	cold	hypothyreosis	bronchitis 2 days	cold	75% bzw. 56%
Weight in grammes	6900g	7500g	6270g	5900g	5860g	5840g	6870g	6990g	7000g	7000g	6200g	6800g	6400g	5980g	5330g	5600g	6402,5g
Length in centimetres	61cm	68cm	62,5cm	61cm	62cm	62cm	62cm	62cm	68cm	62cm	60cm	61cm	60cm	59cm	60cm	60cm	61,94cm

Fig. 51. : Statistic 3



7.1.2. Control group

3-months-old children

	Alexander	Beate	Iris	Jasper	Joel	Leonhard	Mattheo	Melinda	Nahima	Nelly	Raphaella K	Raphaella S	Sophie	Stella	Theo	Wenzel	Results	
Breastfeeding	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100%
Breastfeeding in minutes	5-10 min	5-10 min	30 min	5-10 min	.-5 min	30 min	2-5 min	10 min	5-10 min	5-10 min	5-10 min	15-20 min	5-10 min	10 min	10 min	3-5 min	6-5 min	
Number of breastfeeding sessions	4 times	6-7 times	10 times	4-5 times	4-5 times	5 times	6 times	4 times	6 times	6-7 times	8-10 times	4 times	4-5 times	6 times	3-4 times	8-9 times	6,06 times	
Sleeping position	good belly	good back	good side	good side	good back	good back	good side	good side	good back	good back	not good	good side	good back	good side	good back	good belly	93% good 43% back 37% side 12% belly	
Waking phases during the night	4-5 times	twice	once	once or twice	3 times	once	3-4 times	2-3 times	8-10 times	/	2-4 times	/	once	2-3 times	once or twice	6 times	2,68 times	
Phases of disturbance	once	twice	once	/	/	once or twice	once or twice	/	3 times	once or twice	twice	once	once or twice	once or twice	/	/	0,75 times	
Crying phases	once	twice	once	/	/	once or twice	once or twice	/	3 times	once or twice	/	once	once or twice	once or twice	/	/	0,68 times	
Number of faeces	0- once	once	once	once	once	.-7 days	once or twice	0- once	twice	once or twice	once	.-3 days	.-3 days	.-2 days	2-4 times	once	0,75 times	
Flatulence	Yes	Yes	Yes	Yes	/	Ja	Ja	3-4 times	/	/	/	Yes	once or twice	Yes	Yes	/	68%	
Colics	Yes	Yes	Yes	Yes	/	Ja	Yes	Yes	/	/	/	Yes	Yes	Yes	Yes	/	68%	
Jaundice in days	2 days	3 days	3 weeks	1 week	4,5 days	3 days	2 weeks	3 days	/	/	5 days	1 week	3 days	3 days	3 days	/	87% 4,9 days	
Sickness	coughing	/	influenza coughing	in the mind	cold	cold	/	/	cold	/	Caughing cold hernia umbilicalis	cold	enteritis	caughing	cold	Caughing cold fever	81%	
Weight in grammes	5200g	6010g	6000g	6900g	7000g	5400g	6000g	5800g	6000g	5500g	6000g	5990g	5250g	5700g	6400g	7000g	6009,38g	
Length in centrimetres	57cm	59cm	58cm	64cm	62cm	65cm	60cm	58cm	62cm	60cm	62cm	59cm	60cm	60cm	60cm	62cm	60,5cm	

Fig. 52. : Statistic 4



7.2. Results, discussion and summary

The experimental group consisted of 16 babies which I examined and treated within a period of 24 hours after delivery. I checked them once more when they were three months old.

The second group (control group) also consisted of 16 babies. I saw those children for the first time when they were three months old.

By comparing the two groups' crying-, sleeping- and digestive behaviour I was able to come forward with the statistics ... cf. chapter 8.2, diagrams

7.2.1. Crying

Looking at phases of crying and restlessness there is - according to the statistics - a significant difference between the children I saw (and treated osteopathically) right after delivery and those, who had no treatment.

In the chart you can see that only 18% of the experimental group showed phases of restlessness and 12% – (for their parents) unmotivated – showed crying phases.

The control group showed figures of 75% and 68% respectively. (cf. chapter 8.2, diagrams)

As mentioned earlier (compare chapter 6.1 CRYING) I assume that these results go back to my working on the baby's diaphragm and a balancing of the cranial bones as well as sympathicus and parasympathicus.

At the beginning of my work I was not sure at all whether the results of checking the babies' behaviour, regarding crying and restlessness, would be of significance. I reckoned the difference would be recognisable – however, I am really glad of coming forward with such very positive results. It will definitely mean more quality of life and will result in a stronger relationship between the parents and their child. For a parent it will most definitely feel good to know why their baby is crying.

7.2.2. Digestion and passing Faeces

Looking at the chart we can see that there is nearly no difference referring to quantity of faeces: 0.75 times a day (experimental group) – 0.86 times a day (control group).

With flatulence and colics however, the difference is significant. In both cases it seems that the experimental group hardly encountered problems: Only 18% suffered from winds, only 6% were colicky. (cf. chapter 8.2, diagrams)



The children of the control group, however, showed 68% flatulence and 68% colics. (cf. chapter 8.2, diagrams)

Osteopathic treatment has been a topic for some time; not only has it been researched, it also is fairly well known among young mothers. There are lots of reasons why babies suffer from winds and colics; in most cases however it goes back to organic changes, e.g. reduced bowel motility, irritations of the liver, irritations of the vagus, tension in the fasciae, and so forth.

In most of the cases it is not a big problem for an osteopath to spot and to resolve the respective problem. Thus, the statistical results are rather clear: The proof, as we know, is in the pudding.

Looking at breastfeeding: There is quite a bit of a difference in the number of sessions, not so much regarding the length of a typical breastfeeding session: With the experimental group a session lasts 3.03 minutes (on average) and 6.06 minutes with the control group. However, while the experimental group sucked 7.56 times a day the figure for the control group was 6.06 times. Those who had been treated after birth obviously needed more sessions of breastfeeding. There is no statistic consequence regarding weight and size, though. (cf. chapter 8.2, diagrams)

The mean figure of weight with the experimental group is just slightly higher (6402.5 grams versus 6009.38 grams) as the T-test gives an attenuation equivalent of 0.072. This figure is close to non-significant, as statistics only 'start' at a figure if <0.05 .

Size: On average children of the
Experimental group are 61.94 centimetres
Control group 60.5 centimetres

(No statistically significant difference, as the T-test's attenuation equivalent is 0.101.)

I believe that phases of breastfeeding are more frequent in the experimental group because of a stronger bonding to the mother and a better course of action when sucking and digesting.

Even if statistics hardly show any significance (regarding size and weight), I think that osteopathic treatment should be a suggestion for the mothers of those with difficulties in sucking and/or with slow development.

7.2.3. Sleeping behaviour

Neither with falling asleep, nor with sleeping through the night differences are statistically significant.

All of the babies of the experimental group fell asleep easily with 1.65 waking phases a night; while 93% of the control group fell asleep easily with 2.68 waking phases. (cf. chapter 8.2, diagrams)

No statistically significant difference.

It is quite possible that these differences, though marginal, may be due to my treating of those children. I had not put much thought on anatomical basic sleeping behaviour during my



research. It was only after I had nearly finished studies that I decided to look at details regarding sleeping.

There should be differences, in fact, as important sleeping neurons are sitting just below the occiput in the brain stem, and as this part of the body is affected easily due to strains of birth, I naturally worked on that part of the head quite closely. Also the area of the SSB, the epiphysis and the hypophysis were taken care of.

Sleep research shows that it takes some time before a sleeping rhythm is established, sometimes until we are grown up. Yet there is a lot to be learnt or experimented on sleep mechanisms.

(Ultra sound examinations show that intra-uterine sleeping/waking phases last about 90 minutes. ⁴³⁾

Since light is not so much differentiated in the womb (as compared to ordinary life on earth) melatonin secretion needs to be adjusted. During osteopathic treatment the hormone flow can be influenced by working on the liquor, so actually, hormonal dysfunction can only

be due to the 'functional' change of the metabolism or, possibly it is some kind of (immature) hormonal misbalance, or it derives from other areas in the brain.

7.2.4. *Ikterus neonatrum*

Jaundice in new-borns originally was not part of this research. But in the first answers from the given questionnaire, whether the baby suffered from any illnesses, jaundice was mentioned quite often. I decided to ask mothers about it more specifically.

It struck me that, in the group, that was treated osteopathically after birth, 87% showed no sign of jaundice, whereas in the control group 81% had suffered from this disease! (cf. chapter 8.2, diagrams)

Anatomically it became obvious that we are able to help children overcome difficulties, help with the changing of metabolism of the blood circulation by treating the diaphragm and the liver.

It was a kind of Eureka experience when finding out about such a significant difference.

7.2.5. *Diseases*

When asking parents about their babies' illnesses no statistical significance was found.

Three of the children had had an illness right from birth and were being treated. I will go into more detail about the three of them in the next chapter.



Though I find it strange that physical problems cropped up with those three children – in spite of the fact that they had been looked after osteopathically - I must admit that working with them was exciting and challenging.

These three ‘special’ kids included, the experimental group’s percentage was 75% (otherwise the figure would be down to 56%) – mostly just a cold, anyway - as compared to the control group where 81% of the kids had developed an illness within the first three months – mainly colds, too. (However, the research was done in winter.)

No statistical difference. (cf. chapter 8.2, diagrams)

My Eureka experience was blown a bit because, as we do know infectious diseases can be dealt with by osteopathic treatment – backing the immune system has proved many positive results: Children are less susceptible or infections are not so long and dramatic.

7.2.6. Summary

I am, in fact, very pleased with the results of my research. Even at the beginning after choosing the topic and when coming up with these very homogeneous groups I was sure I would come forward with good results. Hanneke Nusslein, my supervisor, was not as enthusiastic, however, and thought results might not be too relevant - as children born at Geburtshaus were already privileged to master all restrictions. (Restrictions they would have had to face if they had had a normal birth.)

That is why it makes me really happy that the two groups did show big differences regarding to crying, digestion and jaundice.

These results are a strong indication that babies ought to be checked osteopathically after birth.

7.2.7. Obvious results of the Treatment

Those who have been treated by me, most clearly showed anatomical misbalances that can be explained as a consequence of either the intra-uterine position or the birth itself. Apart from restrictions of the occiput (75%) – well known and described in literature – and apart from tensions of the diaphragm (62%) and torsion of the pelvis (62%) I found an extraordinary number of shifts of one or both fibulae, namely 86%. Taking in consideration the intra-uterine situation of space available at the end of a pregnancy it is easy to imagine how a thin bone like the fibula is affected by Braxton Higgs contractions of the uterus or the position of the legs along the arch of the ribs. Quite often pregnant women complain about the baby’s painful kicking against the ribs. Lots of problems with the feet, however, can be dealt with after birth through special massage. (cf. chapter 8.2, diagrams)



Fairly easy work on the feet, the fibulae in particular - and life will be much easier for the child. In cases where those faults are not resolved before the child starts walking, it is easy to imagine how these restrictions in later life will influence their posture and their ways of walking.

Osteopaths can achieve good results with resolving tensions or torsions of the pelvis and the organs thereof, especially the sigmoid and the bladder, the hips (e.g. resolving congenital dysplasia of the hip) and the spine. The connection between sacrum and occiput must not be ignored, either - a free moveable sacrum means free energy and independence, giving the newborn the chance to develop full power. By the pressure of labour contractions, which continue cranially to the sacrum and the pelvis, strains might develop. There may be intra-uterine forces that influence the pelvis (see above) depending on the position of the bottom of the baby along their mother's arch of the ribs.

With difficult births the gynaecologist or the midwife strongly presses against the fundus of the uterus (and thus the bottom of the child) in order to move the child caudally towards the pelvis (Kristeller manoeuvre). As my group was very homogeneous and all of the babies had a 'soft' birth I can imagine that figures would have been a lot more different in a more heterogeneous group.

I found 62% tensions of the fasciae, minor ones locally, big ones going through the whole body.

Especially around the navel the fascia was often irritated. It struck me that the area round the belly button often felt vulnerable and featured an irregular motility with no direction, although the umbilical cord had already stopped pulsating and had been cut only afterwards (nearly in all 'my' cases). Even more so, the earlier I saw the babies after birth.

Besides these obviously very restrictive areas there were compressions between ethmoid and frontale (18%) and clavicular restrictions (18%). I am still wondering that clavicles had not shown more faulty positions as we can often find clavicular fractures after birth. But again, 'my kids' had experienced a 'soft' birth. (cf. chapter 8.2, diagrams)

Tensions of the diaphragm have been dealt with in detail earlier (see the chapters 6: 'crying', 'sleeping' and 'colics').

In the SSB I found	31.00% flexions
	0.06% extensions
	68.00% torsions
	37.00% side-bending rotations (cf. chapter 8.2, diagrams)

I assume that the difference in statistics as compared to Viola Fryman's goes back to her researching a much higher number of children.

The CONTROL GROUP showed the following striking features:

In the SSB	55.00% flexions
------------	-----------------



25.00% extensions
 50.00% torsions
 31.00% side-bending rotations
 0.06% compressions (cf. chapter 8.2, diagrams)

Even at the arrival of the babies of the control group for their examination, I immediately noticed differences. Some of them showed a reduced muscle tonus or were sitting crookedly in their seats. This was something that I had not encountered in the experimental group. There were 43% tensions of the fasciae, 81% connected with the diaphragm. The occiput was restricted in 68% of the cases; the pelvis in 56%. Quite strikingly, I found 25% restriction in the area of the fibula and the clavicles, a misbalance of the ethmoid in 31%. I think that those torsions of the ethmoid were due to teething with most of them. 12% already had their first teeth. (cf. chapter 8.2, diagrams)

I had to work on the immune system with 25% of the babies of the control group. (cf. chapter 8.2, diagrams)

Using the questionnaires I found that half of the three-month-old-babies' development had surpassed the ordinary level.

Summary:	Diaphragm	81%
	Occiput	68%
	Pelvis	56%
	Faster development	50%
	Fasciae	43%
	Ethmoid	31%
	Fibula	25%
	Clavicles	25%
	Immune system	25%
	Teeth	12% (cf. chapter 8.2, diagrams)

As I wanted to know what the situation was like with 'my group' (experimental group) after three months I decided to make a projection of the relevant data to get comparative figures.

Summary of the experimental group:

Faster development	68%
Diaphragm	68%
Fasciae	43%
Ethmoid	43%
Occiput	37%
Pelvis	25%
Teeth	12%
Immune system	12%
Clavicles	0.06%

SSB:	Torsion	43%
	Side-bending rotation	37%



Flexion 12% (cf. chapter 8.2, diagrams)

For two of the children no treatment was necessary. None of 'my children' had a restriction of the fibula.

Comparing both groups there is a clear difference in the percentage of restrictions concerning

the occiput	(37 : 81)
the pelvis	(25 : 56)
the immune system	(12 : 25)
the clavicles	(06 : 25)
the fibula	(0 : 25) (cf. chapter 8.2, diagrams)

Just imagine the consequences regarding health if those remainders from birth are not dealt with: problems with posture, digestion, deformed feet, respiratory difficulties, dyslexia.

7.3. Three very special babies I treated

PASCAL

Pascal was born on November 5, 2002. It had been a fast delivery after 39 weeks of pregnancy. As I was present during his birth I could examine him right away.

Most striking I found a subluxatio calcanei of 170°-180° on his right foot. Both fibulae were shifted caudally, the right one two centimetres. Two centimetres does not sound very much, but for a foot so small it is quite big a figure. The fibula had bent the talus and the calcaneus into inversion, the result of which being a subluxatio. The forefoot was lying against the shin. The neonatologist – called for assistance – wanted to put the leg in plaster. However, as mobility of the pedal bones was very good - Pascal loved having his foot mobilised – the parents, the doctor and I decided to wait for another week: Had Pascal not been born prematurely he would have spent another week in the womb in this crooked position, anyway.

I made an appointment with the parents to see the baby the day after, as I wanted to mobilise the foot again. The neonatologist agreed, however, was very sceptical regards my treating Pascal, due to the degree of the malposition.

When I saw the foot the next day the right fibula had already moved back cranially one centimetre, so that the foot only showed a dorsal flexion, the forefoot no longer touching the tibia. Above the talus I spotted an increased tension of the fascia.

In the course of the next week I saw Pascal every second day – to calm my nerves rather than the parents'.



A week after birth the deviation of the right foot was no longer visible, although tensions at the talus and calcaneus were still to be spotted.

Another appointment was to be 3 weeks after birth. During that period the parents had consulted an orthopaedic doctor, who, without being told could not spot anything out of the normal. Only when the parents told him about the problems, they had encountered, he said he had better see the baby again after three weeks.

At my treating Pascal again osteopathically I only found an anterior talus; calcaneus and fibula were in the right position.

After three months no more restrictions in right foot could be found. All of us, the neonatologist, the orthopaedic doctor and I were really amazed that, this rather strong malposition of the ankle was resolved by osteopathic treatment in such a short time. It is a pity that there were no pictures taken immediately after birth showing Pascal's subluxatio calcanei.

After my first treating Pascal I was not sure at all whether he would need to have his leg plastered or not; but I was confident after the session and, at night, I dreamt that I would be capable of treating him on my own.

I really appreciated that Pascal's parents trusted me and my work that much; naturally they were pleased that their son's leg did not need to be plastered.

PENELOPE

I saw Penelope 5 hours after her birth on November 12, 2003. Her mother being very anxious as the year before she had had a still birth (in the 20th week of her pregnancy).

The new -born was rosy and was sucking on her mother's breast. She showed a low muscle tonus and featured a 'croaking' voice. Her primary respiratory rhythm was a bit slow, her meninges were strained quite a bit. As a result of her umbilical cord having been wound round her neck the frontal fascia of the neck was in a strong tension. She appeared to be grumpy: a tension of the fascia reaching from her navel to the liver could be spotted. Due to her reacting spontaneously to the treatment I was confident I could leave her, busying myself elsewhere in the Geburtshaus.

At noon the neonatologist came to see her. While checking her, Penelope suddenly overstretched her neck backwards, she turned bluish and her breathing stopped. The doctor had to reanimate her and the midwife ran to collect me.

The child had changed completely. Breathing again shallowly, bringing her complexion back to a rosy colour, her lower jaw was fallen in and I could hardly feel her primary respiratory rhythm. She had gone into shock and her focus was quite far outside the body.

She was given Laurocerasus C30 and I started treating her doing an ignition on the sacrum, then applying the Vatter-Tom technique for half an hour until the ambulance arrived to take her to the children's hospital. She was taken to the intensive-care ward with her mother.

During this half hour of my working with her - quite strikingly - there were always phases of her primary respiratory rhythm working well, alternating with nearly no response at



all. She really did fight to survive. The room had an air of death – especially coming from her mother's fear and the presence of her deceased sister. After about 20 minutes Penelope shook quite intensively and - the extreme situation cleared away.

In a later check-up in the hospital no physical damages were found.

I believe Penelope's shocking start into life had its sources in the (psychical) mother-child relationship and, perhaps, too sudden a movement of the neonatologist during the examination – triggering off an old psychical trauma.

Thank God, this rather nasty situation came to a satisfactory ending.

At the three-months-check-up her mother had calmed down and Penelope had become an energetic little personality whose nerves did not play up any longer.

SUE

Sue was born on 5th November, 2002 after 37 weeks of pregnancy. She had her umbilical cord cut fairly soon, as she showed an Apgar of 7/9/10. I saw her about three quarters of an hour after her birth, head still slightly jammed because of the very fast delivery (of one and a half hours). Sue was full of mucus and was breathing with a kind of rattle when lying on her tummy. She had a husky, croaking voice. Though she had not suffered from her umbilical cord being wound round her neck she showed a strong tension at the anterior fascia of the neck that, only improved very slowly.

Two weeks later a rather worried mother phoned and told me that Sue was suffering from a hypothyreosis. I saw her at the control examination on the 29th November. Although grown sufficiently she was kind of lethargic due to the medication she was taking. She drank hastily with the result of spitting easily. The fascial tension of the neck going back to the 7th or 8th week of pregnancy was still very prominent. On being asked what had happened at that time I learnt that, Sue had been conceived in Australia and were on their way back to Europe at that period. The flight had been a very difficult one.

We decided she should take some Chinese herbs because, in my opinion, there was some kind of toxic deposit from the long flight.

After three months the tension in the centre of the cervical region was better, yet still very strong on the side of the neck. However, medication could be reduced to a minimum and beside the Chinese herbs Sue was Laser acupuncture by her mother, who had had to acquire this technique.

Pity that the mother was ashamed of her daughter's disease and would not talk about it – even within her own family. Apart from her husband nobody knew - although her daughter had developed into a normal child in quite a short time.

I am seeing Sue quite often at the Centre for Child Osteopathy and am still looking after her. For medication she only needs small doses of thyroid hormone and is developing fine.

The three children mentioned above really challenged my osteopathic skills and I must admit, I thoroughly enjoyed working with these kids intensively.



7.4. Final statement

I believe I was able to contribute to osteopathy with my work showing the importance of having babies examined after birth as soon as possible. And I think I could prove that it would be best to have a treatment right after delivery in hospital or else within the first hours after birth. Severe health problems – that might materialize in later life only - like scoliosis, hip problems, difficulties with the feet and digestion, could be avoided, and the psyche of both children and grown-ups could be more balanced.

I sincerely hope that this paper reaches the health authorities and get them to start thinking whether it would be of advantage for public health to employ osteopaths in hospitals in order to give newborn babies a chance to get osteopathic treatment right after birth.

7.4.1. Acknowledgments

I wish to express my sincere thanks to all the families that helped in this research, everybody from *Geburtshaus Nußdorf* who was involved in the project and, especially the midwives who called me to see the children within 24 hours.

Next I would like to thank Hanneke Nusselein for her looking after me in such a caring and constructive way.

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8. Appendix

8.1. Abstract

Title: Do three-month-old-babies, getting treated immediately after birth, develop a different behaviour in crying, sleeping and digestion than three-month-old children who did not get a treatment after birth.

A comparison study

KEY-WORDS: OSTEOPATHIC TREATMENT AFTER BIRTH – FLATULENCE - COLICS – IKTERUS NEONATORUM– PHASES OF DISTURBANCE – CRYING PHASES – SLEEPING – NATURAL BIRTH – *GEBURTSHAUS NUßDORF*.

A very homogeneous group of 16 babies delivered at the *Geburtshaus Nußdorf* , checked by me within 24 hours after birth and if necessary being treated osteopathically after three months checking them again and compare them with 16 three-month-old babies who also were delivered at the *Geburtshaus* without any complication, in relation of their crying-, sleeping- and digestive behaviour with the help of a detailed questionnaire.

There were no statistical differences between the period of breastfeeding, the numbers of faeces, and how often they wake up during the night..

Luckily there are statistic differences of the numbers of breastfeeding per day (7,56x vs. 6,06x), of the phases of disturbance (18% vs. 75%), crying phases (12% vs. 68%), flatulence (18% vs. 68%), colics (6% vs. 68%) and also jaundice (13% vs. 81%).

Parents of the two groups were prepared for birth in details and were accompanied by „their“ midwives and hence had a good start for their „beginning of the life“.

Comparing the first group to a group of children born in a normal hospital would have been even more significant.



8.3. Definitions

A	
Acromio-clavicular Joint	Part of the shoulder
Apgar	Estimation of the new-borns with points with a scale from 1 – 10. It will be assessed the respiration, skin-colour, reflexes, heart rate and muscle-tonus until 2 points (1 minute, 5 minutes and 10 minutes after birth). Normal degree between 8 – 10.
Amniocentese	An invasive examination of the unborn-child to screen genetic errors. In the 16th week of pregnancy some amnion fluid will be punctured and a chromosome culture will be placed.
Anterior	To the front
Atlas	1st cervical vertebra
Auscultation	Examination with the stethoscope
B	
BEL	Breech position the baby's breech or feet are on the leading position at birth
Bird	Activating treatment of the 3rd ve
Bronchitis	Inflammation of the bronchus
C	
C1-7	Cervical vertebrae, there are 7 vertebrae (1 – 7)
Calcaneus	Heel bone
Caudal	Downwards, to the tail
Clavicula	Collarbone
Coccyx	Coccyx
Colon	Large bowel
Cranial	To the top, headwards
Cranial system	System of the head and nerves
D	
Diaphragm	Diaphragm
Dorsal flexion	Flexion to backwards
E	
Ethmoid	Bone behind the nose
Exhalation	To breathe out
Exspir	Direction of the motility, counterpart to the exhalation direction
Extension	The stretching is more significant
Extremity	Arms and legs



F	Connective tissues
Fasciae	Longitudinal duplication of the meninges, which separates the hemispheres through great venes, passing through (venous sinus).
Falx	Calf
Fibula	Opening in the upper eye cave for nerves and vessels
Fissura orbitalis superior	The bending is more significant
Flexion	Opening between the different bones of the skull at a new-born, closed with membranes to make the passage at the time of delivery more easily. They get ossified in childhood.
Fontanel	Opening between the occiput and temporale, where the following cranial-nerves passing through: 9th (N. glossopharyngeus), 10th (N. vagus) and 11th (N. accessorius) and vessels
Foramen jugulare	Great opening in the occiput, connection between the head and the spine, vessels, nerves and the spinal cord going through.
Foramen magnum	Forceps delivery, instrumental delivery
Forceps	Forehead bone
Frontale, frontal bone	
I	
Ignition	Ignition, starting of the PRM
Ileum, iliacal bone	Part (bone) of the pelvis
Inferior	down
Inhalation	To breathe in
Inspir	Direction of the motility, counterpart to the inhalation direction
Intra-osseous	In the bones, between the embryonic parts of the bones
Intra-uterine	In the womb or the time when a baby grows up in the womb
IR	Inward rotation
Ischium, ischial bone	Sitting bone, part (bone) of the pelvis
L	
L 1-5	Lumbar vertebrae, there are 5 of them (1 – 5)
Lig.= Ligament	Band
Lig. Falciforme	Ligament = band between the navel and the liver
Liquor	Fluid of the brain
LOA	Position of the head at the time of delivery where the left occiput is anterior, the back of the baby is on the left side of the mother.
Locus caeruleus	Area in the forehead connected with the olfactory nerves
Lunar month	Month of pregnancy which lasts 28 days like the cycle of the moon.



M	
Mandibula	Jaw
Maxilla	Upper jaw
Interossea membrane	Special connection of the fasciae between the different parts of the bones, e.g. between the tibia and the fibula
Menings	Skin of the brain
Midline	Bio-electric line where the embryo develops, which can be sensed.
Moro reflex	Reflex of the head of the new-born when you put he baby down.
Motility	Spontaneous movement of an organ, we differentiate: 1. Inspir: direction of the motility, counterpart to the inhalation direction 2. Exspir: direction of the motility, counterpart to the exhalation direction
M=Musculus	Muscle
Myo-fascial system:	System of the muscles and connective tissues
N	
Nasion	Region above the nose
Neocortex	Evolutionary young part of the cortex
O	
Occiput	Bone of the back of the head
Os	Bone
OSKAR	A non-invasive examination of the unborn child to screen genetical errors. In the 11th - 13th week there is an ultrasound examination with measuring the neck transparenc of the child combined with a special computer programme and 3 pregnancy hormones of the mother.
OR	
Oxytocin	Outer rotation, Hormone which triggers the labours and also the secretion of the milk.
P	
Palmar reflex	Finger reflex of the new-borns when something is touched by hands
Parasympathicus	Antagonist of the sympathetic, great nerve plexus, which calms down.
Parietal, parietal bone	Vertex bone
Pelvis	Basin, bony pelvic ring
Pericardium	Heart sac
Placenta	After-birth
Posterior	To the back
Post partum	After the birth
Pre- and postsphenoid	The fore part and backpart of the sphenoidal bone
PRM	Primary respiratory mechanism, a movement of the body (of the brain, the spinal cord, the liquor, the menings, the



	sacrum and the head bones), involuntary of the respiratory movements Part of the pelvis
Pubis, pubic bone	
R	
ROA	Position of the head at the time of delivery where the right occiput is anterior, the back of the baby is on the right side of the mother.
S	
Sacrum, sacral bone	Rump bone
SBR	Side-bending rotation, movement of the skull base, Bending and rotation is more marked
Sectio	Instrumental delivery, cutting incision, caesarian section
Sigmoid	Last segment of the colon; it continues as the end of the intestines (rectum).
SIMS	Border area of the branchial arches, the face develops from the first three arches.
Sinus venosus, venous sinus	Plexus of venes in the head
Soor	Mycosis
Sphenoid, sphenoid bone	Bone in the middle of head
SSB	Synchondrosis sphenobasilaris, connection between the sphenoid and the occiput of the skull base whereis the skull movements originate. We differentiate between following movements: Flexion Bending is more marked Extension Stretching is more marked Torsion Torsion is more marked SBR Side-bending rotation, bending and rotation is more marked Horizontal strain a shift in the horizontal line Vertical strain a shift in the vertical line
SSW	Week of gestation
Faeces, consistancy of mustard	Faeces of the new-born who is breastfed exclusively, it is greenish or yellow, pultaceous and smells sweet.
Sternum	Breast bone
Stork bite	Visible vessels at the front of the head of a new-born
Superior	At the top
Sutherland grip	Holding the head named after Dr. Sutherland; holding the occiput and sphenoid with 4 fingers.
Sympathicotonus	More activity of the sympathetic which has an activating effect.
Sympathicus	Big nerve along the spine
Symphysis	Anterior connection between the pubic bones



T	
T +...	Date of expected delivery + days overtime
Talus	Ankle bone
Tentorium	Horizontal duplication of the meninges which separates the hemispheres from the cerebellum, through great veins passing through (venous sinus).
Temporal bone, temporale	Temple bone
Th 1-12	Thorax, thoracic vertebrae, there are 12 of them (1 - 12)
Thoracic-inlet, -outlet,	Upper opening of the rib cage
Thorax-apertur	
Thorax	Rib cage
Tibia	Shin
U	
Urachus	Connection of the bladder and the navel
Uterus	Womb
V	
Vacuum	Suction cup, instrumental delivery.
Vatter Tom Technik	A vitalised technique on the temporal bone to force the OR.
Ventral	To the belly
3. Ventrikle	Tank of the liquor in the frontal bone.
4. Ventrikle	Tank of the liquor in the occipital bone.
Vertex presentation at the delivery	There are two common ones: LOA and ROA (see above)
Viszeral	Inner organs
Vomer (bone)	Bone of the face between the sphenoid, the upper jaw, the palatine bone and the ethmoid.



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8.5. Picturesbibliography

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