

OSTEOPATHY IN THE TREATMENT OF BREECH PRESENTATION

handed in by

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1. INTRODUCTION

Breech Presentation (BP) is considered the most frequent abnormal alignment of the fetus. The conception of Breech Presentation comprises all fetal longitudinal alignments with the head of the child within the uterine fundus and its breech leading in the lower uterine segment.

Literature within the last 14 years assigns a frequency 3 – 5 % to this anomaly (Feige und Krause 1998).

1999 the hospital of St. Johann registered 4,8 % BP (26 women among 539 deliveries). 56 of these were Primary and 17 were Secondary Cesarean Sections. The other hospitals in Tirol including the University Clinic Innsbruck registered 4,7 % BP (258 women among 5423 deliveries).

According to the authors Feige & Krause 80 % of the etiology is regarded as idiopathic. Manifold mechanisms might be the cause of BP of the fetus:

Figures regarding first deliveries with BP vary between 50 % (Philipp, 1951), 56 % (Boos, 1994) and 61 % (Krause et al.,1994).

One reason could be the increase of age above 30 years in first deliveries.

Here a not yet widened uterus and rigid abdominal wall are supposed to be the reason. The possible movement of the fetus is impeded to such an extent that a spontaneous proper turn is made more difficult.

With multiparous women the tendency to BP is also enhanced because of the diminished tension of the uterine wall in combination with the decreased compression of the abdominal wall. According to the Accommodation Theory of Simpson 1849 the fetus has increased liberty of movement in the womb. It is lacking the hold to accomplish by help of his arm and legs an active turn down with its head.

The proportion of BP in premature birth up to the 37th week of pregnancy is rated at 5 – 15 % (Martius, 1986, Rayl et al. 1996). The fetal alignment for birth is assumed in 90 % about the 32nd week and persists till birth (Boos.1994).

Polyhydramnion, increased amniotic fluid, favours the tendency for BP because the fetus has no restriction. Oligohydramnion, too little fluid, restricts the movement impeding a spontaneous active version.

Myomas of uterus and cervix, malformations such as uterus arcuatus, bicornis or unicornis might favour the development of BP. Also an obstructing or low lying placenta as well as fetal malformations may be the cause for increased BP.

The intensity of fetal activity seems to play a major role in positional anomalies. Generally the fetal activity increases continually from the 20th week onward and reaches its peak in the 32nd week. Thus the maximum activity coincides with the stabilisation of the final alignment for birth. From this time onward activity remains constant decreasing towards delivery. This is not only caused by the increasing lack of space but also by the development of inhibitory central nervous mechanisms (Boots, Rayl et al., 1996). An examination of the motion pattern comparing BP and Vertex Presentation shows that BP the fetus show longer periods of motion of the trunk but less so of arms and legs. Furthermore it was observed that in vibroacoustic stimulation 10 % of the BP showed immature, incomplete central nervous motion patterns (Boos, 1994).

In subjects with Vertex Presentation this state of immaturity was found only in 6 %. Thus one might conclude that the immature intrauterine state more frequently observed at BP might be the cause for neurological developmental problems in later childhood (Boots, 1994).

These results are in accordance with Simpson's 1849 Accommodation Theory (quoted by Schrage 1973). It emphasizes the relation between „embryo and womb“ as a cause of BP. The intensity of fetal movement gains prime importance, forming a reciprocal functional union between the mother's pelvis and abdominal wall.

A further theory regards the **hypertonus of the lower uterine segment** as a cause of BP (Martius G. 1981).

BP has to be regarded as a pathological state of the fetus with consequences of a certain risk. Mostly Cesarean Section is done.

Even nowadays surgical delivery has a 4 - 12 fold higher morbidity compared to vaginal delivery. 13 % of the women need blood transfusions, 10 % have anaemia, 8% have prolonged wound healing, 9 - 40 % Endometritis (Feige and Krause 1998). Urinary infection, thrombosis and embolism show a marked increase.

On account of the normal flexion, rotation and extension movement of the fetus within the birth channel the skull bones are forced to overlap and the lung is strongly compressed. At the first intake of breath membranes and fascia are due to maximal expansion.

This stimulus for a maximal expansion having undergone compression does not occur after Cesarean Section, mostly the cranial membranes remain in flexion without expanding. Thus the head appears normal but is lacking the cranial rhythm. Vaginal delivery over several hours is ideal for the fetus to accommodate.

An attempt for External Version after the 36th week is advisable only under strict precautions, the facilities for immediate operation must be given. Vaginal delivery with BP requires a specially experienced doctor and midwife.

Feige und Krause (1998) offer the following description of the situation in BP:

„BP is a fetal ailment of which the etiology is unknown, there is no connection with anomalies of the pelvis of the mother. BP tendency manifests inferior fetal quality. Primary Cesarean Section might often be avoided if this fact were better known that BP is to be regarded as a fetal ailment in no connection with pelvic anomalies of the mother“.

On the occasion of a chat with a midwife concerning the attempt to establish intensive sensitive contact with the fetus (Haptonomy) I was inspired to examine the influence which osteopathic treatment might have on BP.

It was my wish to proffer a smooth and gentle way to help.

A thorough search of literature yielded no results whatsoever of theoretical or empirical findings regarding osteopathic treatment in BP.

Thus I carefully selected a group of pregnant women with Breech Presentation.

The purpose was to compare the effect of osteopathic treatment of women with BP in Group A with those in Group B who had no osteopathic treatment. The selection included primiparous and pluriparous women after the 30th week of pregnancy.

Together with the obstetricians a follow up was done to see whether osteopathic measures serve to attain a fetal alignment into Vertex Presentation thus paving the way for simple vaginal birth.

Criteria for evaluation were the following:

1. Does osteopathic treatment have an influence on the alignment of the fetus to the effect of it turning into Vertex Presentation?
2. What are the common dysfunctions to be found in the abdominal pelvic cavity?
3. Comparison is to be made concerning spontaneous version in the non treated Control Group (12 % possibility after the 38th week).
4. What is the rate of success of External Version by the obstetrician after the 36th week?
5. What might be the additional benefit the mothers might have by osteopathic treatment?

2. FOUNDATIONS

In osteopathy it is of prime importance to emphasise the close connections of embryological, anatomical and physiological aspects, to be aware of them and to make use of them for treatment.

Here a short review of functional anatomy and pathology concerning this thesis is given.

2.1. ANATOMY

2.1.1. FUNCTIONAL ENTITY OF THE ABDOMINAL AND PELVIC SPACE (Heller, 1998)

The bony and soft tissue elements bordering the cavity of the trunk and the abdominal and urogenital organs within act as a self contained closed system.

The soft tissue elements of the trunk wall are:

- On the cephalad side the dome shaped thoracic diaphragm.
- On the ventral and lateral side the interwoven chain of straight, cross and oblique abdominal muscles
- On the dorsal side the osseous and muscle ligament system of the lower spine and the pelvis. Lower spines, Sacrum and innominates act as shock absorbers supported by the psoas, piriform and levator ani muscles, counteracting sacral nutation.

During pregnancy the ligaments are prone to hypertrophy and are not able to compensate to such an extent as opposed to normal conditions.

- On the caudad side the three layer elastic basket of the pelvic diaphragm.

Thoracic and pelvic diaphragm and the muscle ligament system of the abdominal wall have the task to compensate and regulate all intraabdominal pressure changes actively as well as passively, as for instance while coughing and sneezing.

By suction the thoracic diaphragm equilibrates the inner organs of abdomen and pelvis from above thus alleviating the pelvic floor. By means of the physiological costoabdominal breathing movement especially in caudad direction the thoracic diaphragm stimulates the organs within and also the basis, the pelvic diaphragm. This synergism is augmented by forced speaking, laughing, sneezing or coughing.

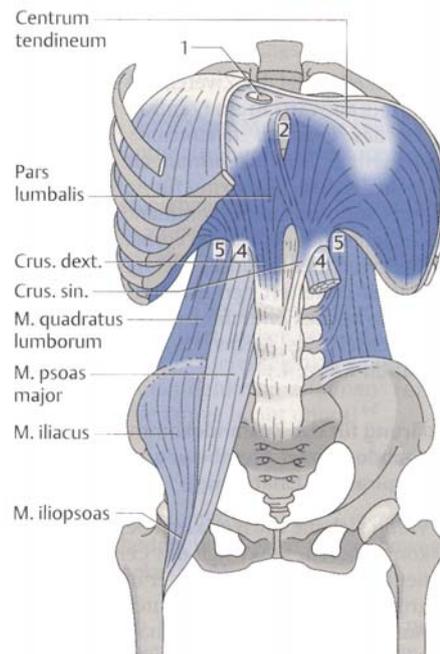


Figure 1: Anterior aspect of the thoracic diaphragm and course of the psoas muscle.

Muscle equilibrium of the abdominal wall alleviates the load on the pelvic diaphragm. Bladder, uterus and intestines are retained in intermediate position within the small basin by ligaments, connective tissue and fascia, enveloping vessels and nerves, the latter uniting to form the parametrium which connects to the pelvic visceral fascia. Ligaments, tissues and fascias restrict the movement of these organs within the pelvis. An additional hold is given by the tension of the abdominal and pelvic muscles.

Thus the organs are mechanically well embedded, similar to goods within styropor granules. This effectively eases the weight bearing on the pelvic diaphragm.

(Heller, 1998, 22, 25)

The organs filling the pelvis are situated below the abdominal intestines. They are not exposed to excessive tension they are arranged in the shape of a cupola, also the plane of the aperture around the linea terminalis has an alleviating forward tilt, the perineum in addition absorbs pressure changes.

The ligamentous pelvic diaphragm suspended in the frame of the pelvic bones contributes to stability during gate. The perineum closes the pelvic floor at the same time guarding the openings of vagina and rectum.

Every disturbance in the closed system of the abdominal space affects the weakest part. Distension of the abdominal wall and increase of pressure on the thoracic diaphragm during pregnancy tend to disturb this equilibrium.

Within the structure of the pelvic floor, two additional muscles the piriformis and obturator internus take their course along the posterior part and proceed to the major trochanter. They act as side cushions in the pelvis. They have a static and dynamic role in normal conditions as well as during delivery.

The piriform muscle originates from the inner side of the 2nd to 4th sacral segments, attaching to the greater trochanter. It rounds off the closure of the posterior pelvis and forms the birth channel together with the pelvic muscle floor and the levator ani. A few fibers of the piriformis communicate with the anococcygeal ligament leading from the coccygeal bone to the anus. The sacrouterine ligament has its origin on the sacrum similar to the piriform muscle.

The piriform muscle does extension, abduction and external rotation in the hip joint. During birth the child's head applies varying transverse pressure to the muscle and stretching its fibers, possibly causing functional problems in the iliosacral and hip joints.

The obturator internus muscle forms a fan shaped covering of the pelvic side walls extending through the foramen obturatum to the fossa of the greater trochanter acting as abductor and external rotator of the hip joint.

(Heller, 1998; 21)

A dysfunction of the piriform muscle affects the uterine corpus and cervix. It influences the position of the sacrum. The sacrouterine ligaments act as stabilisers of the cervix uteri.

The angle between corpus and cervix uteri prevents a premature opening of the cervix during pregnancy. Until birth the pelvic girdle remains closed. The pelvic floor is the last barrier.

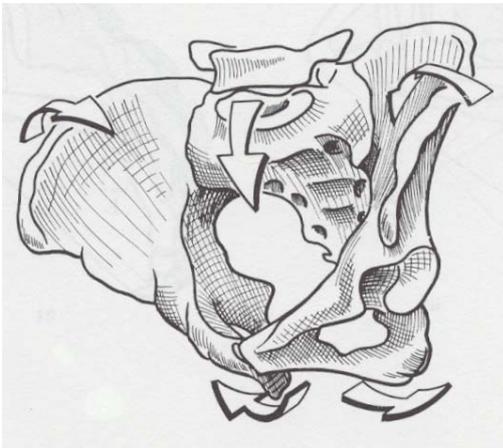


Figure 2:
nutation of the sacrum.

During birth the function is reversed, the angle changes, the lordosis is mitigated. Counternutation of the sacrum takes place. The cervix contracts and by tension of the sacrouterine ligaments tends posterior. The pelvic floor is submitted to extensive widening.

(Molinari, 1999)

2.1.2. THE BIRTH CANAL OF THE BONY PELVIS

(Heller, 1998; Molinari, 1999)

The pelvic ring consists of the two innominates, the sacrum and the coccygeal bone and their articular connections. Here the child has to make its way through.

These joints and links, lumbosacral, iliosacral, sacrococcygeal, intercoccygeal and pubic symphysis as well as the femoral joint are of prime static and functional importance for gate, standing and sitting, increasingly so in pregnancy.

During birth when the child has to pass through this narrow passageway of the mother's pelvis, the joint connections of the pelvis are submitted to excessive stress.

Hormonal activity towards the end of pregnancy loosens the joints up to 1 cm of gain of the pelvic opening.

(Heller, 1998; 14)

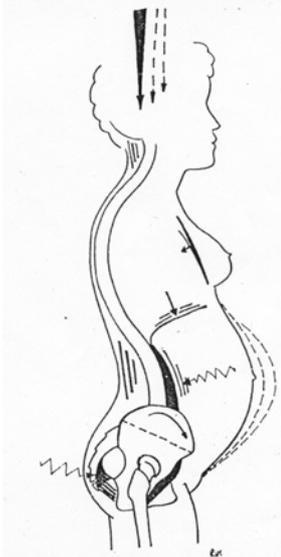


Figure 3:

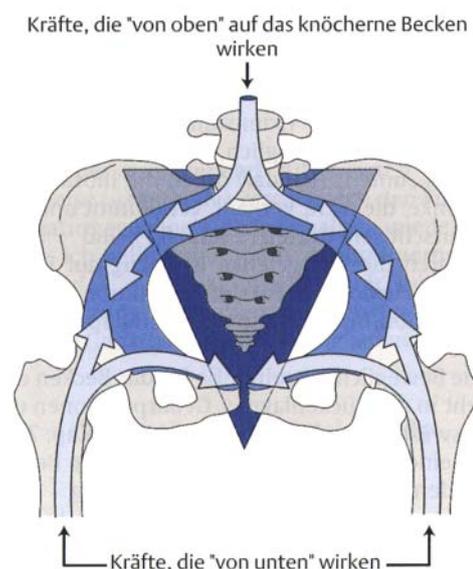
During pregnancy nutation and spinal curves increase in connection with the forward shift of the point of gravity caused by the increasing weight of the growing abdomen. The abdominal wall is considerably extended.

The pelvic ring submitted to mechanical compression in three ways:

1. Compression in the vertical by gravity of the sacrum's downward pull, with a tendency of widening the ring.
2. Compression in the horizontal plane by forces transmitted through the iliosacral joints and the connecting ligaments.
3. Compression caused by nutation of the sacrum.

The transmission of weight along the line of gravity splits at the level of the 3rd lumbar vertebra and passes by the iliosacral joints meeting the ascending force at the hips.

Figure 4



Gravity and the ascending force is absorbed to

70 % by the innominates

25 % by the pelvic diaphragm, levator ani with its striated muscle fibers

5 % by the sphincter system

(Molinari, 1999)

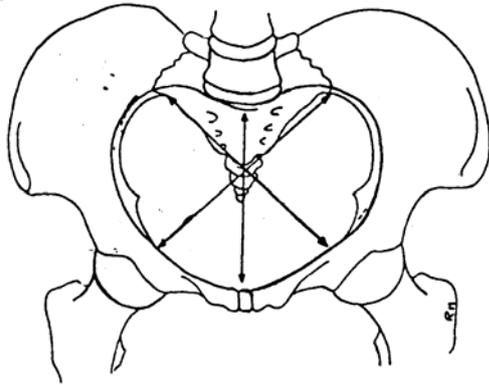


Figure 5:

During pregnancy the sacrum has the tendency to anterior movement along its oblique axes. The tilting of the uterus in the vertical axis transmits increased tension to the sacro uterine ligaments. To compensate the m. piriformis reacts with increase in tension.

2.1.3. CONSTRUCTIONAL ELEMENTS OF THE UTERUS

(Heller, 1998)

The uterus is a thick pear shaped muscular hollow organ.

It consists of the upper end, the fundus, situated above the joining of the tubes, below there is the substantial corpus where the fetus is embedded. Then it thins down to the cervix, in between the isthmus with the internal ostium, the lower end, the portio projecting into the vagina.

The uterine wall has three layers:

1st the perimetrium, a peritoneal layer.

2nd the thick myometrium containing up to 55 % of smooth muscle fibers at the end of pregnancy. The cervix contains only 5 %.

The myometrium contains to a considerable part soft tissue, enabling rapid growth without becoming over stretched and yielding good retention properties to the cervix during gestation. On the other hand rapid enlarging during birth is here feasible.

3rd The inner mucous membrane, the endometrium where the fertilised ovum is embedded. It consists of a single layer of high cylinder epithelium. The basal layer is augmented by an inner functional layer prone to the cyclic changes. It is discarded in case of non fertilisation during menstruation.

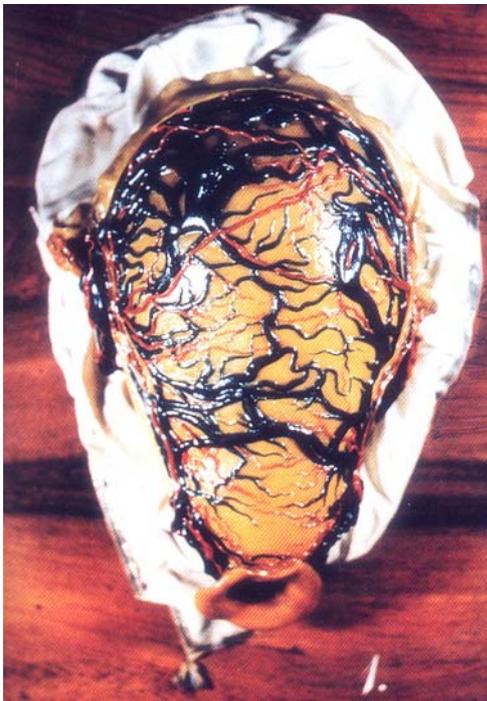
(Heller, 1998; 38)

2.1.4. VASCULAR SUPPLY OF THE GENITAL ORGANS

(Ligner, 1994; Gitsch & Janisch, 1991; Leonhard, 1991)

The outer and inner genital regions are supplied by branches of the iliac and the ovary arteries, the latter originating from the abdominal aorta.

The uterine artery, originating from the internal iliac artery, its non obliterated part of the umbilical artery, runs medially and downward in front of the ureter, along the base of the lg. latum to the cervix uteri. It is embedded in the soft tissues of the pelvic wall. It renders a branch to the vagina, from here anastomosis exists to the haemorrhoidal and vesical arteries.



The spiral course of the uterine vessels enables the adaptation to the growing womb.

The uterine and ovary artery are connected by anastomosing branches over the tubes.

The concomitant vena ovarica connects with the internal v. pudenda. The utero vaginal plexus connects with the vesical plexus such that the conception of a communal interconnecting venal system of the female intestines can be upheld.

The main drainage of the uterovaginal plexus is performed by the uterine veins at the level of the collum uteri and by the vena pudenda interna.

Figure 6: Pregnant womb at the end of gestation, anterior aspect,
uterine artery and venous uterine plexus

2.1.5. INNERVATION OF THE GENITAL ORGANS

(Ligner, 1994; Molinari, 1996 u. 1999)

The sympathetic nerve fibers for the inner genital organs derive from the renal plexus (N splanchnicus minor) Th 10 - L2.

The parasympathetic fibers derive from sacral plexus (N pelvici) S2 - S4. M. piriformis and the sacrouterine ligament originate at the same level.

The Fankenhauser cervical plexus (plexus utero vaginalis) may be regarded as an agglomeration of all nerve fibers leading to the uterus. It is situated in the retroperitoneum closely to the cervix.

This plexus has connections to the hypogastric plexus and receives branches from the 2nd- 4th sacral segments. The plica rectouterina contains the uterine cervical ganglion, emitting branches to corpus uteri, vagina and uretra.

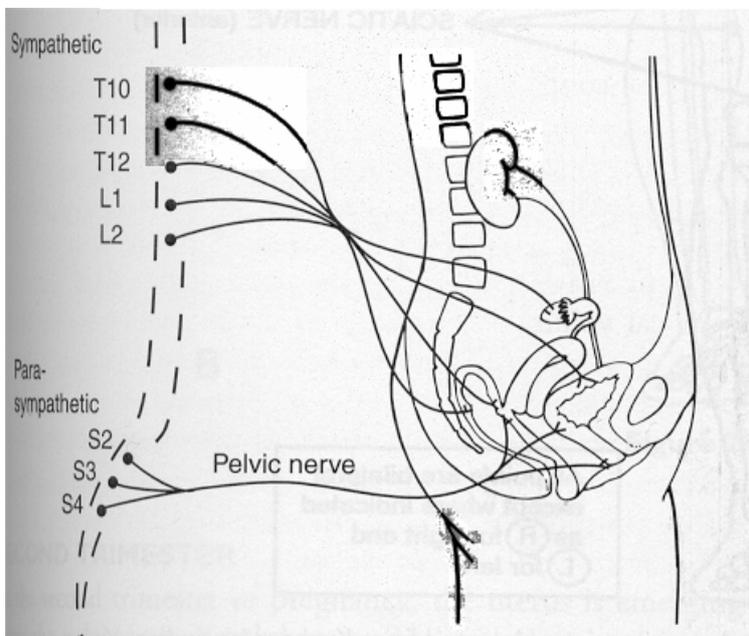


Figure 7:
Autonomic innervation of the female pelvis

2.1.6. POSITION OF THE UTERUS (Ligner, 1994)

The pear shaped uterus protrudes with its stem into the upper vaginal cave. Its anterior part faces the bladder, its posterior part the ampulla recti.

Below the vagina continues. It traverses the pelvic diaphragm and opens into the urogenital sinus. Uterus and vagina form an angle of more than 90 degrees open to the front.

Uterus and vagina are situated within the pelvis in the subperitoneal space. The peritoneum of the bladder continues to cover corpus, fundus, posterior area of the supravaginal portion of the portio and the upper part of the vault of the vagina. The anterior part of the supravaginal portio adheres to the bladder.

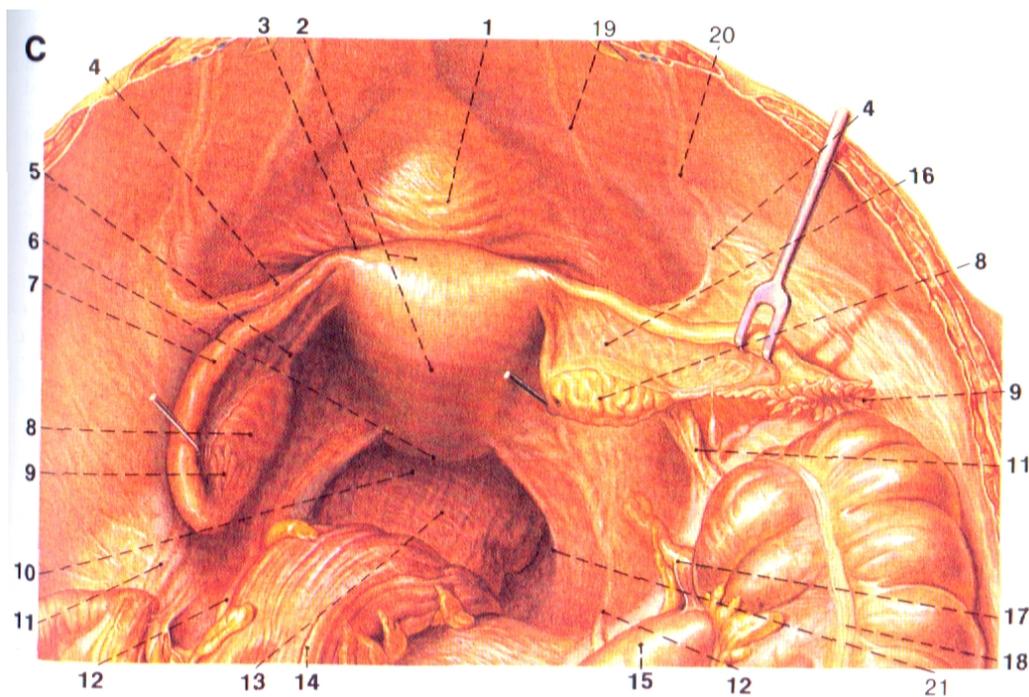


Figure 8:

View of the female pelvic cavum from above, ovary and tube are distended on the right side.

1 Bladder, 2 corpus uteri, 3 vesicouterine excavation, 4 lig. Teres, 5 lig. Ovarii proprium, 6 cervix uteri, 8 ovary, 10 douglas space, 11 lig. suspensorium ovarii, 12 ureter, 13 rectum, 14 sigmoid colon, 15 ileum, 17 appendix vermiformis, 18 ascending colon, 21 rectouterine plica

The anterior surface of corpus and upper cervix is linked to the bladder by a peritoneal fold, the pubovesical ligament. Fundus, corpus and cervix are covered by

the overlying small intestine and the sigmoid colon. On both sides of uterus and cervix the big venous uterovaginal plexus is situated. Here the ureters run along obliquely forward in median direction to reach the lateral anterior part of the bladder.

2.1.7. SOFT TISSUE LAYERS OF THE FEMALE PELVIS

The lamina parietalis covers the internal obturator and piriformis muscles on both sides.

The lamina visceralis covers the upper surface of the pelvic diaphragm and continues with the pubovesical ligaments over the bladder to the vagina and to the uterus. It serves as covering of the uterovaginal venous plexus. It is perforated by vessels and nerves leading to the intestines. From the uterus the lamina continue to the rectum forming the septum rectovaginale between vagina and rectum.

The vagina has the best fixation, its anterior wall having a stable hold on the uretra by the septum uretrovaginale, to the back the septum rectovaginale offers a slightly looser link to the rectum.

Vagina and cervix act as stabilisers of the corpus uteri. The pubo vesical ligament and the visceral lamina of the pelvic fascia provide stabilisation for the bladder.

(Ligner, 1994)

2.1.8. STABILISERS OF THE UTERUS (Barral, 1993; Ligner, 1994)

2.1.8.1. UTERINE LIGAMENT SUSPENSION

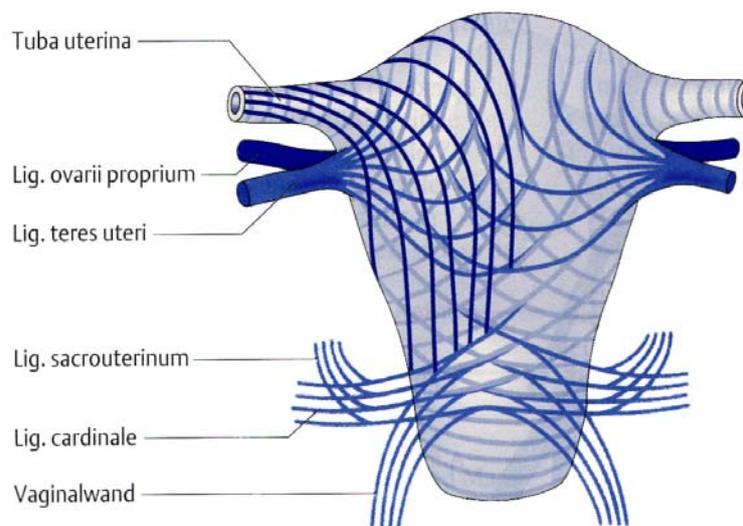


Figure 9: Course of the muscle fibers, attachment of the uterine ligaments.

Vaginalwand = Vaginal wall

The uterus is mainly stabilised in its cervical part by retinacula containing collagen, elastic and smooth muscle fibers, including the pubovesical uterine ligament extending from the posterior part of the symphyseal rim, to the neck of the bladder and to the cervix, and the rectouterine ligament.

The parametria on both side of the uterus consists of subperitoneal connective tissue. They are tent shaped stretching from the cervix to the pelvic wall. They bare the vessels for the uterus.

The rigid cardinal ligaments within the most caudad part of the parametria permit a guided anterior posterior movement of the uterus. They keep the uterus floating in the pelvis.

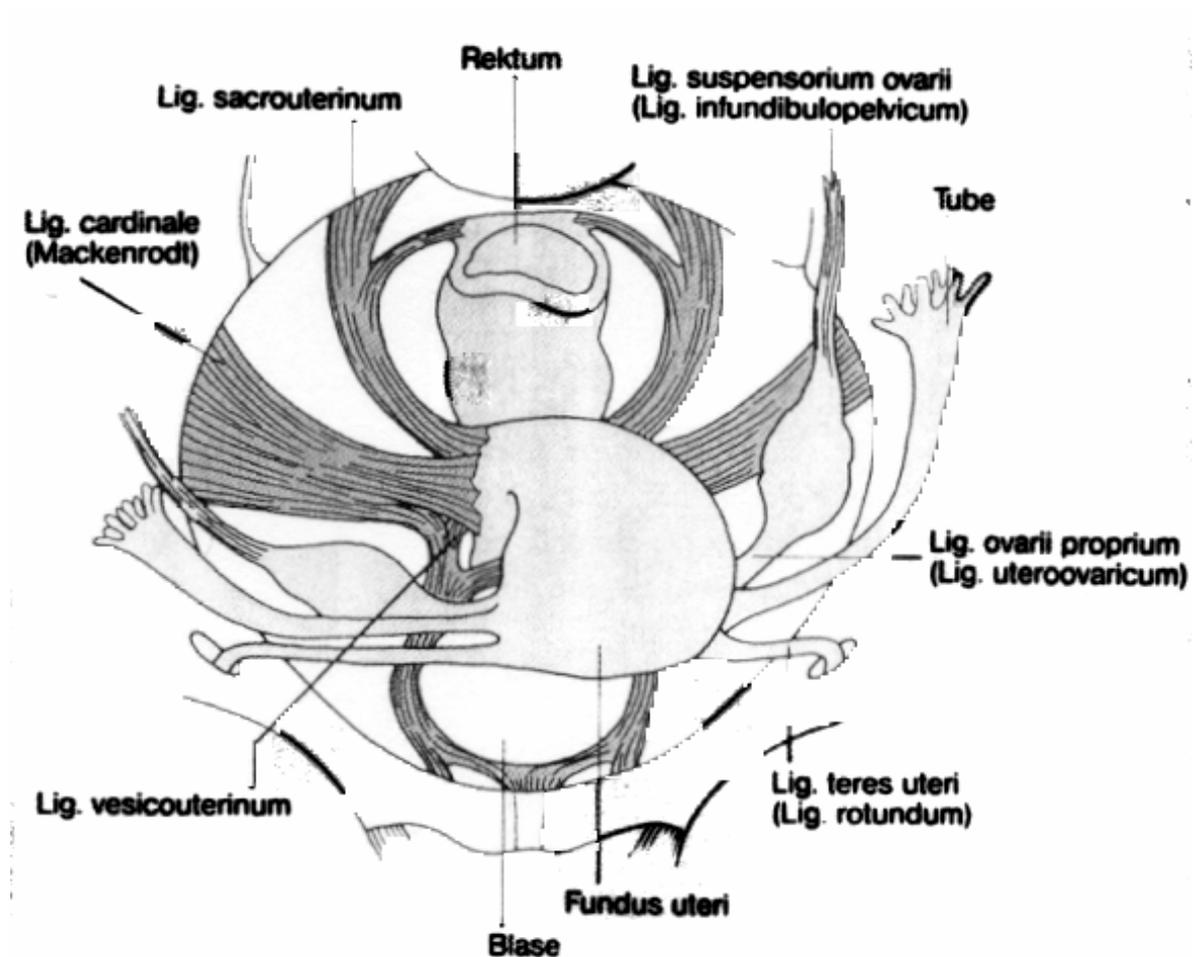


Figure 10: Blase = bladder

The ligamentum latum uteri is constituted by two folds of the peritoneal sheath, covering the parametria. It extends sideways to the pelvic wall. The upper rim partially encloses the tube. It has no sustaining function.

The strong sacrouterine ligaments originate from the 2nd - 4th sacral segments, similar to the piriform muscle. They form an arch round the rectum and insert on the posterior side of the corpus uteri, joining the cardinal ligaments. They contain smooth muscle fibers. They help to maintain the uterus in position within the pelvis, restraining from the back, thus attributing to general anteversion and anteflexion only in the isthmian part. They contain the uterine plexus, part of the inferior hypogastric plexus.

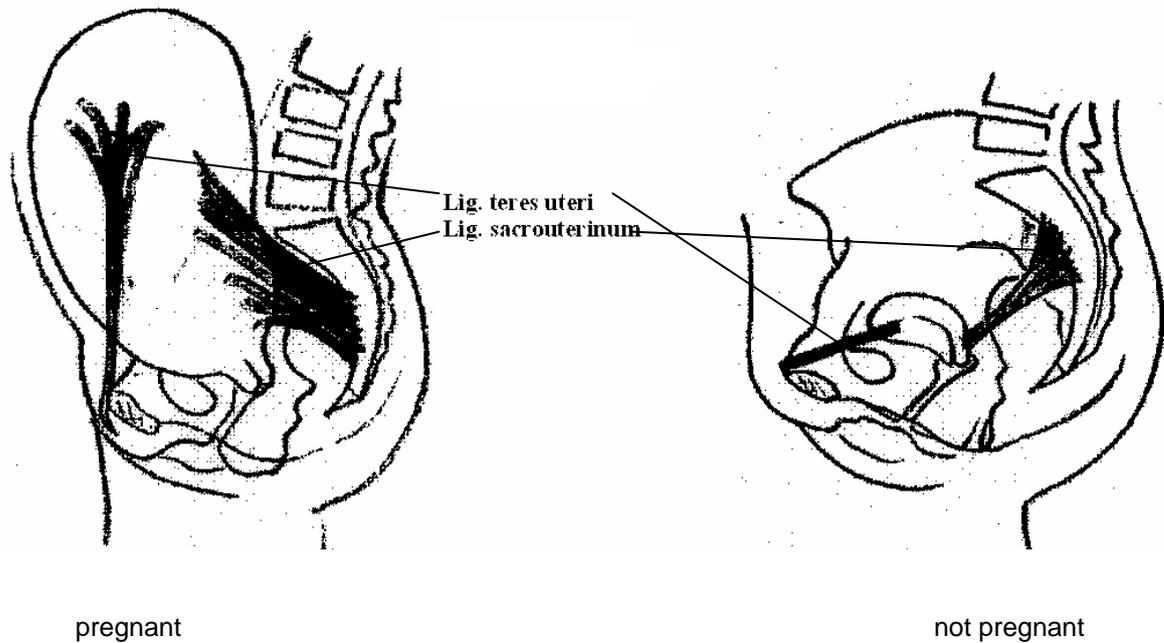
The ligamenta ovarii propria contain smooth muscle fibers, they attach to the ovaries and connect to the uterine tube angle (Leonhart, 1991, 290).

The ligamenta teretia uteri or round ligaments originate just below and anterior to the tube angle on the uterus and pass by the inguinal channel to the upper edge of the pubic bone. They keep the uterus in anteflexion and in anteversion, counterbalanced by the recto uterine folds.

They are specially prone to hypertrophy during pregnancy, finally reaching the thickness of a pencil. On account of the rising and growing of the womb a strong tension results, causing a sense of inguinal pain.

The round ligaments tend to a vertical course towards the end of pregnancy. By their strong tension they have an action similar to contracting muscles during birth (Molinari, 1996)

.. Figure 11



2.1.8.2. SUPPORTING STRUCTURES OF THE PELVIC FLOOR

(Kepp et al., 1982; Bartsch & Poisel, 1994)

The pelvic floor constitutes the posterior inferior boundary of the abdominal cavity. It consists of the pelvic diaphragm and the urogenital diaphragm.

The pelvic diaphragm is composed of the levator ani and the coccygeus muscles.

The levator group consists of the puborectalis, the pubococcygeus and the iliococcygeus muscles. The levator arises from the pubic bone lateral to the symphysis, from its tendinous arch, belonging to the obturator fascia and also from the ischial spine. The pubococcygeus and ischiococcygeus muscles are attached to the coccyx and the anococcygeal ligament.

The coccygeus muscle passes from the ischial spine to the coccyx and closes the diaphragm posteriorly.

The urogenital diaphragm is a musculotendinous sheet in the subpubic angle, arch within the females. It closes the levator hiatus inferiorly. The main component is the deep transverse perineal muscle. Anteriorly there is the transverse perineal ligament. Superficially it is reinforced by the by the superficial transverse perineal muscle .

2.1.9. PHYSICAL AND FUNCTIONAL CHANGES OF THE UTERUS AND ITS SOFT TISSUES DURING PREGNANCY (Molinari, 1996)

The following maternal and fetal systems are due to alteration:

1. The growing fetus is the cause of change in maternal tissues and in biomechanics.
2. Alterations in the circulation of liquids.
3. Hormonal changes in the iliosacral joints and in the symphysis pubis

In pregnancy the uterus at first shows moderate broadening and then mainly increase in length increasing from 7 to 30 cm at the end of the 40th week. Weight rises from 50 g to 1000 - 1500 g.

After the 3rd month the uterus rises into the abdominal cave. The ovaries approach the anterior iliac spines towards the end of pregnancy. (Molinari, 1996)

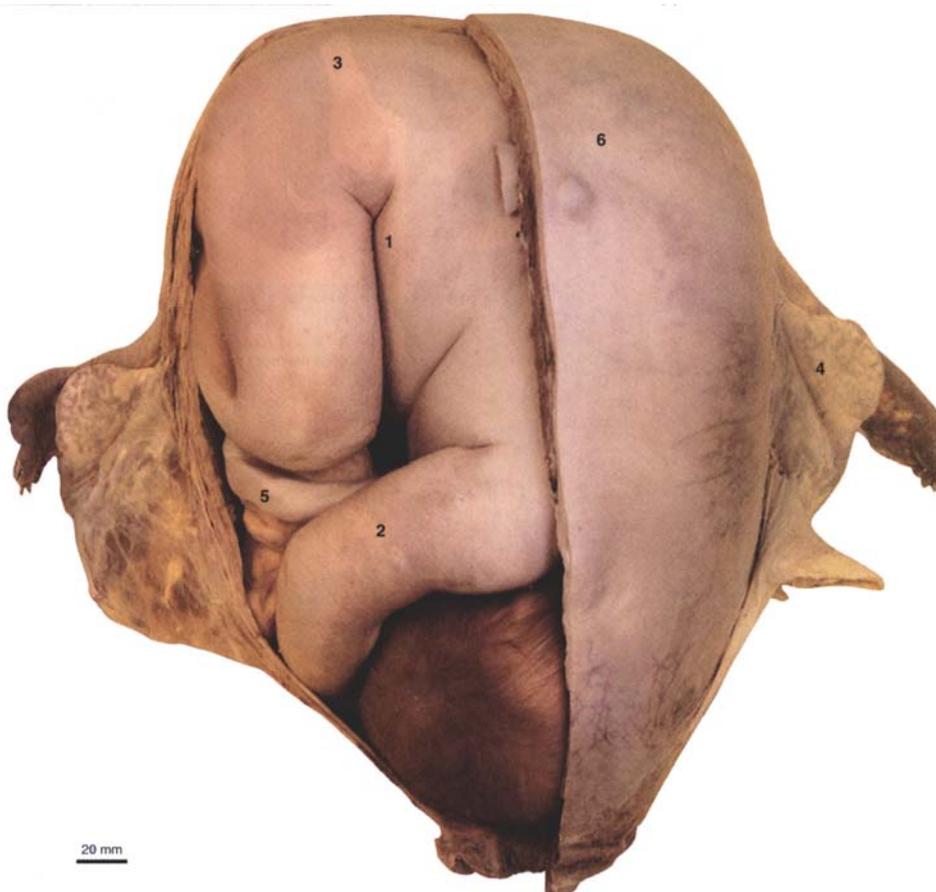


Figure 12: uterus 38th week, 360 mm

1 abdomen, 2 arm, 4 ovary of the mother , 5 umbilical cord, 6 uterus

The psoas muscles act as a guiding line for the growing uterus.

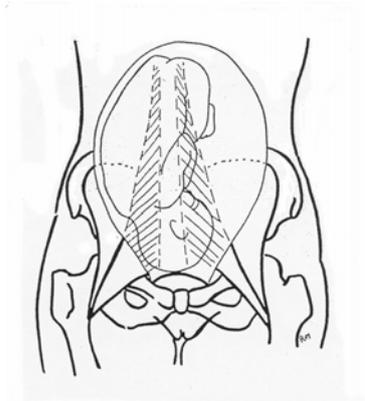


Figure 13 course of the psoas muscle

In the course of pregnancy the uterus develops increasing muscle energy expending maximal performance during birth. The corpus uteri has plenty of smooth muscle fibers. The isthmus is similar to a tendon with many receptors. The cervix serves as insertion for this muscle. The sacro uterine ligaments give backward pull to cervix and vagina thus acting as stabilisers of the uterus.

The increase of size during pregnancy has two reasons:

- Hypertrophy is active growth of already existing muscle cells caused by physical and hormonal stimulus leading to the enlargement of the uterus (pressure of amniotic fluid)
- Hyperplasia is passive growth by new formation (increase) of muscle fibers from soft tissue cells as a consequence of the adaptation of the uterus to the growing child.

(Heller, 1998 38, 39)

The thickness of the uterine wall at the end of pregnancy is 1 - 2 cm less than at the beginning being 2 - 3 cm at first.

After the 12th - 14th week the upper part of the isthmus is extended by the growing child and thus integrated in the corpus, now called the lower uterine segment. Over half of this is soft tissue, thus lacking contractility. It is distended up to 6 - 9 cm at the end of pregnancy.

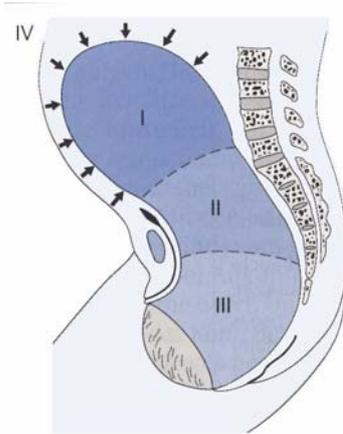


Figure 14:

- I** = active part of the uterus
- II** = passive part (lower segment, cervix, portio)
- III** = the folds in the vagina have disappeared, the aperture in the pelvic floor is open (levator portal)
- IV** = by abdominal pressure the birth of the child is effected.

Molinari said 1999 (p. 3):

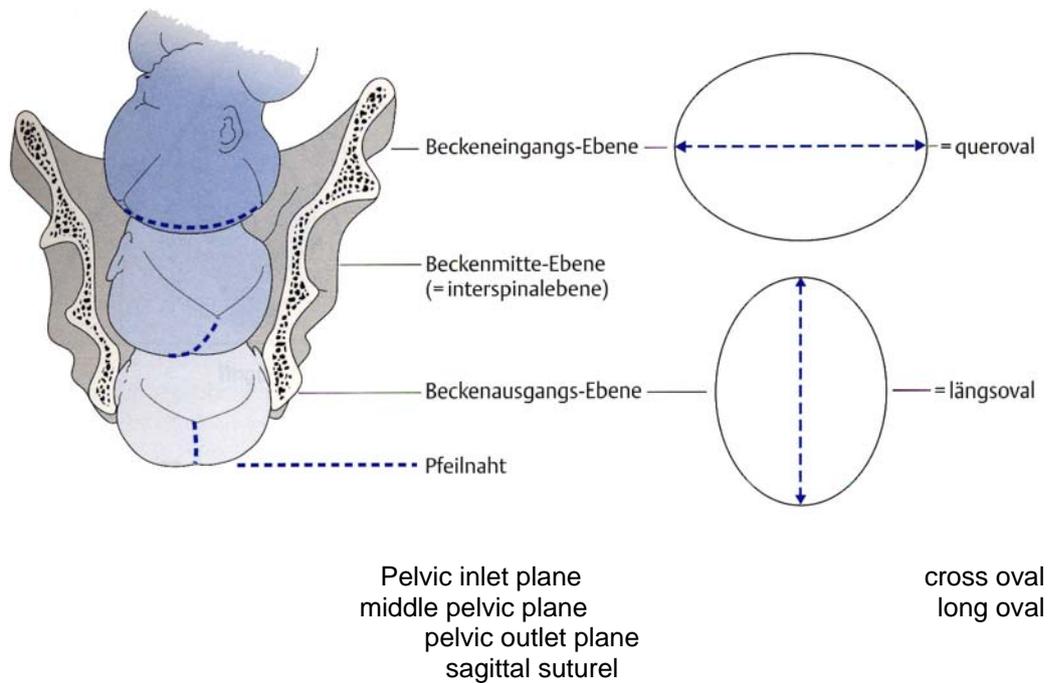
“The natural physiological rotation to the right of the uterus and direction of the uterine contraction favours fetal rotation and motion in the pelvis towards the outlet.

The uterus ought to be in similar direction of side bending and rotation to shift the fetus into rotation and to expel it. If this is not the case ineffective uterine contractions, pain and a prolonged birth might result.

When the fetus descends in the last weeks of gestation the psoas muscle acts as a guide. As the foetus is growing, one shoulder has to go behind the muscle. Rotation is necessary. The axis of the fetal cranium fits the oblique axis of the pelvic aperture. This oblique inclination is the only way to permit the relatively big head of the fetus to turn entering the pelvis.“

(Molinari, 1999)

Figure 15



Molinari (1996):

The head of the fetus descending from the psoas unto the sacrouterine ligament and the obturator internus and piriform muscles thus receives a cushion for its face. Both muscles have the same insertion on the sacrum. The muscle stretch signals information for contraction pushing the fetus towards the levator ani.

The propulsion through the pelvic channel towards the vagina is thus achieved, 1st step by the sacrococcygeal muscle, 2nd step by the iliococcygeal muscle, 3rd reactive step by the pubococcygeal muscle.

The fetal head is mainly of membranous tissue. On account of the pliability of the fetal skull, bone overlap can result in size reduction during its pelvic passage, frontal and occipital bone sliding beneath the parietal bones.

The two diagonal diameters of the mother's pelvic inlet can be increased by a combined posterior and outward movement of the innominates.

(Molinari, 1996)

2.2. PATHOLOGY

2.2.1. ABNORMALITIES OF THE CAVUM UTERI

(Kepp et al., 1982, Moore, 1993)

Myomas and fundal placenta have already been mentioned.

The origin of malformation is explained by partial non uniting or non opening of the Müller Ducts. (These originate from the intermediary mesoderma lateral to the 3rd dorsal segment about the 44th to 56th day). They unite in the 9th week to give origin to the uterovaginal duct and later to the uterus.

The least degree of incomplete unification leads to uterus arcuatus, showing an indentation of the fundus. A stronger indentation causes the uterus bicornis unicollis as found in mammals.

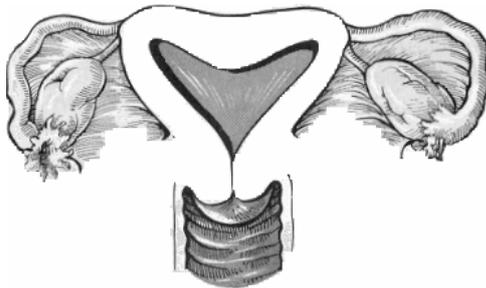


Figure 16: uterus arcuatus

In Group A up to now unrecognised uterus arcuatus was found after a primary Cesarean Section, according to the obstetrician. This was regarded as the cause for the lack of a spontaneous turn of the fetus from Breech into Cephalic Presentation. Earlier ultrasonic diagnoses had failed.

The double horned uterus can be so pronounced that the duplication runs right down to the uterine orifice, it is then described as bicornis bicollis. A further deformity to be found is the completely partitioned uterus duplex, showing two separate halves of uterus and vagina.

Asymmetric double formations occur, all being caused by abnormal development of the Müller-Ducts.

2.2.2. ABNORMALITIES OF THE AMNIOTIC FLUID

(Mändle et al., 1995)

Amniotic fluid has dynamic properties. Production begins within the very first days of embryonic life. An amount of 5 ml is registered in the 6th week. On account of the rapid metabolism the rate of production and absorption is prone to disorders. At the end of the gestation period 0,5 - 1,5 liters are considered normal. Beyond the 38th week decreasing placenta metabolism results in a reduction of 300 - 500ml.

Thus External Versions are limited to the 38th week.

2.2.2.1. POLYHYDRAMNION

Fetal deformities of the head and in the digestive tract are among the causes for increase of amniotic fluid of more than 1,5 - 2 l. This leads to a functional or anatomic impediment of the peristaltic waves, caused by impaired swallowing or by passage obliteration.

Maternal causes are more diverse including diseases leading to hydrops or polyuria of the fetus (diabetes, syphilis, nephritis).

2.2.2.2. OLIGOHYDRAMNION

This anomaly, less than 0,5 l is rare. A cause is supposed to be the lacking fetal miction as a consequence of malformations of the kidney or the urinary tract.

2.2.3. PLACENTA PRAEVIA (Martius, 1986)

Normally the placenta inserts high up in the fundus, anterior or posterior in the corpus uteri.

The placenta praevia is situated low down beyond the child, thus blocking to a greater or lesser extent the way out. The biggest danger is a premature ablation in the last months or at birth, causing bleeding.

2.2.4. THE DIFFERENT FORMS OF BREECH PRESENTATION (Martius & Rath, 1998)

2.2.4.1. SIMPLE BREECH PRESENTATION

Both legs are flexed in the hips with the thighs on the abdomen, leading part is the breech.

Its frequency is rated at 66 % of all Breech Presentations.

2.2.4.2. FOOT PRESENTATION

In the complete presentation both stretched legs lead, frequency is rated at 15 - 20 %. With incomplete presentation, one leg is ahead the other one bent back, frequency is rated at 5 - 10 %.

2.2.4.3. DOUBLE BREECH PRESENTATION

Both feet are in squatting position next to the behind. The frequency is rated at 10 % of which 5 % are incomplete double Breech Presentations.

2.2.4.4. KNEE PRESENTATION

The legs with flexed knees are leading. The frequency is rated at 1 %.

3. METHODS

3.1. CRITERIA

3.1.1. INCLUDING CRITERIA

A random selection of 18 primiparous and multiparous pregnant women with Breech Presentation was made. Of these 10 were included in Group A for osteopathic treatment not commenced before the 31st week. One of these was later excluded on account of a uterus arcuatus diagnosed at the Cesarean Section.

This study was done between March and October 2000, in cooperation with the hospital at St. Johann in Tirol, department for Obstetrics Prim. Dr. Trockenbacher and practicing obstetricians within the regions of Kitzbühel: Dr. Sachs and Dr. Matt; Wörgl: Dr. Ruth; Kufstein: Dr. Mayr and Dr. Jourdain – Madl; Saalfelden: Dr. Schwarz, and Innsbruck: Dr. Hell.

The Diagnosis was Breech Presentation.

The treatment was done in the 31st week at the earliest.

The age of the patients was between 20 and 41.

3.1.2. EXCLUDING CRITERIA

Excluded were patients with placenta praevia, vaginal bleeding, discrepancies of head and pelvis, pathologic CTG (recording of the fetal heart beat and the uterine contractions), uterine deformities, low situated myomas and multiple pregnancies.

3.1.3. CONTROL GROUP B

8 pregnant women not submitted to osteopathic treatment. They were interrogated according to the form mentioned (see appendix 56). Then they were examined (see appendix 57 - 60), but no treatment was done.

3.2. OSTEOPATHY

3.2.1. CASE HISTORY

First the patients were interrogated according the interrogation form, including diseases, accidents, fractures and operations, as well as profession, sportive activity, family situation, stress factors, former pregnancies and present pregnancy.

(appendix 57 - 60)

3.2.2. METHODS

After detailed interrogation, physical examination followed.

For examination and treatment I had decided on external techniques only, excluding vaginal and rectal approaches.

If the fetus had not turned after the first treatment, it was repeated for a 2nd or 3rd time in two weekly intervals right up to birth.

3.2.2.1. CLINICAL EXAMINATION

This was done standing (according to Molinari, 1996).

First the aspect from the front, the back and from the side was considered.

The posture of a pregnant woman is similar to a posterior typ. The sacrum is in nutation and the lumbar spine in increased lordosis.

Specially observed were mode of breathing while standing, vertical alignment of spine and legs, proper carriage of the abdomen. Does the woman carry her belly along in front of herself or does she have it well within the pelvis?

1. A general listening technique of the **fascia (écoute)**, standing with the eyes closed, might indicate reaction regarding a possible dysfunction.

Contact with the patient is established by putting one hand on the head and the 2nd on the back observing the 3 facial enveloping tracts extending throughout into the deep layers, sensing their movement.

This test might show where the basic dysfunction could be.

This has to be checked by more detailed examination.

(Barral 1993; 168 u. Chauffour, 1994)



Figure 17 and 18: écoute while standing.

2. Molinari, 1996: In the course of pregnancy the thoracic diaphragm is subdued to increasing pressure, it rises yielding to the abdominal organs pushed up by the growing uterus, acting as a counter balance and "fixed point". Hypertonus of the thoracic diaphragm towards the end of pregnancy is thus physiological.

The circumference of the chest increases by 5 - 7 cm, the subcostal angle goes up from 68 to 103 degrees. The diaphragm is lifted 4 cm.

Similarly the **global quality of the mobility of the spine and the thoracic diaphragm** is tested.

The region Th 10 – L 2 is of special importance for the sympathetic innervation.

The osteopath stands behind the patient, both hands sideways on the ribs following the breathing.

The **pelvic diaphragm** is palpated with one hand on the perineum sensing the tonus while breathing and coughing.

The **iliosacral joints** are examined according to the test of the rhomboid fossa.

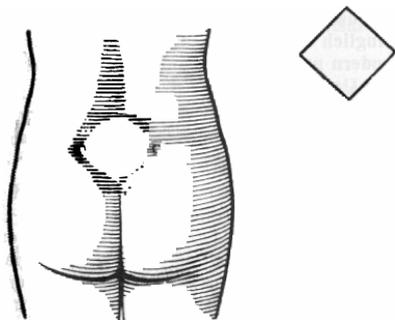


Figure 19: Normal rhomboid fossa, a square point downward while standing:

The iliosacral joints, the spinal process of the 5th lumbar and the apex of the sacrum are palpated with 4 fingers. Going into squatting position the distance between ought to remain proportional.

The distance from the middle of the cross line between the sacral joints at the level S2 to the apex of the sacrum ought to be double the distance to the spine of the 5th lumbar.

This way nutation or counter nutation of the sacrum is tested. The treatment is started there where no change is observed (Molinari, 1996).



Figure 20 and 21: motion test of the rhomboid fossa.

3. The patient is sitting on the couch, the osteopath at the back, clasping the arch of the ribs. The insertion of the **thoracic diaphragm** on the ribs is tested in lateral flexion. Both sides are compared.



Figure 22: test of the diaphragm in sitting.

Examination of the mobility of spine and coccyx is repeated in sitting with emphasis on the quality of movement.

4. - 6.: Testing was done supine taking into account a vena cava syndrome. Nausea occurring, position was immediately changed.

4. The mobility of the **pubic bones** is tested supine. The osteopath standing facing the patient, grasping both pubic bones from above and below in double lock. The patient has to lift one of her stretched legs alternately. A concomitant motion of the pubic bones is looked for.

5. 3 dimensional testing of the excursion of both **hips** is done.

6. The stretching ability and tissue quality of the **psoas muscle** is tested. It is a guiding line for the growing uterus and later for the fetal head on its passage downward (Ligner, 1994; Molinari, 1996).

Tissue quality renders information about former happenings and the present state.

With the patient supine, maximal knee flexion on one side might show a lifting of the stretched leg of the opposite side as a sign of psoas shortening. Comparison of both sides is made.

In a case of a strong lordosis it seems important to examine the upper part of the psoas. The Osteopath standing at the side of the supine patient, place the hand that is cephalad to the patient on the abdomen just below the ribs arch, retaining it. The hand caudad to the patient is pushed under the sacrum. The legs of the patient are in strong hip abduction and outer rotation, the knees in flexion with the soles of the feet touching.

While the patient exhales, the sacrum is pushed into counter nutation thus extending the lumbar spine. (Extension or dorsiflexion of the upper pole of the sacrum does flattening of the lumbar lordosis) The legs are stretched until the soles of the feet tend to come apart.

If strong resistance can be felt by the hand on the sacrum, if the psoas is shortened, it is necessary to do stretching of the muscle.

7. The elasticity of the **piriform muscle** is tested by flexion, abduction and outward rotation with hip and knee flexed, the osteopath again standing at the side. Pain or impediment of motion is a sign of dysfunction.



Figure 23

8. The **pelvic floor** is best examined through the foramen obturatum. The foramen appears rounded posterior and angular anterior. Posteriorly the quality of the m. obturator externus is palpable, in the middle the membrana obturatoria and anteriorly the m. obturator internus. (Barral, 1993; Molinari, 1996)

At the side of examination the flexed leg of the supine patient has to be placed with the foot on the table. The osteopath stands on the side of the patient to be examined. Posterior and a little lateral of the origin of the m. adductor magnus and m. pectineus, the thumb can reach the foramen obturatum.

By deep breathing or coughing the thumb can palpate muscle tension. Comparison of both sides is necessary (Barral 1993, 153).

This technique was chosen to test the shock absorbing quality of the perineum.

(Refer to chapter: Foundations, 2.1.1.)

9. The elasticity of the **sacrospinal ligament** was examined with the patient supine. The flexed legs of the patient are placed with the feet on the table. Palpating the fossa ischioirectalis is done by pressing the tips of the 2nd - 5th fingers against the middle part of the ischial bone and then sliding along towards the levator ani to palpate adhesions. Both sides are compared.

The middle part of the ischial bone gives attachment to the m. obturator internus, the m. levator ani and in their aponeurosis, the posterior part of the ischial bone serves for attachment of the m. coccygeus, the m. levator ani and the sacrospinal ligament.

The **sacrotuberal ligament** is tested in side lying position, the legs flexed. The osteopath stands in front of the patient. The tuber ischiadicum is gripped with the fingertips of both hands sliding to the inner side (Ligner, 1996).



Figure 24: Examination of the lig. sacrotuberale

The examination of the sacrum, the occiput and the uterus is done sitting, side lying or supine, depending on the condition of the patient. If side lying position is chosen, the patient takes the position which enables the fetus to turn forward, thus facilitating the turning, this according to midwife opinion.

10. Motility of the uterus (Barral, 1993) is similar to that of the bladder presumably because of their common embryologic origin. The patient is supine. The palm of one hand of the osteopath contacts the suprapubic region while the other slips below the sacrum. During flexion the hand on the abdomen moves anterior and inferior, the hand on the sacrum posterior and superior.

In the event of a restriction, movement will tend to shift to a frontal and transverse plane thus finding a new axis of motion.

(Barral, 1993, 189 f and Ligner, 1994)

11. Examination of the craniosacral rhythm

and the intra osseous state of the occiput, the sphenoid, the sacrum and the coccyx (Arlot, 1994)

The rhythm of the primary respiratory mechanism is transmitted by the fascial tracts throughout the body. The fascial tissue originates from the mesoderm. Within its liquid medium, blood plasma, lymph fluid and cerebro spinal fluid have contact with each other.

The **SSB (Synchondrosis sphenobasilaris)** is the mechanical center of the cranial base and in close proximity to the pituitary gland in the sella turcica, the steering center of hormonal activity.

The mobility of the SSB is of importance not only for the harmonic synchronism of the cranial bones, membranes and liquids. It has prime influence on the whole body

There are numerous ways of treatment of the SSB.

I did choose the following indirect technique:

The osteopath is sitting at the head end, the patient supine, the thumbs in gentle contact with the ala major, just posterior to the lateral orbita, the remaining fingers on the occiput or the neighbouring atlas.

Contact is taken up with the SSB waiting till the equilibrium of the membranes is established.

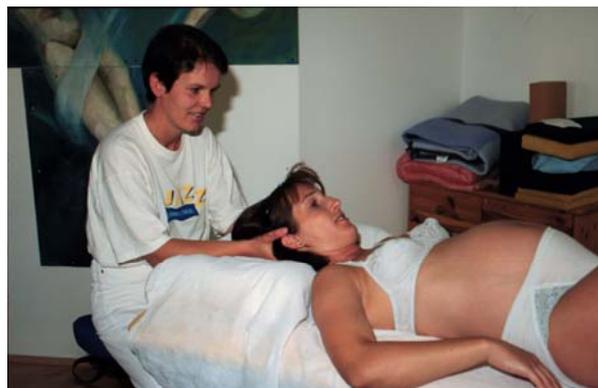


Figure 25: Intraosseus treatment of the occiput

Intraosseous strains within occiput, sphenoid, sacrum and coccyx are frequently caused by traumatic incidence and by operations. Functional interrelationship of the body as a whole and thus also to the muscular and ligamentous environment of the fetus were my reason to keep a special eye on this relating pathology.

The sacral segments S 2 - 4, center of the lower parasympathetic system is of special importance for treatment on account of its close connection to the uterus.

S 2 also serves as the caudad insertion of the dura, the connecting quality to the occiput is not elastic, thus transmission of the craniosacral rhythm is direct.

3.2.2.2. OSTEOPATHIC TREATMENT

The treatment done was individually adapted to the patient according to the type of dysfunction.

1. Treatment of the thoracic diaphragm in sitting position

Lateral flexion to the concave side while breathing deeply, favours the muscular action of the diaphragm. It also relieves the tension of the lateral muscle tracts here, thus giving better access to the deep layers allowing the manual loosening of the diaphragmatic insertions. By grasping under the ribs and letting the patient breathe deeply, the insertions are loosened.

The treatment can also be done with the patient supine, the osteopath standing at the head, the patient grasping the osteopath's pelvis. Thus the osteopath can by movement of her body transmit a stretching impulse, having the hands free to work on the arch of the ribs.

2. False alignment of the pelvis was found with 3 patients.

First the hips were mobilised then, **structural techniques** were applied to achieve anteversion and retroversion of the respective pelvic parts (posterior or anterior ilium).

The pubic bone was brought cephalad using the Mitchell technique. In 3 women treatment of a hypertone psoas muscle was done, with 2 women stretching of the piriform muscle was effected. (Refer also to examination 3.2.2.1. 6.).

Therapeutic effect was achieved by repeating the motion test.

3. Myofascial unwinding technique of the four diaphragms (tissue release):

These are the cranial tentorium, the thoracic inlet, the thoracic and the pelvic diaphragm.

The osteopath explores tissue tension till the barrier is reached. The tissues are held at the Still Point without exerting local or directional pressure. At the fulcrum there is complete calm. Then the barrier resolves and relaxation follows. The tissues gain freedom of movement, liquid perfusion throughout the membranes is stimulated.

4. Craniosacral treatment was added to enhance fluid exchange and thereby increase hormonal stimulation of the pituitary gland.

The treatment of the SSB thus seems of special importance.

The osteopath is sitting at the head of the table with the patient supine and cups the hands under the occiput (refer to 3.2.2.1. 11.) The center of equilibrium of motion of membranes and of liquids can be sensed and is maintained until the SSB moves freely.

At the beginning flexion and extension movement can be felt. In order to achieve a deeper effect a lateral motion of the occipital membranes has to be waited for. Finally these attain a slow longitudinal pattern (long tide). (Jealous, 2000)

I concentrated on the links between SSB and sacrum S2 - S4 thus influencing the pituitary and the descending parasympathetic nerves to achieve a relaxation of the uterus.

5. The prime object of treatment was to maintain **the motility of the uterus**. This was done with all patients of Group A because of my experience that all of them had hypertension of the lower uterine segment. Treatment was done with the patients sitting, side lying or prone.

First the spontaneous uterine movement is observed. Ideally flexion and equilateral rotation and side bending would be felt, finally a 3-dimensional reverse movement.



Figure 26: Frontal aspect of the uterus, corpus uteri rotates from left to right, the longitudinal axes deviates to the right

With all women a strong reduction of the amplitude of motion as well as an increase in tissue tension was found, specifically in the lower uterine segment. The osteopath is sitting at the side of the supine patient or stands behind the sitting patient. In side lying position treatment is done from the front. The hands are very softly placed on the abdomen.



Figure 27 and 28: Treatment of the uterus supine and sitting.

The movements of the fetus could be felt. Mostly they seemed sluggishness as in figure 29.



Figure 29

6. Towards the end of treatment equilibrium is achieved within the membranes of the craniosacral system. as in Figure 30.



Figure 30

After delivery I offered a control examination to mother and child of group A and B which was usually accepted.

With the mothers I always found an imbalance of the craniosacral system.

The babies delivered by Cesarean Section always required treatment. The craniosacral rhythm of the babies was weak and uncoordinated. Dysfunction in the SSB was found.

3.3. VERIFICATION

(Käser et al., 1969)

The effectiveness of osteopathic treatment was verified by ultrasonic examination within a few days of osteopathic treatment.

Ultrasound screening was first applied in medicine 1942.

Modern real time imaging on the screen (advanced B-Mode) began in the early seventies.

In this study a Picker Model CS 1900 Oculus with a B-Mode 3, 5 MHz (millions per second) Sector Transducer was used. The sound head was applied to the abdominal wall using a water soluble contact gel.

Ultrasonic waves are mechanical waves with a frequency of 2 - 10 MHz. They have a linear spread and depend on aqueous medium. On the borderline between media of different density they are partially reflected, thus allowing in the final reconstruction to depict differences in soft tissue structures.

This method has proved to be invaluable for the obstetrician rendering reliable information about intrauterine conditions, localisation of the placenta, hydramnion, uterine deformities and about irregularities of fetal presentation. The disadvantage is that ultrasound is not suited to provide exact information regarding pelvic measurements.

3.4. Reflection on the method

Since I had too few patients, it was not possible to interpret the results statistically: With only 17 test persons the percentage is neither sound nor convincing.

Group B was my control group. I examined eight women. But doesn't the fact that I touched them already mean a change in their condition? Can I really differentiate clearly between examination and treatment?

Additionally I wanted to present the external version as a possible alternative. By trying to do so my work as an osteopath has been distorted: It has not been part of the original question and the number of test persons has not been high enough to get a statistic result.

In literature the hypertonus of the lower uterine segment has been mentioned as possible reason for the breech presentation several times (Martius, 1981; Heller, 1998, Feige & Krause, 1998).

As I knew that before I started my examinations and treatments, I might well have expected this result beforehand. Since my expectations to find a reason for the breech presentation were very high, I might unconsciously have fixed this diagnosis within myself. Thus I really sensed this hypertonus uterus under my hands.

4. RESULTS

It was possible to demonstrate that osteopathic treatment of Breech Presentation in Group A yielded successful results twice as high compared to the untreated Control Group.

(see Figure 31 and Table 1)

10 patients were treated in Group A. In one of them in the course of a Cesarean Section a hitherto unnoticed uterus arcuatus was found. This deformity had been the cause for the child not turning. This case was excluded.

Of the remaining 9 women, 2 reacted to the first osteopathic treatment within 3 days verified by sonographic screen.

Among the remaining 7, 4 underwent an attempt for External Version by the obstetrician. This was done on their expressed wish done. 1 was successful.

In the Control Group among 8, 1 spontaneous version was observed. None of this group had given consent for an attempt for External Version.

Course of delivery

In Group A 3 normal vaginal deliveries took place, 1 vaginal in Breech Presentation, 1 primary Cesarean Section was done and 3 secondary Cesarean Sections were done.

Within group B there was 1 vaginal delivery, 4 primary and 3 secondary Cesarean Sections were done.

(Primary sections were defined as scheduled, secondary sections were cases originally intended to be spontaneous deliveries, eventually operation became necessary.)

In order to be able to apply a common denominator for the indication of osteopathic treatment the following factors were statistically reviewed:

(see Appendix, Table 2 – 17)

Age, occupation, sportive activity, primiparous or pluriparous, site of the placenta, fetal mobility, wish for a child, stress factors, injuries, amniocenteses, number of ultrasonic scans, course of her own delivery, presentation of the fetus, course of pregnancy and way of delivery.

Since the number of people in groups A and B were very low, the result is unfortunately not statistically convincing and sound.

At the first screening no common objective parameters could be found.

The 2 women with successfully achieved version due to osteopathic treatment had much in common. They were aged between 20 and 25, employees, primiparous and in no way sportive. Their child was not primarily intended, stress was considerable to high. They felt child movement at an early stage.

In the 17 sessions on the anamnesis the result was following:

3 housewives, 6 graduate and 8 employers take part in this study.

The placenta was with four women anterior of the uterus, with 13 posterior of the uterus.

Out of seventeen women ten were primipara, 7 were pluripara.

One single woman had been a fetus in breech presentation herself.

13 children were wanted, four weren't.

Five women were between 20 and 25 years old; three were between 26 and 30, eight between 31 and 35 and one was 41 years old.

Eight women described the stress they experienced throughout their pregnancy as high, three as average and one as low.

Fifteen women could feel their child from the 16th week of pregnancy, two from the 24th week of pregnancy.

13 fetuses had their backs to the right, 4 to the left.

Only two women permitted an Amniocentesis.

Among the 17 women were four who did serious sports, 8 who did sports on a regular, every day basis and 5 who didn't do sports at all.

Seven experienced their pregnancy as good, five as inconspicuously, and five as bad.

Clinical examination similarly showed few common traits, but rather an individual variable picture of dysfunctions, though two things were in common: A hypertonus of the lower uterine segment and a craniosacral imbalance.

Treatment comprised:

1. structural myofascial techniques

- Stretching of the proximal part of the psoas and the piriform muscles and of the sacrospinous and sacrotuberal ligaments and also treatment of tissue consistency.
- Mitchell technique applied to an innominate or pubic bone to restore pelvic symmetry.
- Soft tissue technique on the thoracic diaphragm

2. myofascial unwinding technique on the 4 diaphragms

(Tentorium, thoracic inlet, thoracic and pelvic diaphragm)

In order to reduce tissues tonus and to increase fluid exchange.

3. craniosacral treatment

- Membrane techniques for treatment of the SSB aiming to equilibrate tension within the dura.
- Intraosseous treatment of occiput, sphenoid, sacrum and coccyx (*Moulding*)
- Liquid techniques for long tide

4. visceral fascial technique on the uterus to achieve clear rhythm, increased amplitude and better quality of motility.

The women in Group A received up to 3 treatments in fortnightly intervals before delivery. After birth another examination and treatment of the mother and also of the child was done. A final concluding talk followed.

Additional opinion given by the patients after treatment:

The circumference of the womb had increased.

„My tummy became much softer and bigger. “ (patient 6)

All felt relaxed during and after treatment.

The mother child relation was intensified. Some women felt the movements of the child more clearly and more pleasantly. They were more conscious of the baby.

They felt calm and reassured regarding delivery.

They felt new strength, their self assurance was increased.

2 women who had lumbar pain were relieved of it after the 1st treatment.

Summarising the osteopathic treatment, it was found to be a good physical, mental and psychological preparation to discard anxiety and to be relaxed for birth, there was a closer tie to the child.

5. DISCUSSION

5.1. SUCCESS OF OSTEOPATHIC TREATMENT IN BREECH PRESENTATION AND DISCUSSION OF THE OWN RESULTS

Osteopathy can have an influence on fetal version in Breech Presentation.

9 patients were treated in Group A and were compared with 8 in Group B.

Among these 17 women were primiparous and pluriparous all with Breech Presentation persisting after the 30th week. Their age was between 20 and 41. This study was performed within March to October 2000.

In the Treatment Group A osteopathic treatment succeeded in achieving a version in two cases, manifested by ultrasonic check. In the Control Group B one spontaneous version was observed.

Excluding criteria were multiple pregnancies, placenta praevia, vaginal bleeding, discrepancy of mother's pelvis and child's head, pathologic CTG (Cardiotokography: recording of fetal heart beat and of uterine contractions), myomas of the lower uterine segment and deformities of the uterus.

Originally there were 10 women in Group A. Of these one was excluded later when during a Cesarean Section a hitherto unknown uterus arcuatus was found. Within this group was a child with club foot deformity not considered as a cause of Breech Presentation.

The women were sent to me by the obstetricians at the beginning of the 31st week.

Some of the patients had little motivation to have osteopathic treatment done. Most of them however had a completely open mind to osteopathy, this of course being of paramount importance for the success.

The low number of patients must be viewed critically, explained by the rarity of such cases. Being dependant on the obstetricians I had no choice to influence this. Thus this study might appear to have limited relevance.

The two versions in Group A which were noted shortly after treatment must be regarded critically, be it the osteopathic treatment or a spontaneous process. In this early period between the 30th and 34th week the chances of a spontaneous version are rated at 26 % and after the 37th week at 12 %.

A hypertonus of the lower uterine segment was noticed in all women. I may have been influenced by the hypothesis of Martius (1981) during my recent review of literature, thus biased knowing his theory assuming hypertonus as the primary cause of Breech Presentation and thus assuming hypertonus to be obligatory. Measurement of uterine wall tension really ought to be done in future to have objective data.

Ultrasonic screening as a means to gather information from within the womb renders new possibilities. However the question arises regarding negative physical and psychological effects on mother and child. Might the mother's awareness of the pathology set off the vicious circle of fear, tenseness and pain? Breech presentation might just be a transient state, righting itself on its own.

My literary research in the Internet regarding osteopathy in the treatment of Breech Presentation yielded scanty results. Thus up to now empirical data regarding osteopathic treatment are practically lacking.

Molinari (1996, 1999) and Barral (1993) are osteopaths active in the obstetric field. I took up some of their suggestions to build up my own experience.

I did visceral treatment to relax the uterus with the idea of creating sufficient room for the fetus to perform its own version.

I did intraosseous treatment on the occiput; on the sphenoid, on the sacrum and on the coccyx with the idea to work on the parasympathetic links between the sacral plexus and the uterus in order to lessen uterine tension.

My experience increased with every woman treated, but there is certainly no simple concept in the treatment of Breech Presentation.

5.2. SUCCESS AND RISKS IN THE TREATMENT OF BREECH PRESENTATION AND REVIEW OF LITERATURE

5.2.1. EXTERNAL VERSION VERSUS CESAREAN SECTION

External Version is a mechanical method to effect a change in fetal alignment from without. External Version is performed when the risk of a spontaneous vaginal delivery or that of a Cesarean Section is rated considerably higher.

After the 37th week of pregnancy a spontaneous Version was seen in 12 %.

A return to original Breech Presentation after External Version was seen in 100 out of 2650 cases – 4 %.

(Feige & Krause, 1998).

Comparable measures are known as early as the 4th century B.C.

In the 1950ies and 60ies Cesarean Section was frequently performed in Breech Presentation.

In the late 1950ies Primary Cesarean Section was considered as an alternative to vaginal delivery in Breech Presentation. It was liberally performed, especially in primiparous.

Cesarean Section is to be regarded as an interperitoneal abdominal delivery.

The surgery comprises a low abdominal cross incision, the tracts of the two rectus muscles are bluntly spread apart. Dissection is done to separate the lower uterine wall

from the bladder. Then a length incision is done in the anterior lower segment, opening the cavum uteri. Incision of the amnion and extraction of the fetus follows.

Internet search yielded over 100 articles about External Version in Breech Presentation.

Searching Medline between 1966 - 1997 9385 cases of Breech Presentation were found of which 5817 External Versions were successful, a rate of 62 %. The individual rates varied between 32 % and 96 %.

Reduction of the uterine muscle tonus creates more favourable conditions for External Version. This can be achieved by Tokolysis, a specific medication with substances effecting uterine relaxation. Tokolysis is thus frequently and successfully combined with External Version.

In 1974 External Version was done by Saling and Müller-Holve in Berlin on account of the high risk of abdominal delivery:

"There is a significantly increased rate on morbidity and mortality seen in the high frequency rate of Cesarean Section done for Breech Presentation. Often there is no medical reason for this high incidence of Cesarean Sections, the selection being prone to very subjective notions of the performing surgeon. A strictly objective evaluation of the necessity for operation could help reduce complications and sequels and also lower the costs".

Pluta et al. (1981, Berlin, Neuköln) had 12960 deliveries between 1974 - 1980, 508 versions were attempted (3,9 %) of which 53 % were successful. *Pluta et al.* experienced 11 incidents among 536 trials, precocious partial ablation of the placenta and prolaps of the umbilical cord was observed. Less forceful manipulation and growing experience can reduce mishaps.

Emerson reporting in a lecture in Heidelberg (1996), states that there is a steady increase of Cesarean Sections in the U.S.A.. particularly noxious effect of surgical delivery is the sudden environmental change for the child. Within an average of 37

seconds the fetus is suddenly deprived of its uterine support and exposed to a completely different environment. In addition the child is often subdued to forcible manipulation during extraction. Emerson concludes that every Cesarean Section causes mental harm to the child.

In the Journal of Austrian Midwives (1997), reference is made to External Version as practised in the City Obstetrical Clinic in Stuttgart:

"To reduce the high rate of Cesarean Sections and their risk in morbidity and mortality, External Versions are done in the 37th week. This has been the practice for many years. Excluded was multiple pregnancy, earlier Caesarian Section, uterine deformity, early amnion rupture, placenta praevia and placenta deficiency. Preconditions for successful version are sufficient amniotic fluid, posterior placenta and sufficient mobility of the fetal breech.

Since 1986 over 800 versions were done, 60,5 % of these with success. No sedatives were used, ultrasonic and CTG check was done.

Fetal development after successful version and vaginal delivery is rather similar and comparable to that of normal births in Vertex Presentation".

Schmidt et al. (1997), maintain that a posterior placenta be precondition for success in External Version. Children who had undergone version did not seem substantially at a disadvantage in their perinatal conduct compared with those not involved in version.

In the Austrian Journal of Midwives 1998, Krause reports from the Obstetrical Clinic Nürnberg about early and belated morbidity concerning intended vaginal deliveries in Breech Presentation:

"There was no connection between later morbidity and the birth protocol. Our results show that a normally developed fetus in Breech Presentation with a gestation period of over 37 weeks does not require Cesarean Section on the part of the child. In a retarded fetus with a gestation of less than 37 weeks a Primary Cesarean Section might rather be considered when additional risk may be expected".

In Kali, Columbia (1999), a study has shown that in 81 % of primary Cesarean Sections there was no good reason for doing surgery. 460 patients from 4 hospitals were included in this study. Breech Presentation, insufficient labour and fetal distress were the common reasons for the surgical intervention.

(Gomez & Carrasquilla)

At the hospital of St. Johann in Tirol Dr. Elke Schwaiger had no incidents in a series of versions done with tokolysis in the 38th week.

Stadelmann (2000) proposes that Cesarean Section only be done as an emergency with all its operative risks being greater than those in physiological delivery.

Such a statement might appear too generalised and somewhat uncritical because there are times when physiological delivery comprises incalculable risks.

Concluding it must be urgently postulated to avoid surgical measures by all reasonable means in favour of a physiological delivery in order to spare the child physical and mental threat.

5.2.2. SIDE EFFECTS AND GRAVE RISKS

Transient CTG alterations are frequently observed after External Version, at the worst a pronounced bradycardia. A spontaneous return to normal after 10 minutes is usually the case.

Feto maternal transfusions are observed on account of precocious placenta ablation or because of umbilical cord anomalies (1 % - 30 %).

Intrauterine fetal death can occur days or even weeks after External Version (1 % - 2 %).

Pluta et al. (Berlin, Neuköln, 1981) experienced 11 incidents among 536 trials, precocious partial ablation of the placenta and prolaps of the umbilical cord was observed. Less forceful manipulation and growing experience can reduce mishaps.

Lelle et al. (Hannover, 1989) report on 663 cases in Breech Presentation between 1976 - 1985. The maternal complication rate in Cesarean Section was 29 % compared to 8,6 % in vaginal delivery. Though danger of injury for the child is double in vaginal delivery (7,5 % versus 2,9 %).

Troczynski et al. (Polen, 1990) report 15,4 % of average perinatal morbidity of the child in Breech Presentation, 22, 7 % in vaginal delivery and 11,8 % in abdominal.

Wolke et al. (University of Hertfordshire and University of Munich, 1997) have compiled results which comprise early and late morbidity of children in Breech Presentation delivered both by the abdominal and the vaginal way:

In Bavaria he traced the development of new born up to the 5th year. He interprets Breech Presentation as a sign of more frequent prenatal affection.

Although Breech Presentation children had somewhat reduced development quotients in the first months, they all showed normalisation of long term cognitive and motor development after 20 months.

Irion et al. (Switzerland, 1998) in a study of 705 cases concluded that the risk of maternal complications is 10, 5 % less with scheduled vaginal birth than with section delivery

5.3. OTHER CONSERVATIVE METHODS IN THE TREATMENT OF BREECH PRESENTATION

5.3.1. INDIAN BRIDGE POSITION

Technique: Pelvis and legs are positioned above head level, relaxed abdominal breathing is emphasised.

There are no significantly better results than in the untreated Control Group.

Obwegeser et al. of the Obstetrical University Clinic of Vienna in 1999 examined 109 women within the 30 -32nd week. The rate of spontaneous version was not significantly higher in the treated group (70 % versus 63 %).

5.3.2 KNEE ELLBOW POSITION

A study of Smith in Australia in 1999 showed that the knee elbow position yielded no success regarding spontaneous rectification of Breech Presentation.

6. CRITICAL REVIEW AND OUTLOOK

Specific osteopathic treatment was mainly done as follows:

Structural techniques were applied on the pelvis its adjacent ligaments and muscles. Visceral techniques were applied to increase motility of the uterus. The SSB as a central steering mechanism of the endocrine and the autonomous nervous system on the one side and the close link between uterus and sacral plexus on the other were both used to the effectiveness of comprehensive craniosacral treatment.

Feige, Krause and Wolke regard Breech Presentation as a result of fetal ailment.

My thought was, that by craniosacral treatment I might be able to directly influence this ailment of the fetus.

The fetus within the amniotic fluid and the cerebrum equally suspended in the cerebrospinal liquor are somewhat alike.

My wish was to give specific, individual treatment to the fetus to help it to get its bearing within the womb and to some extent be able to develop the instinct to be aware of the dangers and to assess the possibilities to acquire correct alignment by itself.

The search of the hitherto unknown causes of Breech Presentation remains to be pursued.

Furthermore I am going to continue my study to implement the scarce number of cases hitherto included and thus arrive at more telling results. It would also be of interest to have more details in comparing normal pregnancies with those in Breech Presentation.

In the year 2006, six years after completing my work of diploma, the most effective treatment is the one I learned from Dr. Jim Jealous in the year 2001:

Jim Jealous thinks that breech presentation is the result of a fetus that is disorientated because the functional axis of the uterus has been lost.

The preparation of the biodynamic treatment starts with the patient sitting on the medical bed: The knees of the pregnant woman should be free and the lower legs should hang. The hands of the osteopath lie under the tuber ischii and show a transversal axis. The osteopath leans back physically and mentally and gives the treatment room. The axis through the acetabuli is very important here.

The woman lies down on one side. The osteopath has her/his hands on the abdomen: one hand is cranial and the other one caudal alongside the uterus. The uterus is originally made of two parts (see 2.2.1.). The osteopath imagines a middle line (Bregma – 3.ventricel – os coccyges) and also comes to the middle of the uterus. She or he stays in good contact until a longitudinal axis forms through the uterus.

Often the patient automatically turn onto their abdomen while being treated.

At the end of the session the osteopath checks the craniosacral rhythm at the Foramen magnum to resolve possible blockades at the system.

It was said that the midwife questioning the mother in presence of the father asked them to consider if the sitting position of the baby might not be interpreted as a protesting pose, a sign of lack of consideration of the growing child.

It would be of great advantage to have closer contact and even better teamwork with the midwives as they have considerable practical experience and closer contact to the patient.

Furthermore it would be interesting to find out in how far a breech presentation could be changed by acupuncture, moxibustion and more recent studies on the knee-elbow-position (“Tönnchenstellung nach Heller, p. 233, 1998).

The object should be to go as far as possible the natural way of birth and to reduce surgery. Here a good cooperation with other osteopaths would be desirable to widen outlook and improve methods.

A closer contact between obstetricians, midwives, physiotherapists, doctors with a certificate in acupuncture, TCM-therapists (traditional Chinese medicine) and osteopaths could serve to allot to Osteopathy its due part in obstetrics for the benefit of all.

7. CONCLUSION

1. In this thesis it has been shown that Osteopathy can be applied to treat pregnant women with Breech Presentation. This was done after the 30th week of pregnancy.

Breech Presentation is the most frequent anomaly in false fetal presentation. It occurs in 3 - 5% of all pregnancies.

Including criteria were primiparous and multiparous women after the 30th week of pregnancy, between March and October 2000. They were divided into 2 groups. In Group A: 9 women were subjected to osteopathic treatment. In Group B: 8 women served as a Control Group.

Excluding criteria were multiple pregnancy, placenta praevia, vaginal bleeding, uterine malformations, discrepancies of the pelvis and head, low situated myomas and pathological CTG (Cardiotocography: recording of the fetal heart beat and of the uterine contractions).

The treatment was done up to 3 times before delivery in fortnightly intervals.

One treatment of mother and child was done after birth.

Following treatment ultrasound affirmation of the result was done by the obstetricians.

The osteopathic treatment consisted of:

- Mobilising structural techniques applied to pelvis and its soft parts
 - Visceral techniques on the uterus to increase motility
 - Craniosacral techniques (SSB, moulding, long tide)
2. As a result it was found that in 22, 22 % fetal version was achieved within the first days after osteopathic treatment. In the Control Group spontaneous version took place in 12, 25 %.

3. External Version combined with tokolysis was found to be successful in 25 % in my findings. Generally more than double, 62 % are the average. This difference might be explained by the fact that all the women in the Control Group , nearly half of all the patients, refused to have External Version done.

Also the very small number of cases cannot be taken as really reliable for statistics. Thorough experience and readiness for operation are preconditions.

I have reviewed diverse international reports concerning External Version and other conservative methods in the treatment of Breech Presentation. I have also drawn a comparison between abdominal and vaginal birth.

4. Osteopathy is proposed as a new approach for "gentle" treatment in Breech Presentation.

I hope that this study will serve as an incentive for further research in this field!

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QUESTIONNAIRE FOR THE CONTROL GROUP

Date:

Nr.:

Diagnosis and week of gestation (at first contact):

Date of birth:

Calculated date of birth:

Profession:

Sports:

Social status:

Trauma, operations, accidents, diseases:

Gynecologic diseases:

Description of their own birth:

Primipara

Pluripara

When pluripara: description of previous pregnancies:

Pregnancy1: optimal normal bad

Pregnancy2: optimal normal bad

Pregnancy3: optimal normal bad

description of previous births:

Birth 1: optimal normal bad

Birth 2: optimal normal bad

Birth 3: optimal normal bad

Kind of birth1: vaginal prim.sectio sec.sectio

Kind of birth2: vaginal prim.sectio sec.sectio

Kind of birth3: vaginal prim.sectio sec.sectio

description of this pregnancy:

Optimal normal bad

.....
Stress (subjective rating): high medium low

Wanted child: yes no

Fetal movement:

Location of plazenta, amount of amniotic fluid:

Number of ultrasonic screen:

Amniocentesis: yes no

Other forms of therapy:

(External fetal version, Accupuncture, Moxibustion, Indian turn,.....)

Result, course of delivery:

CASE HISTORY FOR THE THESIS „OSTEOPATHY IN THE TREATMENT OF BREECH PRESENTATION“

date:

number of the test person:

date of birth:

profession:

sports:

social status:

Primipara or Pluripara:

Diagnosis:

Week of gestation:

Calculated date of birth of the child:

Name of the obstetrician:

Consent to the osteopathic treatment during pregnancy and after birth:

**Trauma of pelvis, head, trunc and extremities,
accidents,
operations:**

Chest, lung:

Head, headache, throat ears, nose, eyes, teeth:

Digestion:

Allergy:

Stress:

Sleep:

Decisive events, deaths:

Kidney, bladder:

**Gynecologic diseases, previous pregnancies, abortus, course of previous deliveries,
first menstruation, pain during menstruation
course of own birth, if known:**

**Description of this pregnancy, wanted child,
pain, labour pains,
amniocentesis,
number of ultrasonic screen,
placenta location, fetal movement,
alignment of fetus,
other ways of treatment on account of BP
(acupuncture, moxibustion, knee ellbow position,.....):**

prescriptions:

**present weight and before pregnancy:
size:**

constitutional type:

Blood pressure: right: left:

EXAMINATION

ècoute while standing-position

Spines, rhomboid fossa; especially sacrum and coccyx

Thoraco abdominal diaphragm

Pelvic floor

Pubic bone

Hip joints

M. psoas

M. piriformis

M. obturatorius

Lig. sacrotuberale

Lig. sacrospinale

Sacrum

Uterus

Fetal movement

Craniosacral

1st TREATMENT

2nd TREATMENT,
effect of the 1st treatment:

3rd TREATMENT,
effect of the 2nd treatment:

4th TREATMENT, post partum, final talk, check of mother and child,
(treatment if necessary)