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A PAPER ON SEPARATION OF THE SYMPHYSIS PUBIS DURING PARTURITION.*

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This subject was not chosen with the hope of presenting anything original, but it had become one of interest to your reader on account of a case treated at the hospital early in the winter, and it was hoped, would be of interest to the society.

The text-books on obstetrics have very little to say about it, and in reports of cases and dissertations on the subject also, as found in the accessible medical journals, the literature is not full. Most of the facts in this paper have been obtained from a treatise by Dr. Fr. Aklfeldt, Leipzig, as found in *Schmid's Jahrbucher* for 1876. Until 1868 he had been able to find but twenty cases recorded, but at the date of his paper had collected upwards of one hundred cases, and thought they would be found much more common than usually supposed if the slighter forms did not so often pass unnoticed, and physicians were not ashamed to publish the cases occurring in their practice.

The extent of separation which can take place between the two pubic bones is a subject which has given rise to considerable discussion among obstetricians. Some writers have gone so far as to maintain that a limited amount of separation takes place in all cases of labor, while others have as positively

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asserted that no such separation is possible without giving rise to serious results to the mother; and some have advised and practiced an operation for division of the symphysis pubis in cases of contracted pelves, with the hope of increasing the diameters, an idea which is very recently being revived in Germany.

Relaxation and separation of the pelvic symphyses, as evidenced by reported cases, may occur during pregnancy, during parturition, and even in the puerperal state, here starting from septic infection. Outside of these there are a few cases caused by muscular action, as in riding, the rider being suddenly thrown up in the air and as suddenly falling back on the saddle.

During pregnancy there may be relaxation of all the symphyses of the pelvis, sometimes due to traumatism, more often without any apparent cause. It is accompanied, usually, with pain in the region of the hips, and this may go on until the patient cannot stand or walk and has to take to her bed. The symphyses often are plainly movable. Inflammation and pus formation may take place. This condition does not have a favorable influence on the course of the confinement, as might be thought. Labor is rather slowed because of and by the pains caused by the relaxation.

In a case reported in the *Chicago Medical Journal and Examiner*, the patient, pregnant at nearly full term when a physician was call in, walked with the aid of two canes. The abdomen was much distended, walls of vagina relaxed and partially prolapsed, rectum prolapsed, symphysis pubis separated three-fourths of an inch, the bones at the sacro-iliac synchondroses quite movable. The inability to walk had come on gradually. She could feel the hips move up and down when she stepped and felt as if pried apart. Confinement took place a week later. Presentation first vertex. Pains strong and regular but progress slow. Labor lasted seven hours. During the passage of the head the pubic bones separated one and one-fourth inches, so two fingers could be placed between. The child was large, with a very firmly ossified head, and looked as if a month old. The patient had had the same trouble in a previous confinement, but not to such a degree as in this one. She made a perfect recovery.

The notes of a case as written by the sufferer herself, a very intelligent lady, may be of interest. They are, briefly, as follows.* During her first pregnancy she was so ill with various other troubles that she was obliged to keep her bed after the first month and so did not know whether she had separation that time. During three succeeding pregnancies she was unable to lift her feet from the floor after the end of two months, but managed to shuffle around by bracing her knees together and pushing a low chair before her. Soon she began to have what

*Obtained through the kindness of Dr. Mary F. Hobart, Boston.

she thought were rheumatic pains in the pelvis, and after the seventh month severe neuralgic pains in the uterus and lower limbs, and could not turn or be turned in bed without screaming. She could lie only on her back, and had the sensation as if "the pelvis were parted." In the first of these three pregnancies the diagnosis of separation of the symphysis was made at the beginning of the ninth month by Dr. Charles Meigs. When he turned the patient on her side the "bones moved upon each other with a report like a pistol, which was heard in the next room." She was not "conscious of any trouble during labor, other than some soreness in the pelvic bones." The suffering during labor was very moderate, but that may partly have been owing to the fact that her children were very small, averaging only a little over three pounds in weight. Twice afterwards she became pregnant, but each time miscarried at three months. Even now, thirty-six years after the first pregnancy, if she walks too far, or overdoes in any way, the pelvis aches.

One case more, caused by traumatism. A primipara, aged twenty-five years, about the middle of pregnancy received a severe blow on the symphysis pubis. She had some slight febrile movement and suffered some pain, which soon grew less and disappeared, but with it the ability to walk was lost. She was delivered, six weeks too soon, of a small, feeble child. Puerperal fever and death followed. At the autopsy the symphysis pubis was found separated, the ends of the bones completely destroyed and bathed in pus.

To come now to separation during labor. We are taught that it may take place spontaneously when inflammation or excessive relaxation of the joints exists at the time of labor, but more commonly is the result of difficult forceps operations in cases of contracted pelves; that the risk of this is great when forceps are applied at the brim and traction is made in a direction anterior to the pelvic axis.

The brim or inlet of the pelvis is to all intents and purposes a solid ring of bone whose form cannot be changed. If there is force enough to overcome the resistance, separation must occur in two places. It is evident that a break cannot occur in a perfectly solid ring in one place only. Separation will occur either in the symphysis pubis and one of the sacro-iliac joints, in both of the synchondroses and not the symphysis pubis, or in all three of them. Cases are recorded showing the three forms. The separation of the pubes is the primary and the other the secondary. That of the pubes is the most easily explained, and this, with separation of the right iliac joint, is most common.

The degree of separation is very variable. Frequently the symphysis pubis is entirely separated and the iliac symphysis only partly, on the anterior surface. It depends upon the

structure of the pubis, quantity of synovial fluid, strength of ligaments, whether separation takes place in the middle of the cartilage, or whether the cartilage is separated from the bone at one side. More force is needed for the latter, there is more apt to be a sound at the time of separation, and crepitation can be felt and heard afterward. A slight degree of separation may occur without much injury to the capsule of the joint. Severe cases may be complicated by injury to the bladder, urethra, vagina and cellular tissue between.

It would quite naturally be thought that such extensive injury to the pelvis can occur only through great force. The literature shows that forcible extraction of a large head was the cause in a large number of cases. But the number is not small where separation was found though force was not used, sometimes even in normal labor, where the pains were not excessive. From this it would seem that some pelves, or their articulations, are predisposed to rupture. This is most easily explained when an inflammation of the joints, an accumulation of pus in them was present before parturition, as in the case due to traumatism, cited above. But the quantity of fluid is not necessarily due to traumatic causes. It is found to vary in different persons and may be a fault of development, as is ectopia vesicæ. Then if there is any want of proportion between the head and the pelvis, there will be separation. If there is inflammation of the joints, a very slight force may cause separation. If these conditions are absent, the form of the pelvis may predispose.

The most numerous cases recorded are those in the uniformly contracted pelves. In these, and in the pelves deformed by osteo-malacia, there is narrowing of the transverse diameter at the brim, constituting the most important cause. The head is pressed down into the narrowed space and naturally must separate the symphysis pubis if it is to pass through the pelvis, and secondarily the sacro-iliac synchondroses, one or both, if room is not given by change of form as might happen with the soft osteo-malacic bones. In the rachitic pelvis the separating force works in the direction of the straight diameter, which is not favorable to separation. Besides, in the rachitic pelvis the symphyses are often unusually hard and so present greater opposition. On the other hand, as will be seen later, the great obliquity of rachitic pelves is favorable to separation. If the rachitic pelvis is at the same time uniformly contracted, the danger to it of separation may be classed with that of the uniformly contracted pelvis.

Theoretically, the funnel-shaped pelves should be classed after the uniformly contracted and osteo-malacic, but they are not common, and cases reported as occurring in them are extremely rare.

The head is usually the part of the child which acts as a wedge, but there are examples on record where this was not the

cause, or at least not the sole cause. In one case separation was supposed to be due to an excessively large and hardened placenta in an osteo-malacic pelvis. In another the fœtus was born with the membranes intact, labor was very easy and rapid, still there was separation.

In many cases the cause was the too great force which came into play in extracting or in forcing out the fœtus. Usually it was a difficult forceps extraction. Some are reported after manual extraction of the after-coming head, and one case was due to the use of the vectis. The position of the head and mode of extraction are of importance. Very often the head was in a transverse or an occiput posterior position when the delivery was completed. When the head is pulled through the pelvis, especially through the outlet, in these positions, if the force of the pull is directed too much against the arch of the pubis, if the forceps are too soon or too forcibly elevated, the head acts as a wedge and drives the symphysis apart. This wrong direction of the extracting force, combined with the exertion of too much force on the part of the accoucheur, is the most fruitful cause of this accident.

In one case, forceps delivery in knee-elbow position seems to have favored separation, for it is to be presumed that the head was pressed sooner than was best into the arch of the pubis. In the rachitic pelvis there is greater obliquity, hence more direction of the force into the pubic arch. One case happened in spontaneous delivery in a kneeling, groveling position, but here there may have been some predisposing cause in the joint.

Some room is always given to the head by the separation. Sometimes it is sufficient to allow of its easy passage through the canal. Sometimes there is not enough; then, notwithstanding the separation, the head remains in, or above, the pelvis. Experiments on the recent subject showed the increase in the conjugate diameter at the brim, after separation, to average less than one centimeter. If after this separation downward pressure was made on the anterior walls of the pelvis, the iliac bones turned on their axes at the sacro-iliac joints, giving greater obliquity, and then in one case the increase in the length of the conjugate was two and five-tenths centimeters, of the transverse one and six-tenths, the right oblique three and nine-tenths, left oblique four and two-tenths centimeters, but the sacro-iliac joints were destroyed.

At the time of the occurrence of separation, the patient may experience a sensation of tearing. Sometimes a distinct noise is heard. The physician should think of this accident if there is a sudden descent of the head, accompanied by a noise and this sensation of tearing, with pain in the joint. In slight cases these signs and symptoms are completely wanting, but immediately after the patients usually complain of complete inability to move, or severe pain when they try to move. As

these complaints are sometimes made after severe instrumental deliveries, a large number of cases has probably passed unnoticed, and others, perhaps, when because of anæsthesia the patient could make no statements.

Characteristic of complete separation is outward rotation of the thighs. Separation may be felt through the skin, as much as several fingers' width. Alternate pressure upon the ends of the bones at the articulation and combined external and internal examination will cause movement and crepitation, occasionally a perceptible sound, and pain which is relieved by fixation of the pelvis.

Rupture of the bladder has been coincident. If the vagina is lacerated, the finger may pass up and even enter the capsule of the joint between the separated surface. Incontinence of urine will be the more noticeable as retention is the rule. In a case reported in the *Boston Medical and Surgical Journal* as late as four weeks after the accident, there was a separation of two inches between the ragged edge of bone on the right and the torn ligament and fibro-cartilage on the left, laceration of the anterior wall of the bladder and a rent into the vestibule. It is not reported whether the bladder was sewed up, but merely that the woman was alive four months afterwards. Forceps had been applied at the brim, and were closely clasped by the cervix during each pain. The liquor amnii had escaped twenty-four hours before the pains began. The head had remained fixed at the brim, with a rigid undilated os, for eight hours. The forceps remained in position two hours, and when traction was made the symphysis pubis gave way with a loud snap.

In the majority of cases the diagnosis seems not to have been made until one or more days after the accident.

The prognosis, as a rule, is good. When a tight bandage was put on the first day after confinement, the patients could often get up within two weeks. But there may be movement which it may take months and even years to cure.

A tight bandage around the pelvis, to hold the torn surfaces closely in apposition, is the only treatment which seems to be necessary. A simple towel, folded and tightly pinned around, would seem to be sufficient, and as it can be easily renewed, has the advantage of cleanliness. An adhesive plaster bandage will give a comfortable support and feeling of security.

In some instances, patients who had suffered from separation of the symphysis pubis during a confinement, became pregnant again, and then had very easy labors, as if there had been a permanent increase in the diameters of the pelvis. But in one case a callous tumor was formed at the symphysis and interfered with delivery.

Mrs. E. B., primipara, aged twenty-nine years, confined three weeks before, came to the hospital October 21, 1885, bringing the following letter from her physician:

"She had a long and tedious labor, which was terminated by the use of forceps. The instrument was applied at the brim, version being prevented by the existence of an hour-glass contraction. The pelvis being uniformly contracted to a moderate degree, the extraction was difficult, but was attended by no unusual expenditure of force and without the aid of leverage movements. The separation took place during the passage of the head through the brim. As the head came under the arch, the perineum was freely incised on each side, the incisions being subsequently united by sutures. No laceration of the perineum occurred, but an extensive tear in the region of the vestibule was discovered, involving the lower portion of the urethra and permitting the passage of the finger between the separated surfaces of the symphysis pubis. The child had a firmly ossified head, cried as soon as delivered, and with the exception of a transient facial paralysis, was all right.

"The treatment thus far has consisted in keeping the bones approximated by a pelvic bandage, irrigating the parts with a sublimate solution, dusting with iodoform, and attending to the bladder. Owing to incontinence of urine, a catheter has been retained most of the time, but now seems unnecessary. Paralysis of patient's left leg was marked at first, but is now rapidly disappearing."

The patient's condition when admitted to the hospital was as follows: A very aæmic looking, slender brunette, rather under medium size. Examination of thoracic and abdominal organs negative. Between the two pubic bones a depression, easily admitting the tip of the index finger. Introitus vaginæ large, open. On each side of the perineum a deep cicatrix. A large cicatrix on the anterior wall of the vagina, and the lower wall of the urethra divided almost to the neck of the bladder. The upper part of the vagina filled with cicatricial bands, cervix almost obliterated, uterus small, anteverted. Patient complains of poor appetite, constipation, and incontinence of urine, pain in left hip and knee when that leg is moved. Just below the knee, on the outside of the leg, a small spot which is painful to the touch, but no visible lesion. Sometimes a burning sensation in the left foot. Some pain in the symphysis pubis when pressure is made on one side of the pelvis.

A firm bandage was applied from the crests of the ilii down to the great trochanters. Internally she was given tincture ferri chloride and a laxative. On the 28th of October she was allowed to sit up in bed with a bed rest, and continued this until November 5, when she sat up in a chair for the first time.

On November 13 she was etherized and an operation for restoration of the urethra done. The torn edges of the urethra and a narrow strip of adjacent vaginal tissue were denuded, united on the urethral surface by catgut and on the vaginal surface by silk and catgut sutures. A soft rubber catheter was

left in the urethra. The knees were tied together, and a wide bandage, reaching nearly to the knees, put around the pelvis and hips.

The catheter and sutures were removed on the 20th. There was good union, and the patient had no incontinence of urine. She still continued to have occasional pains in the left leg, which suggested that the left sacro-iliac joint was the one injured, and that in some way, perhaps by the formation of a callus, pressure was made on the great sciatic nerve. On the 27th of November she stood on her feet for the first time since her confinement, and began to walk December 4 with the aid of crutches. She continued to improve, and was discharged from the hospital December 30. There was good union at the symphysis, she had almost complete control of the bladder, and could walk about quite easily without aid.

Dr. Norton very kindly saw her for me last week, and obtained the measurements of the pelvis. Extreme conjugate, seventeen centimeters; distance between crista ilii, twenty-five; between anterio-superior spines of ilii, twenty-one; between great trochanters, thirty; and between tuberosities of ischii, nine centimeters. She was feeling very well, could attend to all her household duties, and even carried her child up and down three flights of stairs. The symphysis is firmly united, and she has no pain there, but occasionally has a slight pain in the left thigh, which extends down the leg, and is most severe in the foot.