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## Pubiotomy, with Notes of Three Cases.\*

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It is now a very long time since the idea was first conceived of improving the prognosis for the mother and child in cases of contracted pelvis, and of lessening the number of Cæsarean sections, inductions of premature labour, and perforations of the living child, by an artificial enlargement of the pelvis. In 1655 Courvée demonstrated on the dead subject the method by which such an enlargement could be produced, and one hundred years later Sigault performed a symphysiotomy on the living for the first time. This created great excitement, but a few years were sufficient to abolish the operation for another period of more than one hundred years. Symphysiotomy then came again into vogue, but as we know, the results were not at all satisfactory, the usual mortality being about 10 per cent., and many of those who recovered being permanently injured. To Gigli belongs the honour of being the first to propose as a substitute an incision through the os pubis, by which he considered that the soft parts would be less likely to be damaged, and the union better. This osteotomy was first performed by Bonardi, in Lugano, in 1894. Gigli employed a large incision straight down over the bone, and for this reason his pubiotomy or hebotomie was not a very great improvement on symphysiotomy, since the great danger in both lay in this large, easily infected incision. All this, however, was altered when Döderlein recognized that pubiotomy could be performed subcutaneously, and his simple and safe modification is really a new operation.

The enthusiasm with which the operation is now taken up, and the fact that the maternal mortality is only about 3 per cent. (in

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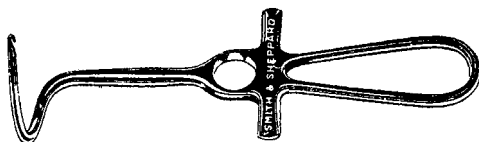
spite of the many errors which are sure to make the results of a young operation worse than they should be) and the excellence of the after results, seem to prove that pubiotomy is one of the greatest discoveries in modern obstetrics. I have had the opportunity of seeing the operation done twelve times and of doing it three times, and during the time that I acted as Volontär-Assistant to Professor Döderlein, I not only saw him do the operation several times, but I also had every opportunity of talking it over with him. I can therefore give you the words of the "father of the operation" himself as well as the conclusions I have come to from my own cases.

*When is the operation indicated?* When the child is alive, it is indicated in cases of narrow pelvis when the cervix is fully dilated and in spite of good contractions and postural treatment the head still moves freely above the brim, or in cases in which, from the very beginning the disproportion in size between the head and the pelvis makes it impossible to hope that the head could ever pass through the brim. The operation may be performed in cases of flat pelvis with conjugata vera not less than 6.75 cm., and generally contracted pelvis not less than 7 or 7.5 cm., but for these low conjugates the head must not be very much larger or harder than normal. For the lesser degrees of contraction its advantages over the performance of Cæsarean section or the induction of premature labour are very great, since good and strong contractions are a power which must always be considered. Through their preparation of the maternal soft parts, and especially by the good moulding of the foetal head, many a head is driven through a narrow pelvis when we could hardly have believed that such a thing could occur. It is through not considering this fact that so many premature labours are needlessly induced, and Cæsarean sections needlessly performed. The operation is also indicated in a normal pelvis when the face presents with the chin posterior, and the child is alive, all efforts to change the position having failed.

*Does sepsis of the genital tract contraindicate the operation?* v. Franqué says not, the idea being that the patient will not suffer any more from her sepsis by being operated on, than she will do if she is not operated on. The fact however remains that nearly all the fatal cases have been septic before operation.

The operation may be performed in several ways which are simply slight modifications of one another. The following is practically the method I learned from Döderlein and adopted in my own cases. When the woman goes into labour a colpeurynter is placed in the vagina. By this means the bag of membranes is supported and kept from giving way, and if the membranes are already ruptured the liquor amnii is preserved. The rubber bag also dilates the soft parts, and it does not prevent the head coming into the brim. When the cervix is fully dilated the membranes

must be ruptured, and the operation, if it is necessary, may be performed. After the bladder has been emptied a transverse incision, large enough to admit a finger, is made over the upper edge of the os pubis between the symphysis and the tubercle, generally on the left side. The tissues are divided down to the top of the bone till the finger can be easily inserted behind it. With this finger the tissues are pushed away from the back of the bone and thus injury to the bladder is prevented. Döderlein's needle (see figure) is then



inserted with its point very closely applied to the bone, and is pushed down along the back of the bone about one finger's breadth away from the symphysis under the guidance of the finger in the vagina. It is necessary to hug the bone closely, and when the needle point comes out at the edge of the bone, to get an assistant to pull the clitoris, labia, etc., well over to the other side, so that the point comes up to the skin well out in the greater labium. A very small incision over the point sets it free. Gigli's saw is attached and drawn back and out through the incision above. During this time the patient has been lying in the cross-bed position with her sacrum resting on the edge of the bed. Now, when the saw is in position, and before it is used, the legs of the patient are brought rather closely together, and an assistant presses on each side of the pelvis to keep the ends of the bone from springing suddenly apart when divided. With the saw stretched fully in a larger arc of a circle, six or ten movements are usually sufficient to divide the bone, but before the saw is removed it is always better to make sure that the ends of the bone separate easily. After symphysiotomy the pelvis separates so suddenly and so widely, unless it is very carefully controlled, that there is danger of injury to the bladder and to the sacro-iliac articulations. During pubiotomy such a sudden separation never occurs. In fact, owing to the protection of the undivided soft parts Sellheim states that in order to get as much enlargement with pubiotomy as with symphysiotomy three times as much force is required to separate the ends of the bone as to separate the symphysis. The advantages of this are obvious. Still it is better to get an assistant to press on each side of the pelvis, or if there are no assistants a piece of rubber douche tubing is fastened around the pelvis. Now the bone is sawn through, and as Döderlein says the ancient belief that the pelvis separates into two portions during parturition and comes together again has become a fact. After the bone is cut there is bleeding from the wound. This is sometimes rather profuse. It comes from

the corpus cavernosum of the clitoris and the plexus pubovesicalis. It can always be stopped by compression, and it cannot be of any danger because if compression fails to stop it, its origin can be sought for and controlled. This, however, is scarcely ever required. The patient's legs are now allowed to hang in Walcher's position, and when they are well separated, the ends of the bone separate easily and the head can very often be pushed from above down through the brim without difficulty. When the ends of the bone separate 3 cm., the conjugate is increased by 1 cm.; when they separate 6 cm. the conjugate is increased by nearly 2 cm. The patient should not be delivered unless delivery is absolutely indicated. An injection of morphia, when she comes from under the anæsthetic, and a rubber bandage placed around the pelvis, if it is not already there, will add to her comfort. This bandage must only be sufficiently tight to keep the pelvis steady; it must not prevent the contractions driving the head through the brim. The patient will generally deliver herself without any very great difficulty, and thus there is the greatest possible protection of the soft parts. If delivery is indicated it is best done with the forceps, but the vagina must be incised if it is narrow. The incision must run down deeply along the side wall and into the perineum. If this be done, and plenty of room made, and the delivery carefully performed, lacerations of the vagina communicating with the ends of the bone cannot easily occur. Spontaneous delivery is the ideal, and it is worth waiting for. If we must deliver we do so, and after delivery, or when we decide to wait for spontaneous delivery, the upper incision may be closed with two deep sutures and the lower with one.

After the birth of the placenta the vagina is plugged with gauze, and firm compresses are put over the incisions and the vulva to prevent the formation of a hæmatoma (the compress over the vulva and the vaginal plug may be removed eight hours later, when the patient should empty her bladder). A few strips of adhesive plaster are put around the pelvis and an ordinary tight binder is applied.

*The after treatment* is very simple. The patient lies on her back for twelve days, and in spite of the fact that the Röntgen pictures for several weeks show no bone formation, the pelvis is, as a rule, so firmly united on the 14th day, that the patient may get up, and a couple of days afterwards she should be able to walk without any difficulty.

*Spontaneous delivery at the next parturition* after pubiotomy has occurred, but generally in those cases the children were smaller than those which originally necessitated the operation. The union is nearly always a bony one. If the operation has to be repeated, it may be performed on the same side or on the other side. Spontaneous delivery after symphysiotomy, as Baisch points out, is also due either to the fact that the children are smaller, or that the union of the

symphysis has resulted in a flail-like joint, or not uncommonly to a combination of the two. If a second symphysiotomy is required, the adhesion of the bladder to the cicatrix will give a good deal of trouble, this has not been found when pubiotomy has been performed for the second time.

There is a *complication* to which I must draw special attention, and that is injury to the bladder during the operation. This is due either to the fact that the bladder had not been properly emptied before the operation, or in rare cases, owing to a previous inflammation, to the bladder being more or less adherent to the posterior surface of the os pubis. In women who have had puerperal sepsis this is to be feared, and the separation of the tissues from the back of the bone with the finger should therefore be performed carefully. In ordinary cases the bladder is never so intimately connected with the pubic bone that any tearing could result from the small amount of stretching it undergoes. If the needle does enter the bladder wall, there is not much harm done. The wound heals up quickly provided a catheter is tied in.

I will now shortly describe my own cases, but firstly I must express my gratitude to the Master of the Coombe Hospital, Dr. Stevens, for allowing me to use these notes, and to perform these three operations. They were done under his supervision and with his help. These three operations were all successful. By successful pubiotomy I mean that both the mother and child survive the operation and do not suffer any permanent injury from it.

CASE I. My first operation was performed on the 16th of August, 1906. M. M., æt. 34, ix.-gravida, all her labours had been very tedious. She had had craniotomy performed twice, had had the forceps applied four times, and had had induction of premature labour twice. The children had all been very large, and none of them had survived for any length of time. She had labour induced at her last confinement; the child was delivered with great difficulty, and only lived for 10 minutes. At the seventh month she came to hospital with the object of having labour induced again, but as she was most anxious to have a living child, I advised her to wait till term. On this occasion the patient is at full term and in labour. A large child presents as first vertex. The head, which is large and hard, moves freely above the brim. The contractions are powerful. The foetal heart is 140 and regular. The pelvis measures: I.S. 22, I.C. 25, I.T. 29, ext. conj. 18. The vagina is very capacious, the cervix admits two fingers, the membranes are protruding. The conj. vera=8 cm. A generally contracted pelvis. A colpeurynter was placed in the vagina and filled. The contractions were frequent and very powerful. After three hours the bag was removed, and the cervix being now fully dilated the membranes were ruptured, and as the disproportion between the large hard head and

the pelvis was so very great, any hope of spontaneous passage of the head through the brim was out of the question, pubiotomy was therefore performed. The hæmorrhage after the bone was cut was easily controlled by compression, and when the legs were allowed to hang in Walcher's position, and were well separated, the head was easily pushed down through the brim, the ends of the bone separating to a distance of about 7 cm. As the head only required to be lifted over the remains of the perineum, I applied forceps and extracted the child without difficulty. The child weighed 12 lbs. It cried immediately after birth and gave us no trouble whatever. The placenta was expressed from the vagina after 15 minutes. While we were waiting for it, two sutures were put in the upper incision, and one in that underneath. After the vagina had been plugged and the compresses over the vulva and the wound applied, a few strips of adhesive plaster were put around the pelvis. When the legs were close together, the ends of the bone touched one another. Neither mother nor child showed a single bad symptom afterwards. I allowed the mother to get up on the 21st day. She walked without difficulty and without pain. She and her child went home two days afterwards.

CASE II. L. M., æt. 32, was also a ix.-gravidæ. Her second baby had been delivered with forceps and is still alive. All the others are dead. She had had labour induced three times, craniotomy once and the forceps applied twice, and there had been a pelvic presentation twice. The patient, who looked very ill, came into hospital after having been 14 hours in labour on the 29th of October, 1906. First vertex. Head free above the brim. Child small. Fœtal heart 160 and very irregular. The pelvis measured 23, 22, 29. Ext. conj. 18. The vagina roomy. Meconium coming away in large quantities. Os fully dilated. Membranes ruptured. Conj. vera 7·5 cm. A generally contracted and flat pelvis.

Mother's temperature=100° F. Pulse 110. Respirations very rapid. Lobar pneumonia. Here we had a combination of child in grave danger, mother's pneumonia, and a generally contracted flat pelvis with a conj. vera of 7·5 cm. Pubiotomy was performed as quickly as possible, and a child weighing 6 lbs. was extracted with forceps. There was severe post partum hæmorrhage which was stopped by douching and massage. When a catheter was passed blood escaped from the bladder, which had evidently been injured owing to the rapidity with which the operation had to be performed, as the patient nearly died under the anæsthetic. A catheter was tied in and the urine was quite clear after four days. The patient recovered from her pneumonia, and both she and her child left the hospital on the 24th day in good health.

CASE III. F. O'D., æt. 29, iii.-gravidæ. The patient aborted at the end of the third month of her first pregnancy. After that she

was delivered with forceps of a child weighing five and three-quarter pounds. The delivery was difficult. This child is still alive.

The patient did not walk till she was three years of age. She is healthy and in strong labour. The child lies transversely. The head larger than usual and very hard, heart 126 and regular. Pelvis measures 26, 26, 32. Ext. conj. 17. Vagina capacious, os very nearly fully dilated, membranes unruptured. Conj. vera 7 cm. A rachitic flat pelvis.

It was decided, owing to the size of the conjugate and to the size and hardness of the foetal head, to perform pubiotomy. There was very little bleeding from the wound. Internal podalic version was done, and both feet were brought down. The patient by this time was having powerful contractions and expelling the child, but the arms had to be delivered, as they were extended, and the head extracted. The child weighed  $7\frac{1}{2}$  lbs. and gave no trouble. The patient was up on the 17th day, and left the hospital on the 23rd, without any difficulty in walking.

The three babies were breast-fed. None of the women complained of pain or showed any difference from a normal confinement except, of course, the second patient, who was suffering from pneumonia. They did not object very much to lying on their backs for 12 days. The pelvis was quite firm in every case. I regretted very much at the time that I could not allow the last two patients to deliver themselves, but by extracting the children very gently no harm was done. These three women dreaded a Cæsarean section, and absolutely refused such an operation. Yet they had no fear of pubiotomy. This is usually the case, and it ought to continue, since with proper precautions, the mortality should be very low. In skilled hands it is an operation which can easily be performed in a private house, but without proper education it cannot yet replace the induction of premature labour in the hands of the general practitioner. One of the objections to the induction of premature labour is of course the difficulty in rearing the child, and in the present state of affairs, with such a decreasing population, it is our duty to deliver as many live children and to give them as good a start in life as possible. The danger to the mother after pubiotomy is very little more than that attached to the induction of premature labour. Leopold, for example, has had 23 consecutive pubiotomies without a death. Gigli has collected 300 cases with a mortality of 3 per cent., and amongst those cases which were aseptic before operation the mortality was nil. I think there is a great future for this operation, and that it will never share the fate of symphysiotomy, but will always remain for us a means of overcoming the difficulties connected with the lesser degrees of contraction of the pelvis without injury to the mother or child.

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