On that peculiar deformity of the pelvis originally described by Professor Fr. Ch. Nægelè of Heidelberg as the "pelvis obliqué ovata" / by Edward B. Sinclair.

ON

THAT PECULIAR DEFORMITY OF THE PELVIS,

ORIGINALLY DESCRIBED BY

PROFESSOR FR. CH. NAEGELÈ, OF HEIDELBERG,

AS THE

"PELVIS OBLIQUÈ OVATA."

BY

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ON

OBLIQUE DEFORMITY OF THE PELVIS,

&c. &c.[a]

SPECIMENS of the obliquely deformed pelvis are scarce ; still more rare are those instances where an opportunity has been afforded to the obstetrician, of obtaining the history of a case in which this peculiar malformation existed, so complete as to throw some light upon the obscure question of its origin. The following complete account of a case, then, which came under my observation, cannot fail to prove of interest to the profession.

A. J. was admitted into the Rotundo Hospital on the 3rd of July, 1853, for her first confinement, at full term.

She was thirty-two years of age, having a full florid countenance, below the middle height, muscular and thickset. She was affected with pes equinus of the right foot, and had a slight limp in her gait, but otherwise she appeared well formed: however, the metatarsal, metacarpal, and phalangeal bones were short, thick, and stunted. These circumstances, though, in addition to her peculiar age, were sufficient to lead us to expect some difficulty in the labour, and a vaginal examination proved that such expectation was not ill founded; for, besides an enormous development of the muscular structures belonging to the pelvis proper, the existence of a deformity of that cavity became evident. It was found that the arch of the pubis was

[a] Read before the Obstetrical Society of Dublin, May 21, 1855.

narrower than normal; that, though the sacro-vertebral angle could not be touched,—thereby indicating no great encroachment upon the antero-posterior diameter of the brim,—still the face of the sacrum was flat, its hollow being absent, and the distance between the planes of the ischia and that between the spines of these bones, were, to an appreciable degree, less than they ought to have been; but the facts that struck the examiner most forcibly were, that while the curve of the innominatum of the left side *seemed* normal, that of the right was destroyed, the latter bone being quite flat, and the distance from its ischiatic spine to the right edge of the sacrum was very much less than the same distance on the other side. The case, from this careful examination, appeared to me pretty evident, so much so, that I explained to those present my impression to be, that the pelvis was "obliquely deformed," or, in other words, that it was a case of "Naegelè's deformity;" that I did not think she could give birth to a living child, and that the case would terminate instrumentally.

I now made an external examination of the pelvis, but this disclosed nothing more than the existence of an old cicatrix, in the region corresponding to the site of the posterior superior spinous process of the right ilium.

The head was presenting, the labour was in the very commencement of the first stage, and the fœtal heart was audible.

Uterine contractions continued, and the membranes were prematurely ruptured, in all probability, from the peculiarly interesting nature of the case giving rise to too frequently repeated examinations; the consequence was, that, the presentation now pressing the undilated cervix against the contracted brim, the structures surrounding the os became swollen, leathery, and disinclined to expand, so much so, that after a considerable period had elapsed (notwithstanding measures had been taken to improve matters), the labour was found to have scarcely at all advanced.

Contractions by and by became frequent and vigorous, though the os was not much acted on thereby, and after an increased length of time it was found not more than nearly half dilated. At this period of the labour the pulse and state of the patient indicated interference, and, after a consultation, I was directed by Dr. Shekleton to perforate the head. This operation I accordingly performed at 8 o'clock in the evening of the 4th, when the contents of the cranium were evacuated, but the extraction was delayed for some time, in the hope that

uterine efforts alone would have some effect upon the diminished presentation.

At half past 10 o'clock, P. M., although several powerful contractions had been endured, there was no very appreciable advance; so that the crotchet was at once applied, and by the exertions of both myself and Dr. Shekleton, and with extreme difficulty, the child was extracted at half-past 1 on the 5th, after a labour of thirty hours. During each operation chloroform was administered. There was no tendency to hemorrhage; the placenta spontaneously came away in a few minutes, and the patient slept well.

On the 6th, the vagina appeared inclined to slough, and there were symptoms of peritonitis present; and next day the urine began to trickle away from between the labiæ.

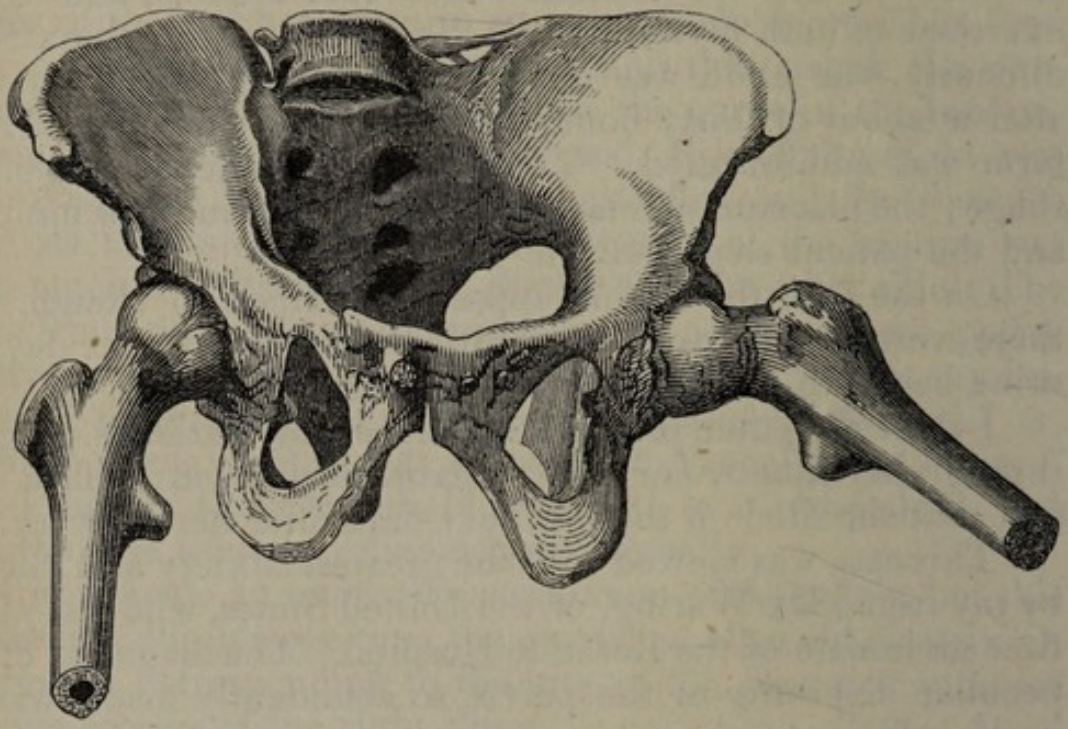
I shall not enter into the history of this patient's progress through her illness, nor of the treatment pursued; suffice it to say, that she died on the 9th, four days after her delivery.

This case was viewed with the greatest anxiety and interest by my friend Dr. Waring, of the United States, who was at the time an inmate of the Rotundo Hospital. The diagnosis of the peculiar deformity of the pelvis, so confidently made, was, in itself, sufficient to keep his curiosity alive, independently of his great zeal for medical science, and his extreme kindness in being ever ready to offer his valuable services, in watching and reporting on the progress of important cases. Dr. Waring made the post-mortem examination thirty-six hours after death, of which the following are the particulars.

A quart of dark-coloured, offensive fluid escaped from the abdomen on opening the cavity of the peritoneum; the small intestines were highly vascular, and adherent to each other by means of recently effused lymph. The uterus was seven inches in length, vascular on its surface, covered with coagulated lymph, and completely above the pelvic brim.

The bladder was tumid, in a state of inflammation, and an irregular sloughy opening, nearly an inch in diameter and about an inch from the os uteri, led from the vagina into its cavity. The liver was found to be in a state of fatty degeneration, and the areolar tissue surrounding the spinal column was infiltrated with gas. A deep sulcus with puckered edges existing on the skin, in the situation before noticed, marked the site of an old sore, and the muscular tissue of the gluteal masses of the right side, had in a measure disappeared, their place being occupied by a kind of pale fibrous tissue mixed with

adipose substance. The pelvis was preserved and macerated, and a glance at it at once proved that the diagnosis was correct, viz., that it was a pelvis obliquely ovate, *the right side being at fault.*



The general peculiarities of this form of pelvis, as described by Naegelè (I quote from the translation of his work by Dr. Danyau), are as follows:—

"Complete anchylosis of one of the sacro-iliac symphyses, or perfect fusion together of the sacrum and one of the coxal bones.

"Arrest of development or imperfect development of the half of the sacrum, and contraction of the anterior sacral foramina of the side corresponding to the anchylosis.

"The innominatum of the anchylosed side, *and the sciatic notch of that side, are smaller than those of the opposite side.*

"The sacrum seems pushed towards the anchylosed side, and its anterior surface appears more or less turned to that side; and, at the same time, *the symphysis pubis is drawn to the opposite side, so that the latter no longer corresponds directly, but obliquely, with the sacro-vertebral angle.*

"On the side where the anchylosis exists the *lateral wall, and the portions of that side corresponding to the anterior wall of the pelvic cavity, are more plane* than in the normal condition.

"The other half of the pelvis, viz., that on which the sacro-iliac symphysis exists, though apparently so, is not really in a normal condition," for (according to Naegelè), "were two

pelves taken, both affected with this species of deformity, only that the malformation existed on different sides, and if an accurate division was made with a saw, so that the section should pass through the mesial line of the sacrum, as well as the centre of the pubic symphysis in each; and that then, the two apparently properly formed sides were brought together at the cut surfaces of the semi-sacrum, it would be found that the pubes were distant from each other at least three-quarters of an inch."

Besides, he tells us, "if a line be drawn (so as to retain any curves in which it may be bent) from the promontory of the sacrum along the linea innominatum of the iliac bone, and the linea pectinea of the pubic, to the symphysis pubis of the apparently normal side, this line will be found, behind, less, and, before, more curved, than in a pelvis of healthy or natural formation."

Hence, Naegelè assumes, it follows that the pelvis formed as above described is contracted obliquely, "that is, in the direction which crosses the line, which from the point of anchylosis extends itself to the cotyloid cavity of the opposite side, whilst that last diameter is not diminished, but on the contrary (and especially when the malformation is considerable) it is more lengthened than in the natural pelvis, so that the plane of the brim presents an oval placed obliquely."

The pelvis of the woman whose case I have just narrated in every respect answers to this description; it even illustrates, in a remarkable manner, the observation of Naegelè, "that all these pelves (apart from the differences which result from the *degree* of deformity, or from the *side* or *seat* of anchylosis) present, upon the relations of all their essential characteristics, a resemblance as perfect as that which exists between two eggs"[a].

The dimensions of the pelvis in my case are as follows:—The antero-posterior diameter, that is, from the centre of the pubic articulation to the central point of the sacro-vertebral angle is 4 inches; but this diameter is not in this pelvis directly antero-posterior, cutting, as it does, the transverse diameter of the brim *not* at a right angle, but *making an angle with it, in the direction of the flattened side, greater than a right angle;* the real antero-posterior diameter, that is, from the central point of the sacro-vertebral angle to the point exactly opposite it, is much less in extent, being but 3 inches; whereas, the transverse diameter is only $3\frac{1}{2}$. From the left ilio-pubic eminence to the right sacro-iliac syn-

[a] Des Principaux Vices de Conformation du Bassin, &c. Traduit de L'Allemand, &c., par A. C. Danyau. pp. 12, 13.

chondrosis (the anchylosed one), the distance is 4½ inches,—the same distance from the right side to the left being hardly 3½ inches. From the left ilio-pubic eminence to the central point of the sacro-vertebral angle, the distance measures 3¾ inches, and from the latter point to the pectineal eminence of the right side, the distance is scarcely 2¼ inches.

The lengths of the diameters of the cavity are as follows:—A line from a point a little above the centre of the hollow of the sacrum to the central point at the back of the pubic symphysis measures 4 inches; from the centre of one plane of the ischium to that of the other measures 3¼ inches; from the centre of the left plane of the ischium to the centre of the hollow of the sacrum measures 3 inches, and the same distance on the right side measures but 2. The space between the ischiatic spine measures 2½ inches. The left ischiatic spine is distant from the centre of the sacral cavity only 2½ inches, and the right is distant from the same point but 1¼. At the outlet we find the measure of the distances to be thus:—Across pubic arch, half an inch below the symphysis, measures 1 inch; between ischiatic tuberosities, 3 inches; from the centre of arch of pubis to the tip of the coccyx, 3¼; from the left tuberosity to tip of coccyx, 2½ inches; and from the right tuberosity to the same point, but 1½. The length of sacrum and coccyx is 4½ inches, and the distance across the base of the former is but 3¼. The sacrum consists of five pieces, and the coccyx of four; but the face of the sacrum is plane. Thus, then, at the brim, we find the left oblique diameter to be about half an inch, and the right oblique 1½ inch less than normal; the anatomical antero-posterior the same as normal; the transverse diameter 1⅝ inch less than natural; the left sacro-cotyloid diameter a quarter of an inch more, and the right 1¼ inch less than in the normal condition.

In the cavity we find the antero-posterior diameter one quarter of an inch, the transverse 1¼ inch less than ordinarily, and besides, a great abnormal approximation of ischiatic spines, together with extraordinary proximity of that of the right side to the edge and hollow of the sacrum. At the outlet the transverse is 1½ inch, and the antero-posterior 1¼ inch minus the natural standard. It is needless to detail the obstruction which would be opposed to the passage of a normally sized fœtal head through this particular pelvis. To mention the great lessening in the length of the diameters is quite sufficient; but then, it may be asserted,—though the passage of a normal head might be impossible through such a space, how comes it that the ex-

traction of the lessened fœtal skull was attended with such difficulty? and how was it that the patient fell a victim to the operation? I think these questions can be satisfactorily answered.

The space through which the head had to pass was, of course, less when covered by its muscular and membranous structures than it is as I now present it. Supposing, then, we estimate these as encroaching upon the pelvic space only to their ordinary extent, we must subtract a quarter of an inch from the conjugate diameter of the brim, which we then reduce to $3\frac{3}{4}$ inches; we must take half an inch from the transverse, and we have only 3 inches left; about the same from the oblique, and we reduce the left to 4 inches, and the right to but 3; then deducting a quarter of an inch from those important lines, the sacro-cotyloid diameters, we reduce the left to $3\frac{1}{4}$ inches, and the right to but 2. Now these small distances would be the living measurements were the muscular structures developed only in an ordinary degree; but there was, in this case, an extraordinary development of these tissues, which rendered the measurements much less than I have just now made them; and it is unnecessary to say what opposition such would have towards the passage of a normal fœtal head. But it was not at the brim that the greatest difficulty was experienced: it was when we had engaged the lessened head in the cavity; here we had a flat sacrum, great approximation of the ischiatic planes, a jutting inwards towards each other of the spines of those bones, so as to leave a space of hardly 2 inches (decidedly less than 2 in the living subject) between them; an embarrassing contiguity of the right ischiatic spine towards the same side of the face of the sacrum, from which it was distant only three-fourths of an inch, and we had lost the benefit of the space included by the right sciatic notch. And though the head occupied the first position, and thus had its occipito-bregmatic line in the longest diameter of the brim, still a considerable portion of this latter being unavailable, from the great narrowing of the right sacro-cotyloid diameter, it was, perhaps, even worse situated than had it occupied the second position,—at least it was as badly. The extractive force, used with the greatest caution, pulled away the entire of the calvarium and scalp. The bregma had then to be turned on its edge, and the crotchet fixed in the most convenient manner to bring it through in this position, and thus injury was inflicted by the jagged edges of the cranial bones upon the soft tissues of the vagina, which gave rise to

inflammation, ending in sloughing, and which, combined with the protracted labour and tedious operations, originated the peritonitis under which the poor woman succumbed; perhaps happily for herself, since death would be preferred by many to life, under the affliction of a large vesico-vaginal fistula.

The diagnosis of this peculiar deformity during life is said to be most difficult; and several external measurements have been invented, as well as perpendicular and imaginary planes made use of, in order to arrive at a correct conclusion in these cases; and it has been asserted, that, even with their aids (previous to the setting in of labour), it is almost impossible to arrive at a correct conclusion. To this I but partially accede, for, during actual labour, when a vaginal examination can with facility be had, and *the deformity exists to any considerable degree*, I do not consider the diagnosis to be at all so difficult. I consider that a person who is an adept at this mode of examination, from very frequent practice, can, under the circumstances I have mentioned, hardly fail of satisfying himself as to the presence of "the obliquely ovate pelvis," without having recourse *to any of those external manipulations recommended*. The case I have just narrated supports this assertion.

I could not reach the sacro-vertebral angle, which indicated that there was no appreciable narrowing of the antero-posterior diameter of the inlet, and then I had the following points to guide me in arriving at the particular conclusion I did. *The extreme approximation of the right ischiatic spine towards* its corresponding side of the sacrum, and the great narrowing of the sciatic notch of the same side, as perceived by the fingers when placed in that region; whereas, this peculiar *narrowing of the notch, and vicinity of the sciatic spine to the sacrum, did not exist to anything near the same extent* on the left side; but, besides this, when the fingers were made to sweep along the right wall of the pelvis, a considerable and unmistakable flattening was found in connexion with that side, which in no degree was felt in connexion with the other lateral wall, the latter giving the sense of its natural curvature to the touch. These were the chief and most prominent features in the examination which guided me in forming my opinion.

I shall not minutely recapitulate the several hypotheses which, from time to time, have arisen, relative to the origin of this peculiar pelvic conformation, common to both the male and female subject; suffice it to say, that they all consist in, merely, varieties of methods of expression of the three following

causes, viz.,—from disease, congenital, or in early life; from arrest of development; and from circumstances of a mechanical nature, combined with those of constitutional defect. We find, however, that sufficient evidence does not, as yet, exist, to enable us to attach to any of them, individually or collectively, the cause of this abnormal deviation, for reasons which are, doubtless, well known to every obstetrician. With regard, then, to this part of the subject, it only remains to inquire,—whether, in the case I have just narrated, there are any points from which we may derive information relative to the question at issue? It will be remembered that previous and subsequent to the death of this woman, an old cicatrix was observed in a region nearly over the top of the right sacro-iliac synchondrosis; and that, after death, the structures in the neighbourhood of the articulation, both posteriorly, laterally, and externally, were found in such a state as to lead us to conclude that a diseased action, which necessarily was once connected with the formation of the old cicatrix, was in a similar manner connected with those altered structures. But, be this as it may, we find evidence of the former presence of long-continued and extensive disease, in close contiguity to an anchylosed joint, there being over the line of fusion *a sharp and prominent ridge, showing a more than natural deposition of bony matter at one time,* "and not the merest eminence," as Naegelè has described; added to which, there was an apparent loss of substance of a very *spongy* bone which helps to form the altered articulation. Now all these circumstances lead at least to a presumption that the right sacro-iliac synchondrosis, in this particular case, was the subject of disease, and that the fusion of the sacrum with the ilium of the right side was not merely a simple congenital anchylosis, subsequent to arrest of development, but one resulting from the healing of some inflammatory action of the articulation, and that not before ulceration had destroyed the interarticular cartilages, and caries had consumed a considerable portion of one of the bones (the one most likely so to be attacked), composing the same articulation.

The history of this case, still further followed up, has certainly the effect of confirming the above idea.

I gained some information relative to the patient from her mother, who evinced the greatest anxiety that a post-mortem examination should be instituted; but I ought to mention that I had never any interview with the latter until after the death of the former.

This most respectable, and I should say, trustworthy person, acquainted me that in very early life, when almost an infant, her daughter received an injury in or about the seat of the cicatrix above alluded to; namely, the accidental introduction of a large sewing needle thereabouts; that inflammation soon set in, followed by an abscess, which burst and gave exit to a purulent discharge, which continued to flow from the orifice for a very great while; in fact, a fistulous opening discharging pus was formed, which remained open for a long time, rendering her child puny, emaciated, and incapable of walking; this opening by degrees healed, the child regaining strength slowly, and a little before puberty the cicatrix was perfect. Puberty came on, after which her constitution was very much improved, and she became robust and muscular, but she was affected with a slight lameness. As to the pes equinus, before remarked, I could not ascertain whether it was congenital or otherwise; I assume, however, that it was congenital.

In conclusion, I would beg to remark that I do not for an instant attempt to assert that the view I feel inclined to take concerning the origin of this form of abnormal pelvis is the correct one. I claim merely to have added another to the existing collection of cases of Naegelè's deformity of the pelvis, and, perhaps, to have brought forward some facts which may tend to elucidate that abstruse question as to their origin; however, I must say, that the circumstances connected with this present case certainly lead to the conclusion, that an injury was originally inflicted on the right sacro-iliac synchondrosis, followed by inflammation, ending in suppuration, then destruction of the interarticular cartilage by ulceration, and of a portion of the sacrum by caries; that there was subsequent subsidence of diseased action, followed by the reparative process, producing anchylosis and hypertrophy of bony deposit; but that this did not commence before nearly the whole of the right half of the sacrum had been absorbed; and that physical and mechanical causes coming into play during the progress of these actions, there occurred a flattening of the wall of the pelvis corresponding to the deficient side of the sacrum, together with all the peculiarities of the "pelvis obliquè ovata."

THE END.