The Caesarean section. / by Edward William Murphy.

THE CÆSAREAN SECTION.

BY

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A CASE OF CÆSAREAN SECTION,

&c. &c.

I WAS sent for July 11, 1858, by Dr. Frazer, of Harrington-square, to see a patient of his in difficult labour, and found the pelvis so extremely distorted that the Cæsarean section was necessary in order to remove the child. The case is a remarkable example of mollities ossium, and the condition of the pelvis produced by that disease: it is also important as illustrating circumstances which render such an operation imperative.

I am indebted to Dr. Frazer for the following history of the case.

Mrs. N., aged 30, was married about sixteen years, and gave birth to seven children, all born at the full time, without any unusual difficulty in the labour. Six are now living, the eldest 15, the youngest 2 years of age. Three or four months previous to the birth of her last child (May 26, 1856), she complained of constant weariness, and dull aching pain in the lower part of the back, and down the thighs, increased on walking. She continued to go about, however, up to within an hour or two of her confinement. Dr. Frazer had not seen her for several days before, but, calling in accidentally, he found her in labour, and just about to send for him; the labour was quite natural, and terminated in less than two hours from the time he saw her. She progressed favourably for a few days, but in consequence of a dispute with her nurse, who, she thought, put something into her gruel which "burned up her inside," she became feverish, with quick pulse, hot and dry skin, furred tongue, &c. This continued for several days, and her subsequent recovery was slow and incomplete. At the end of three weeks Dr. Frazer ceased to attend her. She was then able

to go about, but complained of weakness and *slight* pain, or rather uneasiness, in the loins and thighs. Dr. Frazer did not see her again professionally until two months previous to her last confinement, July, 1858, but was informed by her husband that about three months after her former confinement she went into Hampshire for a few weeks, and was benefited by the change. She continued to take moderate exercise, but always complained of aching in the back and thighs, and had "an imperfect walk." In September of last year she went to various places in the vicinity of London, was able to walk distances, and on several occasions walked from her residence near Burton-crescent to the Caledonian-road Station, and back again. In October, 1857, she became pregnant, after which the pain and difficulty in walking increased. She went to chapel, January 1, 1858, but was not afterwards able to leave the house.

In April, 1858, Dr. Frazer was again engaged to attend her, and found her sitting at her work-table in the parlour; she stated that for many weeks she had been unable to go up stairs; consequently, her bed was moved down to the back parlour, from which her husband assisted her into the front room, where she remained all day sitting on a chair, until she was again moved to her bed-room. Dr. Frazer was sent for in consequence of sickness of her stomach, which was removed by appropriate remedies. Each time that he saw her, she was dressed and sitting in her chair; and after his fourth visit he ceased to attend her. No opportunity was given him of discovering the deformity, which, no doubt, then existed, and was increasing; nor had he been sent for until July 10, when the pains of labour, which commenced on the 8th, began to assume a decided character. His partner, Dr. Andrews, saw her, and on making a vaginal examination was surprised at the extreme narrowness of the outlet of the pelvis. Dr. Frazer saw her in the afternoon, and observed the same peculiarity; the promontory of the sacrum could be touched, but it was extremely difficult to reach the os uteri. The pains were feeble, and the patient somewhat exhausted; an anodyne was ordered in the hope that, if sleep were procured, more vigorous pains would advance the presentation.

July 11th. Dr. Frazer, finding no alteration, requested my assistance. I saw Mrs. N. about 2 P. M., and, having made an examination, found it impossible to introduce two fingers between the pubic rami; by pressing back, however, against the coccyx, and by using the left hand, I was able to get two fingers within the brim of the pelvis. In order to do so it was

necessary to bend them upwards and forwards, to avoid the strongly projecting promontory of the sacrum. The pubic bones were doubled back so much that the space in the brim seemed hardly two inches in the antero-posterior measurement; on the left side it was contracted to half an inch, and on the right was open to about two and a half inches. Passing the finger around the brim, the space seemed scarcely larger than a florin, through which protruded the os uteri and membranes; the head could just be touched. The nature of the difficulty being thus revealed, I felt satisfied that it was totally impossible to attempt perforation; in fact, no instrument could be used for that purpose. The patient, however, had no pains for some hours previously, and I was anxious to see what the uterus might do, if it were possible to get the presentation within reach of instruments; we agreed, therefore, to see her again at 5 o'clock P. M.; there was no change. We saw her at 9 P. M.; the pains had returned for a short time, but made no difference; we left her in charge of Dr. Andrews for the night.

12th. The patient had slept a good deal during the night, and the pains returned in the morning, and continued stronger than before, until I saw her at 12 o'clock. The membranes were ruptured, and the funis had descended and ceased to pulsate, but there was no other alteration in the pelvis.

My mind was made up as to the mode of delivery, but I wished to have another opinion, and Dr. West's assistance was requested. He made the most careful examination, and arrived at the same conclusion, that the only mode of delivery was the Cæsarean section. Having the advantage of his opinion in confirmation of my own, no time was lost in taking measures for its performance.

The patient was taken into University College Hospital, placed in a ward prepared for the purpose, and about 10½ o'clock, Mr. Quain, who kindly rendered his assistance, performed the operation. The contents of the rectum and bladder being previously removed, the patient was placed under the influence of chloroform. She was then brought to the table, and the abdominal parietes being pressed firmly against the uterus, an incision was made in the line of the linea alba; the uterus being exposed, a second incision was made through its parietes; the placenta protruded, was at once removed, and the child extracted. The section of the uterus caused considerable hemorrhage, which, however, was soon controlled by its contraction. The intestines, which had slightly protruded, were replaced; the edges of the wound were united by the hare-lip suture, and a space left at the bottom of the wound for the

discharges. She was then bandaged, placed in bed, and 25 minims of sedative liquor of opium given in beef-tea.

13th. 7 o'clock A. M. The patient slept at intervals during the night, and seemed refreshed; pulse 120; tongue dry; skin hot, but moist. The urine was drawn off, and 15 minims of sedative liquor of opium, ordered every four hours. To have milk and lime-water *ad libitum*. 5 P. M. Complains of sickness and pain in her bowels; she had vomited several times, and suffers great thirst. To take 5 minims of black drop every second hour. 8 P. M. The pain and sickness relieved, but pulse increased to 160, rapid and feeble; she is restless and not inclined to sleep.

In the course of the night the restlessness increased, and amounted to jactitation, with hiccough and blowing respiration. These symptoms of exhaustion increased, and in the morning—

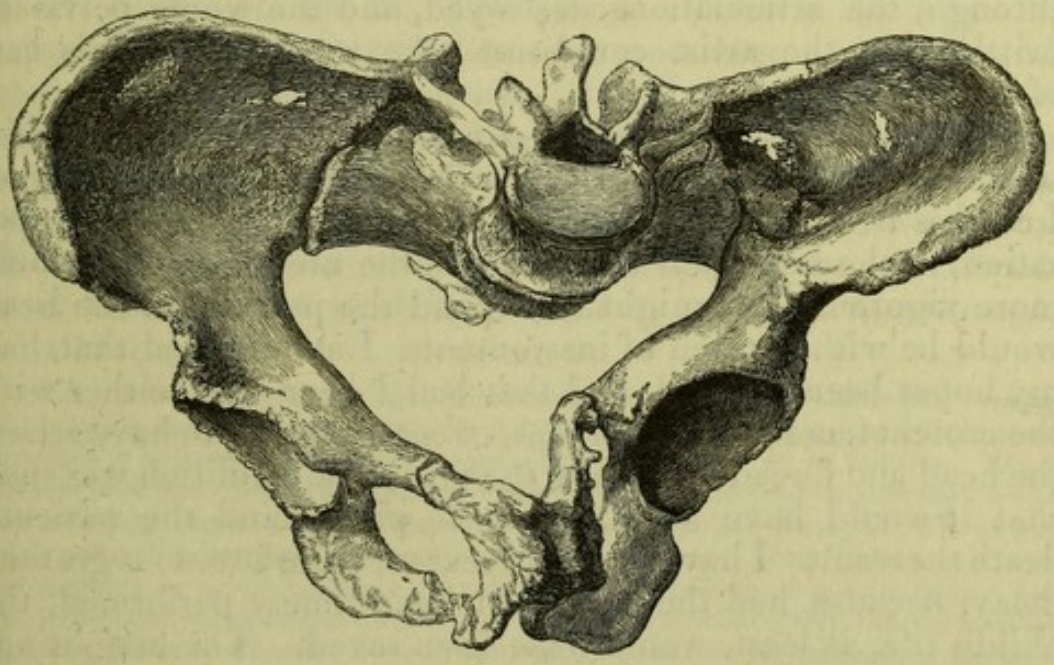
14th. She was moribund. She died at 12 o'clock.

15th. Twenty-five hours after death an autopsy was made; the abdomen was much distended and resonant. There was no attempt at union in the line of the incision; on opening the abdomen a large quantity of bloody serum escaped; the intestines were distended with flatus, especially the stomach, which occupied the whole upper part of the abdomen. Lymph was found on the peritoneum, both lining the abdominal parietes and the intestines. Near the wound the small intestines were of a dark red colour, and injected. The uterus presented a dark red surface anteriorly; the divided edges were everted and widely separated, without any attempt at union. The incision divided the uterus at the right side, about half an inch from the broad ligament. The internal surface of the uterus presented nothing remarkable. When the stomach was laid open, a large quantity of flatus escaped. It contained very little fluid; some undigested currants and a small quantity of feculent matter were found in it. The heart and lungs were healthy.

The Pelvis was brittle throughout; all the articulations were loose, and the pubic and ischiatic portions of the coxal bones moved on each other, much more, however, on the left than the right side. Both iliac bones were much distorted and very carious, the left being perforated in several places, and as thin as tissue paper; the right ilium was also very thin and diaphanous. The horizontal rami of the pubes were parallel, the pectineal eminence on the left side almost touching the promontory of the sacrum; the space by measurement was half an inch, but the bones were quite easily pressed together.

The descending rami were also closed in, the left being carious and eaten through at the pubic and ischiatic junction. The acetabula were also eaten through, and the head of the femur was in a similar carious state. The brittleness of the bones was such that Mr. Tuson, the artist to whom I am indebted for some beautiful wax models, found it impossible to take casts in plaster of Paris. In each iliac fossa the periosteum was raised from the bone by a large quantity of serous fluid. The sacrum was strongly bent forward, and carious toward the lower part; the coccyx moveable. The measurements are as follows:—

The brim: antero-posterior measurement, from promontory of sacrum to the centre of the symphysis pubis, was $2\frac{5}{8}$ inches; but as the rami were parallel, the distance from the promontory to the pectineal eminence on the left side was only 0·7 of an inch; on the right side, 2·2. The transverse measurement was 3·4. The cavity was, transversely, 3·4[a]; the horizontal rami of the pubes were distant from each other only 0·8 of an inch; the descending rami, 1·1; the space between the tubera ischii, 2·5. The iliac bones were so bent upon themselves that the



distance between the anterior and posterior parts of the cavity of the ilium was, on the left side, 1·1; on the right side, 1·5; distance between antero-inferior spine of ilium and posterior part of ilium, on the left side, 2·7; on the right side, 3·4. There was no observable difference in the stature of the patient; the

[a] In the wood-cut, the cavity of the pelvis is greater than before its removal, increased in being moved, from the looseness of the articulations.

disease, therefore, seemed confined to the pelvis. The child's head was large and well ossified.

This case seems to me interesting in two points of view: as an example of the disease which caused this extreme deformity, and as illustrating conditions which render the Cæsarean section imperative. Mollities ossium commenced in the pregnancy of 1856, about January in that year, but caused so little impediment that she was able to go about until within an hour or two of her confinement, and then was delivered in two hours without the least difficulty. In October, 1857, she became again pregnant, and the pain and difficulty in walking gradually increased so much that she was not able to leave the house after January 1, 1858. She remained sitting all day in the parlour, and was moved to and from her bed-room. She complained of nothing, and did not think it necessary to inform her medical adviser about anything more than a sickness of her stomach, which was soon relieved. Thus matters remained until July, when her labour commenced, and the most extreme distortion of the pelvis was revealed. The disease made such rapid progress that the bone was in many places eaten quite through, the articulations destroyed, and the whole pelvis so brittle, that the artist could not take a plaster of Paris cast of it.

The deformity produced was extreme, and would have justified the Cæsarean section in the first instance, but I delayed, I confess it, a great deal too long in determining upon the operation, in the hope that the action of the uterus would become more vigorous, and might so expand the pelvis that the head would be within reach of instruments. I am satisfied that, had my hopes been realized, and that had I been able, either with the crotchet, craniotomy forceps, or cephalotribe, to have seized the head and forced it through the pelvis, its condition was such that it would have been broken to pieces, and the patient's death the result. I have the more reason, therefore, to regret the delay, because, had the operation been timely performed, the child's life, at least, would have been saved. The case, it appears to me, proves that if the distortion in the pelvis is extreme, and ascertained to be so, it is useless to defer this operation, in the vain hope that the pelvis can be expanded sufficiently to drag the child through with instruments

The case illustrates the conditions which render the Cæsarean section unavoidable, in consequence of extreme disproportion. No other mode of delivery was possible; and, had not this operation been performed, the case would have been analogous to those recorded in which the woman was allowed to die

undelivered. The earliest case of this kind is one related by Mauriceau in his Observation xxvi.; which is remarkable as being that given to Chamberlan as a test to prove the superiority of his newly invented forceps. Mauriceau had a triumph, because Chamberlan could not succeed, and heads his Observation, "D'une femme qui mourut avec son enfant dans le ventre, qui n'en pût jamais être tire par un Médecin Anglais qui avoit entrepris de l'accoucher;" but the case was of that character that Mauriceau could not introduce his hand, although a small one, to apply the crotchet, the contraction of the pelvis was so great. The woman died undelivered; the uterus was ruptured, and Mauriceau attributed this to Chamberlan's forceps having been forced through the womb. It is scarcely necessary to say that Chamberlan could not get his forceps into a space where Mauriceau could with the greatest difficulty introduce two fingers of a very small hand[a]. Mauriceau refused to perform the Cæsarean section, as being certainly fatal to the mother; she was, therefore, suffered to die undelivered.

Dr. Hamilton, in the fourth edition of his "Outlines of Midwifery," gives the case of Mrs. Scott, aged 30, with whom labour began March 22, 1795, and continued to April 2, eleven days! when she died of ruptured uterus. She could not be delivered by instruments. Dr. Hull, in his remarks on this case, states:—"I have the honour to be acquainted with an accoucheur of very great eminence, who, in the course of a long and extensive practice, had been called to five women in labour, whose pelves were so exceedingly distorted that he found it impossible to deliver them by embryulcia, although

[a] J'ai vû une petite femme âgée de 38 ans., qui étoit en travail de son premier enfant depuis *huit jours*, ses eaux s'étant écoulées dès le premier jour qu'elle avoit commencé à se trouver mal, sans presque aucune dilatation de la matrice. Etant restée en cette état jusques au quatriéme jour, je fus mandé pour en dire mon sentiment à sa Sagefemme. . . . . Neanmoins pour tout cela [his directions] elle ne put jamais accoucheur et son enfant qui venoit la tête devant, mais la face en dessus resta toujours au même lieu, sans pouvoir avancer au passage, que cette femme, qui étoit très-petite, avoit tellement étroit, et les os qui le forment si serres et proches l'un de l'autre, et l'os de croupion si recourbé en dedans, *qu'il me fut entierement impossible d'y introduire ma main pour l'accoucher, quoi que je l'aye assez petite*, lorsque je fus mandé pour lui donner ce secours, trois jours ensuite de la premiere fois que je l'avois vûë; de sorte qu'y ayant tâché inutilement il ne me fut pas possible d'en venir à bout, ne pouvant introduire ma main qu'avec *un extrême effort*, á cause de l'étroitesse du passage d'entre les os, et l'ayant introduite elle se trouvoit *si serrée*, qu'il, m'étoit impossible d'en remuer seulement les doigts, et de la faire avancer assez pour pouvoir conduire un crochet avec sureté, afin d'en tirer cet enfant qui étoit mort depuis près de quatre jours, suivant l'apparence; ce qu'ayant essayé je declarai l'impossibilité d'accoucheur cette femme à tous les assistans, qui en étant bien persuadez, me prierent de lui tirer son enfant du ventre par l'operation Cesarienne, laquelle *je ne voulus pas entreprendre, sçachant bien qu'elle est toûjours trés certainement mortelle à la mere.*—*Mauriceau*, vol. ii., p. 23.

he has, I believe, had occasion to use the perforator and crotchet as frequently as any man in the kingdom. In one of these cases, the presentation of the child was preternatural, and, judging it proper to make an attempt to turn the child, he, by great perseverance, succeeded in pressing his hand through the superior aperture of the pelvis, but he met with so much difficulty in effecting this, that he immediately relinquished his design of attempting to bring down the feet of the child, and was satisfied with being able to disengage his hand. As the Cæsarean section was not submitted to in any of these cases, *all the ten lives were lost*"[a]. Dr. Hull gives, also, the details of three cases that died undelivered, in consequence of the impossibility of extracting the child through the pelvis. Jane Kinnerly was eight days in labour, and died of ruptured uterus. In Sarah Fletcher's case it is stated:—"Every attempt to accomplish her delivery proving fruitless, I [Mr. Dunlop] contented myself with giving cordials to support her strength, and anodynes to mitigate her pains. She continued to sink rapidly, and was seized with convulsions about 4 in the afternoon, which soon proved fatal." Ellen Gyte, after sixty hours' labour, died of ruptured vagina, after several attempts to deliver by craniotomy had failed[b].

To these facts, more, I am persuaded, might be added to prove that there are certain cases in which the degree of contraction in the pelvis is so great that delivery through it is impossible. If so, it is criminal to make no effort to save the child. It is, therefore, of the utmost importance to determine the kind of case, and the degree of disproportion which would satisfy the practitioner that he is authorized to have recourse to the Cæsarean section.

In all these cases the cause of the deformity was mollities ossium, and the kind of deformity produced was such that the difficulty of delivery may at once be recognised. The outlet is so contracted that it is impossible to make a satisfactory examination; the brim of the pelvis can scarcely be reached, and, even then, the space is so small, and the power of moving the fingers so slight, that the os uteri and presentation often cannot be touched. If I were to meet with such a case again, I should at once decide on the Cæsarean section, because I hold it to be the solemn duty of the practitioner, who is given two lives in his charge, to use his best efforts to save one, if he cannot preserve both; and in a case where the preservation

[a] Hull's Defence, pp. 221, 222.
[b] Hull's Appendix to Translation of Baudelocque, pp. 152, 159.

of the mother's life by the sacrifice of the child is impossible, to endeavour at least to preserve the child, although the operation be fatal to the mother. We have no right to suffer her to die undelivered. But the Cæsarean section is not of necessity a fatal operation, even in such cases as these, although, undoubtedly, the risk to the mother is much greater when she is the subject of a disease which interferes so much with the reparative powers of nature. Dr. West has well pointed out one great cause of ill success in this operation,—the fact that the uterus after delivery undergoes a process of disintegration while being reduced to its original size, and that even then the newly formed tissue is more lowly organized; hence the difficulty of reunion in the wound. But, beside this, mollities ossium is itself a disease of disintegration which greatly interferes with the healing process. As a proof, I need only refer to Mr. Whitehead's case, which is so faithfully detailed[a]. His patient survived the operation. She lived to the thirty-second day after its performance, but on the ninth day symptoms of the original disease returned, and she died from its effects on the hip-joint. Throughout, the changes in the appearance of the womb were most remarkable, at one time presenting healthy granulations, which were again absorbed. Adhesions observed on the third day disappeared on the eighth, and again reunited. But the manner in which nature combats this difficulty is well shown by the post-mortem examination. Mr. Whitehead states that "the external wound, as well as that in the uterus, was excluded from the general peritoneal cavity by a barricade formed by adhesion of the parietal and visceral surfaces of the peritoneum imperforate at every point, and situated at a distance of half an inch from the external wound"[b]. Had this patient escaped from the disease which led to this

[a] Medical Gazette, 1841, vol. ii., pp. 939, 977.

[b] Mr. Whitehead gives the following account of the post-mortem examination, thirteen hours after death:—"The upper part of the wound, three inches in length, healed by granulation. A small knuckle, the size of a hazel-nut, of the ileum had insinuated itself between the edges of this part, but did not protrude beyond its surfaces; was covered by granulations; the rest of the wound was flabby, and the granulations, which appeared so luxuriant and healthy a week before, had become partially absorbed. The incision into the uterus was at its fundus, and at this time an inch in length; both sides were studded with granulations, a circumstance somewhat remarkable, considering the unhealthy appearance of the external wound. I believe that the wound in the womb had been healed, as previously mentioned in the note of the 23rd, but subsequently separated at the time the reparative process had ceased to go on externally, and that the adhesions were destroyed by absorption. The external wound, as well as that in the uterus, was excluded from the general peritoneal cavity by a barricade formed by adhesion of the parietal and visceral surfaces of the peritoneum, imperforate at every point, and situated at the distance of half an inch from the external wound."—*Op. cit.* p. 978.

operation, she would have recovered from the operation itself. Nature had still sufficient power to form a barricade to protect the peritoneum from exposure.

Recovery from this operation, when the distortion was caused by mollities, has been recorded by Mr. Barlow, Dr. Radford, Mr. Knowles, and Mr. Goodman, proving that, even under unfavourable circumstances, the Cæsarean section is not of necessity fatal to the mother. The prospect of recovery is, however, greatly diminished by delay, by too much meddling, and by fruitless efforts to extract the child through the pelvis. When a patient is allowed to remain six, eight, and twelve days in labour, there is not much chance either for mother or child; but even forty-eight hours is a dangerous risk. Kaizar laid down twenty-four hours as the limit of safety; and as this is quite sufficient time to determine the nature of the case, it should not be exceeded. Frequent examinations are also unfavourable; they often cause great pain and distress, and exhaust the patient; but by far the most mischievous practice of all is making attempts to break down the head by instruments. The failure is followed by mischief in the passages, by inflammation, and fever, which would not otherwise arise. The important point, however, is to determine the case itself in which this operation is indispensable, and this, I think, may be decided by a single, or, at the most, two or three examinations of the pelvis. If the distance between the rami of the ischium and pubes will only allow one finger to pass easily; if the coccyx be strongly bent forward; if, passing the fingers within the cavity of the pelvis, it is found contracted, the sacrum projecting strongly forward; if, when the brim is reached, the distance between the linea-ilio-pectinea and sacrum is only half an inch, an inch or an inch and a half on either side of the pelvis; and if the circuit of the brim seems contracted to a space less than three inches diameter,—no other operation seems to me available, and, therefore, should be at once performed. In the case related, as well as in others recorded, there was the additional proof that none of the ordinary instruments used for extracting the child could be employed.

Mollities ossium is a disease but rarely met with, and seems to be produced in particular districts. More cases are reported from Lancashire than London. I cannot find any in the Dublin Reports. It is, therefore, very necessary not to confound the distortion produced by this disease with that produced by rickets. When rickets occur in childhood, the deformity is characteristic, and totally different from that caused by mollities ossium; the deficiency of space is confined to the brim of the pelvis, and if this difficulty be overcome, none

other remains. Rickets, however, may take place in the adult, and, if so, in consequence of the upright position of the body, the deformity assumes the character of mollities ossium; the cavity and outlet of the pelvis are contracted as well as the brim; the pelvis is expansile; the contraction is never so great as to interfere with the use of instruments; and there is everything in favour of a successful operation, whether with the forceps or crotchet, according to the degree of disproportion. Such cases as these, I fear, have been sometimes reported as cases of mollities ossium, merely because the character of the deformity resembled that produced in the pelvis by this disease, and a successful operation by craniotomy in such a case has been advanced as an argument for its use in cases where its performance would be fatal. To prove the nature of this disease, the difficulties it presents, and its dangers, I shall quote from Dr. Robert Lee's Clinical Reports "the only case of distortion from malacosteon that he had met with in practice, and the softening was entirely confined to the bones of the pelvis." Mrs. Jarvis, who, when young, had spent several years in Manchester, had given birth to three living children without any difficulty. "During her fourth pregnancy she suffered much from pains about the sacrum and ilia, and became unable to walk." Dr. Lee was called to her "January 17, 1830, and found the pelvis greatly distorted, the whole head of the child above the brim, and the os uteri not more than half dilated; the pains had nearly ceased, and she was quite exhausted." With great difficulty the crotchet was got within the head, the craniotomy forceps having utterly failed. "More than three hours elapsed before Dr. Lee succeeded in dragging the head with the crotchet into the cavity of the pelvis, and not until the point of the instrument was passed up and fixed outside the head behind the jaw. The bones of the head were all torn to pieces." . . . . "The placenta came away in half an hour, and the patient recovered, as if the labour had been natural." Again, in 1832, she became pregnant, and Dr. Golding performed the same operation, with the same difficulty, and the same success. In 1833 miscarriage was induced at the fifth month, and the discharge of the liquor amnii was followed in eight days by the expulsion of the embryo, without artificial assistance. In 1835 premature labour was induced at the seventh month, and "the fœtus was expelled without artificial assistance, but its head was squeezed so as to be quite flat at the sides." On the 19th January, 1836, when the same patient was at the end of the sixth month of pregnancy, Dr. Lee endeavoured to induce premature labour by puncturing the mem-

branes. The os uteri, however, was so high up that he could not reach it with the point of the finger, or introduce the catheter so as to perforate the membranes. On 12th February he renewed the attempt, but again failed, partly in consequence of the fore-finger of his left hand being still nearly deprived of sensation and power of motion, from a dissection wound, followed by deep-seated inflammation of the joints. Dr. Lee resolved to try ergot of rye, and gave five grains every hour for several days. On the 18th Mrs. Jarvis informed him that she had felt pains in the back and down the thighs for about ten minutes after taking each powder of the ergot, but that no other effect had been produced by them. The ergot was continued every three hours during the day till the 23rd, when pains like those of labour came on, but they gradually ceased, and the ergot was discontinued in consequence of the sickness and vomiting it produced. On the 28th the ergot was again tried, but as it produced nothing but violent sickness, she refused to continue the use of it any longer. On the 14th March another attempt was made to perforate the membranes with the instrument invented by Mr. Holmes for the induction of premature labour; but this also was unsuccessful, in consequence of the instrument not being sufficiently curved. On Thursday, the 24th March, Dr. Lee passed up into the uterus a stiletted silver catheter with a probe point, and much bent, which had been made for the purpose, and with this the membranes were easily perforated. The liquor amnii immediately began to escape, and labour pains commenced. The following day—"then the beginning of the ninth month—

"Friday, 25th. The pains continued feeble and irregular during Saturday, Sunday, and Monday, and on Tuesday they became strong and regular. At 6 o'clock on the morning of Wednesday, the 30th, the os uteri was thick and unyielding above the brim of the pelvis, and very little dilated. The presentation could not be ascertained. The pains continued strong and regular. Mr. Simpson, of Gray's-Inn-lane, took 30 oz. of blood from the arm, and gave 40 drops of laudanum. *At this time Dr. Lee feared that it would be necessary to have recourse to the Cæsarean operation, to prevent her dying undelivered.* At 4 P.M. the pains continued, the os uteri was much more dilated, and Dr. Lee ascertained that the nates presented. He immediately resolved to attempt delivery by passing the crotchet through the anus completely within the pelvis of the fœtus, fixing it upon the bones, and extracting. This succeeded, and the pelvis and lower extremities were delivered without much difficulty, and a strong tape passed around the

body of the child. The abdominal and thoracic viscera were then drawn out with the crotchet, and the upper extremities brought down. The fore and middle fingers of the left hand were then slid along the back of the child, and pressed forward till they touched the occiput. The perforator was then passed up to the occiput, and a free opening made in it. The crotchet was next passed up, and its point forced through the opening, fixed in the base of the skull, and strong traction made for some time. At last he succeeded in extracting the head, with the bones all crushed together. After this severe and tedious operation she was left in a very exhausted state, and died the following day, with vomiting and other symptoms of ruptured uterus. On examining the body after death, Dr. Lee found the muscular coat of the anterior part of the neck of the uterus lacerated"[a].

I have quoted this case nearly at length because of its importance: first, as proving the rarity of this disease in London. It was the only case of malacosteon that Dr. Lee met with up to that date. Secondly, the distortion, although great, was not to such a degree as to render the use of the perforator and crotchet impracticable, as happened in the case now brought forward. Thirdly, it demonstrates the extreme difficulty and danger of such an operation to the mother. Had the Cæsarean section been performed, the risk could not have been greater, and the child's life might have been preserved.

I hold this principle, that no practitioner is justified in taking away human life, even from an unborn child, unless he is nearly certain that it will be the means of saving the parent; and in cases such as these, where the mortality from craniotomy is as great as the Cæsarean section, he is bound to adopt the operation that will save the child.

Cases of extreme disproportion sometimes are met with, not caused by mollities ossium; and occasionally tumours so obstruct the pelvic cavity as to render the extraction of the child by instruments extremely difficult. In such cases the question of the propriety of the Cæsarean section again arises, and is much more difficult to decide than in cases of extreme distortion from mollities ossium.

Much confusion has arisen in discussions on this question, by the introduction of arguments, I should rather call them sophisms, derived from statistics. A comparison has been in this manner instituted between perforation and the Cæsarean section, greatly in favour of the former operation.

[a] Lee's Clinical Midwifery, pp. 74, 78. 1842.

Thus, while the mortality from hysterotomy has been raised to 86 per cent., that from craniotomy is only 20 per cent.; or, in other words, while, by the latter operation, one in five are lost, by the former only one in five are saved. If this conclusion were justly drawn, it would negative the Cæsarean section altogether; but it is forgotten that no comparison of this kind can be fairly made between these operations; because, while, on the one side, the danger to the mother from gastrotomy is uniform, always present, that from craniotomy varies precisely as the degree of disproportion for which the operation is performed. No operation is more easy to perform, or safer for the mother, than craniotomy, when the contraction of the pelvis is not great; but if the disproportion be extreme, no operation is so difficult, or more dangerous to her. In the one case it may be undertaken because the head is impacted in the pelvic cavity; the head is broken up, the difficulty is removed, and the patient recovers. In another, as that quoted, the disproportion is extreme; the operation most tedious and difficult to perform; the child is at length torn away, crushed to pieces, and the mother dies of ruptured uterus. It is only cases of this latter class that should be compared with the Cæsarean section; but statistics place all on the same level, and lead us to a false conclusion.

Again, with regard to the mortality from the Cæsarean section, any notice of the causes which must increase it are of necessity omitted. The delay before the operation was undertaken, exhausting efforts previously made to deliver by instruments, and such like accidents, make this operation more fatal than it otherwise would be. It is only necessary to compare the British and Foreign reports of mortality from the Cæsarean section to prove this. On the one side, you have the results of hesitation and fear to venture on so bold a step. On the other, nothing of the kind, but, perhaps, rather too great promptitude. British mortality is, consequently, frightfully increased, while that from the Continent presents a much more favourable aspect. The number of Cæsarean sections in America is small, but the results agree much more nearly with Continental than with English practice. There were twelve such cases, and of these, eight mothers recovered, and only four were lost. Continental and American statistics are, therefore, decidedly in favour of this operation. The British tables as strongly protest against it.

I place very little confidence in such statistical conclusions, but would rather seek to determine this very difficult question by comparing case with case. Each operation has been per-

formed in precisely similar conditions, and a comparison of the facts and results will lead us much nearer to a just conclusion than any which may be derived from statistics at present both limited and imperfect.

The cases, independently of mollities ossium, in which we might be called upon to decide upon the question which operation should be preferred, are:—First, cases of *extreme* distortion of the pelvis from rickets; secondly, pelvic tumours; and thirdly, the pelves of dwarfs. The rickety pelvis generally presents a deformity of one character; the promontory of the sacrum is pressed forward towards the symphysis pubis, which is rather expanded than otherwise; the cavity of the pelvis is shallow, and the outlet wide, but having the coccyx strongly bent forward. Want of space between the sacrum and pubes and the projecting coccyx are the chief difficulties. If the former be overcome, the latter will not give much trouble; but cases sometimes are met with in which the antero-posterior measurement is so small that craniotomy becomes an operation of extreme difficulty and danger, and the question naturally arises, whether, under such circumstances, the Cæsarean section should not be preferred. It is such cases as these which lead to the question, what is the smallest space through which the child can be extracted from the pelvis? The space means that between the promontory of the sacrum and the pubes; and this has been laid down by different authors, according to their experience. Denman, who had witnessed the case of Elizabeth Sherwood, delivered by Dr. Osborne successfully, lays it down that "if the cavity of the pelvis be so far closed that it should in *any part very little exceed one inch* [Elizabeth Sherwood's was less], of which examples have sometimes occurred, we might presume that the head of the child, though it were reduced to the least possible size, could not be extracted through it, and then the necessity and propriety of performing the Cæsarean section would be allowed, whatever aversion we might have to it, especially if we had reason to think that the child was living, or to conclude that it was not dead"[a]. Osborne, who performed the operation, fixes upon an inch and a half as the least space. Since then, authors have given *minima* varying from an inch to two inches[b]. In a case of this kind the comparative merits of either operation may be illustrated by two cases. In one,

[a] Denman, p. 532.

[b] Least conjugate measurement, according to Davis, 1 inch; Hamilton, 1½ inch; Burns, 1¾ inch; Hull, 1¾ inch; Ramsbotham, 1⅞ inch; Campbell, 2 inches; Dewees, 2 inches; Baudelocque, 2 inches, French.

which came under my own notice, the conjugate measurement was an inch and a half, and was delivered by craniotomy. In the other, the space was an inch and three-quarters, and was delivered by Mr. Jackson, of Newport, who performed the Cæsarean section.

In 1847, I was requested by Mr. Codd, of Rickmansworth, to see a case of difficult labour arising from distortion of the pelvis. The woman was not more than 4 feet 3 inches in height, thirty-three years of age, and born of diminutive parents. She was perfectly healthy, and well formed, until about five years of age, when she was attacked with measles; the eruption suddenly diappeared, and was followed by inflammation of the chest. During her illness, her parents were thrown on the parish for relief, and from this time the disease commenced which produced the deformity. It chiefly affected the spinal column, and she was eighteen years old before she could walk without a crutch. There was a curvature of the dorsal vertebræ strongly to the right side, and the lumbar vertebræ formed a curve, bent so much forward that the axis of the brim of the pelvis was nearly horizontal. She became pregnant about June, 1846, and was taken in labour March 8, 1847. In about six hours the waters broke, and the pains ceased for about twelve hours. They then returned, and continued for about forty-eight hours before I saw her. She was in active labour, her spirits good, and her pulse tranquil; two fingers were easily introduced within the pelvic cavity, but at once came into contact with the sacrum, projecting so strongly forward that it had been mistaken for the head of the child. It was necessary to use the left hand, in order to make a satisfactory examination. Two fingers were bent upwards and forwards, and passed above the brim of the pelvis, and the conjugate measurement was ascertained to be an inch and a half. The difficulties which the case presented were not diminished by the circumstances in which the patient was placed, living in confined apartments, in a village sufficiently far from London to render any additional aid impracticable. Had she been in London, I should have had the Cæsarean section performed, but in Rickmansworth this was out of the question. The attempt must be made to drag the child through a space that a small apple would not pass. The operation was commenced on Thursday, March 11, at 7 P.M. The perforator was easily applied, and forced into the cranium; the bones were broken in the transverse direction only, the blades would not separate in the antero-posterior. The crotchet was introduced with great difficulty. Having at length succeeded, traction was

made during the pains, resting in the intervals. The cranium on the left side was completely broken up, but did not in the least advance. Three hours had now passed, and I thought it advisable to discontinue any further effort that night. An anodyne was given, and we returned next morning at 8 o'clock.

12th. The operation was resumed; the broken bones of the cranium protruded through the os uteri, which was half dilated. It was impossible to apply the crotchet as before. Several varieties of craniotomy forceps were tried, but could not be used in so confined a space. The point of the crotchet was at length forced through the orbital plate of the frontal bone, and a firm hold obtained; the extractive force was gradually increased to the very utmost strength, but without success; the effort to get the base of the skull obliquely through also failed. At length the bone separated at the frontal suture, and came away. Two hours were now spent, and as of necessity the soft parts were irritated by these efforts, and the woman exhausted, she was again given an anodyne, and left for a few hours. On our return we found the pulse 120. She had no sleep, because of the pains; the fragments of the head were pressed more into the brim, and by placing the crotchet on the outside, and fixing it in the fold of the neck, the head was at length extracted. There was nearly as much difficulty in the passage of the shoulders; a blunt hook was placed in the axilla, an arm brought down, and the child at length removed. It was small; putrescency commencing in the funis, but in no other part.

For six days this patient went on favourably, so that on the 19th, having passed a very good night, pulse 120, abdomen soft and free from pain, lochia natural, she felt so well that she sat up in bed, and took part of a mutton chop; but on the 20th she had passed a restless night, from a troublesome cough, and felt a great sense of weariness. On the 21st, the bowels being confined, she was ordered an aperient draught, which acted about seven or eight times, and was followed by great prostration. She was given half a grain of morphia every three hours.

22nd. She slept until half-past 4 o'clock; then asked for something to take, as she felt pain. Having had two cups of tea, she said that she felt better, and thought she could sleep. Her friends left her for about two hours, and were induced to return by hearing her moan heavily. They found her in a dying state, and she soon after sank, apparently from exhaustion.

The post-mortem inspection gave no explanation of the cause of death. There was no trace of peritonitis; the intes-

tines were distended with flatus; the uterus of the ordinary size for that period, rather softer than usual. The pelvis was found to be in the conjugate axis an inch and a half, and four and a half inches in the transverse measurement.

This case may be compared or contrasted with one reported by Mr. James Hawkins, of Newport:—

"The patient, Matilda Tanner, was twenty years old, and 4 feet 1 inch high. Her mother states of her, that she had been 'hurted in her birth.' She made no effort to talk before her fifth year, and could not speak distinctly until her twelfth year. Her deciduous teeth did not appear until she was a year old; at this age she made her first essay to walk with crutches, which she could not dispense with until she had attained the age of 10. She menstruated first in her eighteenth year; then, to the period of her confinement, only four times, at irregular intervals, and in small quantities. From the age of twelve to twenty she enjoyed uninterrupted good health.

"On the 17th February, 1858, labour pains commenced. Mr. Jackson saw her next day, and upon examination per vaginam found that the dimensions of the pelvis were very irregular and small, the last lumbar vertebra projecting so far over the brim that the antero-posterior diameter, or rather the distance between the symphysis pubis and last lumbar vertebra did not exceed *an inch and three-quarters*. Expulsive pains not having commenced, she was left until the next day.

"On the 19th, Mr. Jackson again visited her, in company with Messrs. Brewer and Woollett, both of whom coincided in the opinion that the Cæsarean section was the most feasible—the only means whereby the life of the fœtus could be preserved, and, under the circumstances, the most favourable to insure the life of the parent. Accordingly, in their presence, and with the aid of his assistant, Mr. Charles M'Ardle, having previously obtained the consent of the patient and her parents, Mr. Jackson proceeded to operate. . . . . The membranes had ruptured without interference.

"Having been placed on a table, with her legs hanging over one end, and her head and shoulders slightly pillowed up, she was put under the influence of chloroform. Mr. Jackson commenced the incision about half an inch to the left of, and about the same distance below the umbilicus, extending about eight inches towards the pubes, and parallel to the mesial line. Integuments and subcutaneous adipose tissue having been cut through, the subjacent tendinous structures and peritoneum were successively divided to the same extent as the

first incision. The uterus, being now exposed, was cut into to the extent of about six inches, bringing into view the fœtus, presenting naturally, with the funis coiled round it. The fœtus, placenta, and membranes having been carefully removed, the uterus contracted firmly almost immediately. A small portion of omentum that protruded having been returned, the parts were quickly brought together with sutures and long strips of adhesive plaster in their intervals; over this were placed a few rolls of lint, and a broad bandage being tightly applied over all, she was removed to bed.

"The baby, being detached from the placenta, was consigned to the care of a female attendant, and when seven days old, weighed 8½ pounds. From this date to the 25th she had an attack of peritonitis, which yielded to treatment, on the seventh day she had an easy night; tympanitis entirely gone; peritonitis almost gone; pulse 120; wound was opened, and sutures removed; the upper part looked healthy, and inclined to adhere; from the lower end there was a very offensive discharge. This was attended to, and from this date she continued to progress steadily, with the exception of an attack of bronchitis, which was subdued. On the 4th of April she got out of bed for the first time. Since then, she and her baby, a fine little girl, have frequently been at Mr. Jackson's surgery, and are at present in perfect health"[a].

The points of resemblance in these cases are remarkable. The disease which led to the distortion commenced in infancy, from which they slowly recovered. Tanner was obliged to use crutches until ten years of age; my patient, until eighteen. E. B. was 4 feet 3 inches; Tanner, 4 feet 1 inch in height. The antero-posterior axis of the brim of the pelvis with the former was an inch and a half; in the latter, an inch and three quarters. Both were in perfect health at the time of the operation; but here the resemblance ceased. In the case delivered by craniotomy, both mother and child were lost: in that delivered by the Cæsarean section, both mother and child were saved. The conclusion to be derived from these parallel facts is obvious, and is greatly supported by a remarkable case reported in the American journals, in which both operations had been, at different times, performed on the same patient.

In 1831, Dr. George Fox, of Philadelphia, was called in to attend Mrs. R., who had been some time in labour. On examination he found such distortion in the brim of the pelvis, the conjugate axis being less than two inches, that he

[a] Medical Times and Gazette, vol. xxxvii. pp. 488, 489.

determined to have a consultation, to determine the course to pursue. She remained in labour from the 14th to the 16th of June, when Dr. Physick, Dr. Meigs, and Dr. James were called in. The Cæsarean section was proposed, but strongly objected to by Dr. Physick: yielding to his opinion, Dr. Meigs undertook to perform craniotomy. He commenced the operation at 5 P.M.; opened the cranium; and returned at 10 o'clock. He used the most powerful and long-continued efforts to extract the head, without success. She was left until the following day, when several trials at extraction were made, but were equally unsuccessful. Towards evening, some febrile symptoms presenting themselves, she was bled, given an opiate, and allowed to rest. On the morning of the 18th another attempt was made, which succeeded. Thus, thirty-three hours were occupied, from the time the head was first opened until the child was delivered; nevertheless, the woman recovered rapidly, and could walk in three weeks.

In 1833 Dr. Meigs was called upon to deliver the same patient. Finding the instruments he had previously used very inefficient, he had a trocar and a craniotomy forceps, like a tooth-forceps, made for the purpose, and with these instruments delivered her in much less time. She recovered: and in 1834, becoming again pregnant, applied to Mr. Nacrede, who, knowing her previous history, "was convinced of the impropriety in this, the third labour in the same individual, of permitting such a sacrifice of life to an innocent being." He, therefore, determined to have a consultation upon the propriety of the Cæsarean section. It was agreed that it should be performed; and Mr. Gibson undertook the operation. A female child was extracted, alive and healthy. In four weeks after the operation the woman was allowed to leave her bed, and in six weeks was perfectly recovered[a].

Towards the end of August, 1837, Mrs. R. called upon Dr. Fox to engage his services. She had completed the seventh month of pregnancy. Premature labour, in her then advanced state, Dr. Fox considered would be attended with as much difficulty, and much greater danger, than at the full period. It was not, therefore, attempted. November 5, 1837, labour commenced. She was visited by Dr. Fox and Dr. Meigs, and found by them "labouring under a good deal of excitement; pulse 106; countenance anxious and pallid, and apparently in a much more unfavourable situation than in either her first or second accouchements." Mr. Gibson and

[a] American Journal of Medical Science, vol. xvi. p. 343. 1835.

Dr. Hodge were called in, and the Cæsarean section agreed upon. A living child was extracted; and Dr. Fox states:— "Our patient had a better 'getting up' than many females after an ordinary accouchement; her sufferings after the operation were slight indeed. In twenty days after the operation she sat up, and for some days previously constantly nursed her infant"[a].

In this case the conjugate axis of the pelvis is stated to be under two inches; rather more space than in the previous cases; and yet Dr. Meigs, using his utmost skill and the most powerful efforts, failed to remove the head until thirty-three hours had passed over from the time it was first opened. This same patient was twice delivered afterwards by the Cæsarean section, and both mother and child saved. Such facts as these are sufficient to negative the doctrine that the Cæsarean section is, of necessity, a fatal operation, and prove that the risk of craniotomy is quite as great, because of the extreme difficulty of the operation. They establish, I think, the rule that in the ovate pelvis of rickets, when the conjugate axis is less than two inches, craniotomy should not be attempted, but an effort made to save the child by the Cæsarean section.

Those cases in which the passage of the child is obstructed by tumours or other morbid growths, are similar to cases of mollities ossium in this respect. A disease exists in the constitution, of which the patient may die, quite independently of any operation performed for her delivery. If such an operation be performed, therefore, it is undertaken with every disadvantage. Whether craniotomy or the Cæsarean section be selected, the risk is in every respect equal; and, being so, I feel it to be our solemn duty to save at least one life if possible. Some published cases will, I think, illustrate, if not prove, this position.

Dr. Shekleton, when Master of the Dublin Lying-in Hospital, reported in this Journal a very remarkable case, in which a tumour filled, almost completely, the pelvic cavity. The patient, Anne Parsons, aged 35, had been delivered five times in the Dublin Lying-in Hospital. The first child was still-born; the second delivered by the crotchet; the third, acephalous; the fourth, delivered in December, 1841, by the crotchet; and the fifth, in December, 1846, by the same means. In the records of the Hospital the tumour was described at that time "as being of such magnitude and density as to convey the same sensation to the fingers of the examiners as the fœtal

[a] American Journal of Medical Science, vol. xx. p. 13.

head after it had cleared the os uteri. . . . The head was perforated, after fourteen hours, with no great difficulty, but it required two hours of active and unremitting exertions of three gentlemen to drag it through the pelvis; nor was this effected until the entire calvarium was removed, so that when extraction was finally accomplished, nothing remained of the head but the face and base of the skull."

July 20, 1849. Dr. Shekleton's attention was called to her as a patient, for the sixth time, of the Dublin Lying-in Hospital. She was seen in the morning, and stated that she had been in labour since the previous evening. "On examination, the same tumour, large and unyielding, was found to occupy the whole cavity of the pelvis, with the exception of a space immediately behind the pubes, which barely admitted the passage of one finger between it and the tumour; while to the right the space was much larger, owing to the tumour being to the left side. Neither the os uteri nor presentation could be ascertained. On examination of the abdomen, the uterus appeared to lie obliquely, with its fundus inclined to the left hypochondrium, and its cervix pushed into the right iliac fossa, where the head of the child lay—hard, round, slightly movable—resembling very much a tumour, for which, indeed, it was at one time mistaken. . . . . The fœtal heart was distinctly audible." Dr. Shekleton, in very clear and forcible language, states his view of the case:—

"On weighing maturely in my own mind all the circumstances of the past history and present state of the case, namely, the extreme straitness of the passage through which the child had to pass, even in the most mutilated condition, as proved by the immense amount of difficulty that was experienced in her last confinement, and which might naturally be expected to be augmented by an increase of growth in the morbid structure since that time; the strength and vigour of the child, as evinced by the stethoscope, and the certainty of its being the fifth sacrifice to the mother's chance of recovery; the woman's naturally healthy constitution guaranteed, not only by her present state, but, to a certain extent, by her wonderfully rapid recovery on the last occasion; the short time she was in labour, and the uterine pains being neither vigorous nor distressing, with a tranquil state of mind, great fortitude, and a pulse 74: all these circumstances affording presumptive evidence that it was a case in which the Cæsarean section might be performed most legitimately, and with the greatest prospect of success, I summoned a consultation of Drs.

Collins, E. Kennedy, and Johnston, late Masters of the Hospital, together with Sir Philip Crampton, the Consulting Surgeon." Dr. Shekleton's opinion was overruled; and, feeling the great responsibility that would attach to him individually if he acted in accordance with his own views of the case in opposition to the judgment of such sound and experienced practitioners, and failed in an operation which they deemed ineligible, Dr. Shekleton at once determined on yielding to their decision, and undertook the task of carrying it into effect. The perforator was introduced, the cranium broken up, and as much as possible of the brain removed by the crotchet. "5 o'clock P.M. having arrived, it was agreed to adjourn to 7 o'clock. On examination then, Dr. Shekleton found, to his surprise and regret, that the left arm of the child had fallen into the narrow space in the vagina, and no effort of his could return it, nor could a finger be passed up the side of it to determine the position of the head. . . . . The crotchet was fixed in the axilla, and such traction employed that at length the arm gave way, bringing with it the scapula of that side. By degrees the whole of the thoracic viscera, the ribs, and contents of the abdomen, were torn away, and, finally, the spine was, unintentionally, divided in the middle, and many of the vertebræ were separated. After various attempts and failures, two crotchets were at length fairly fixed in the fœtal pelvis, and, by the united alternate efforts of Dr. Shekleton and his friends, he at length succeeded in dragging the lower extremities through the os externum, and with them the right arm, attached by a strip of integument and torn muscles. In this stage of the operation the funis got entangled in the crotchet, and the placenta came away with it, but no hemorrhage ensued." Dr. Shekleton observes:—"A most perplexing and difficult operation at all times, but more especially so in the present instance, still remained to be performed, namely, the extraction of the child's head. In despair of finding any means to fix it at the brim, I [Dr. Shekleton] introduced my finger into the vagina, and there, to my surprise and satisfaction, found the stump of the dorsal vertebræ, with small portions of the ribs attached, which I instantly secured, and firmly held until the crotchet was fixed in the back of the ear externally, and the head extracted with extreme difficulty, and much flattened. Thus ended the mechanical efforts by which the delivery was at length effected, which occupied upwards of three hours at our last sitting, and which exhausted the strength and depressed the spirits of myself and friends on the occasion. . . .

In ten minutes after the operation, Anne Parsons breathed her last"[a].

The graphic language of Dr. Shekleton well describes the difficulties and *dangers* of this operation: the danger of hemorrhage; the risk of leaving the head behind in the uterus; the liability of the uterus itself giving way, which actually happened. The case may be contrasted with one which came under the care of Dr. Waller, of St. Thomas', in which Mr. Le Gros Clark performed the Cæsarean section; an operation performed under the great disadvantage that the patient was at the time suffering under an attack of bronchitis. Having given an outline of the previous history of the case, Dr. Waller proceeds to say that—" on examination, per vaginam, a tumour of bony hardness was felt, nearly blocking up the entire pelvic cavity. From its hardness, immobility, and apparent connexion with the sacrum (for we could not separate the one from the other), it seemed evident that no child, however mutilated, could be brought through the natural passages; that nothing short of an abdominal section would be sufficient for the patient's relief. . . . . The space between the anterior portion of the tumour and the symphysis pubis was precisely $1\frac{3}{8}$ inches, while the lateral diameters were also greatly encroached upon. The operation was performed, a living child extracted, the placenta was separated, and hemorrhage had ceased; but at this moment the patient was seized with an irrepressible fit of coughing, in consequence of which, notwithstanding the utmost caution was taken to prevent such an occurrence, the intestines were forced out *en masse*. However, they were replaced, and the integuments were accurately brought together, and secured by means of the interrupted suture, an aperture sufficient to allow the escape of any discharge being left at the lower extremity of the wound.

The operation was performed February 7, 1853. The symptoms were favourable for the first forty-eight hours, but on the 9th, "a remarkable change was observed. The countenance was pallid and anxious; the lower jaw dropped; power of deglutition nearly suspended, and a cold clammy sweat over the surface. She sank at 9 o'clock P.M. The inspection after death proved that a pedunculated fibrous tumour, the size of the head of a small fœtus, occupied the whole pelvic cavity"[b].

Dr. Oldham also reports a case in which the Cæsarean sec-

[a] Dublin Quarterly Journal of Medical Science, vol. x. pp. 287, 293. 1850.
[b] Medical Times and Gazette, vol. xxvii. p. 266.

tion was performed by Mr. Poland, in consequence of the pelvic cavity having been completely filled by a scirrhous mass. The child was saved, and the mother recovered perfectly from the operation, but, as might be expected, died some time afterwards of the original disease[a].

An impartial examination of these facts leads us obviously to the conclusion, that when the pelvic cavity is occupied by a diseased mass, and will scarcely admit a space more than two inches for the removal of the child, the risk to the mother is the same, whichever operation be performed. It is, therefore, the duty of the practitioner to select that which will give him a reasonable chance of saving the child.

The propriety or impropriety of the Cæsarean section is a question of that importance that I have been induced to bring it again before the profession; the more because it seems to me that too little weight is attached in this country to the life of the infant. Dr. Meigs expresses in forcible language the doctrine commonly maintained, and "protests against the Cæsarean section being performed with any other views than those relative to the preservation of the mother, saving, always, that to preserve the child is a great additional good fortune"[b]. Against such a doctrine as this I must equally enter my protest; and hold it to be the duty, both morally and professionally, of the practitioner, to make an effort to save the infant's life in cases where its sacrifice gives no certainty that the life of the mother may be preserved. The preservation of its life must not be viewed as an accidental piece of good fortune, but as a solemn duty, when the risk to the mother of craniotomy equals, or *nearly* equals, the Cæsarean section. No conscientious practitioner would for one moment hold the balance equally between the mother's and the child's life. He would not hesitate to sacrifice the infant, if it were the means of preserving her. But in cases where there is no certainty whatever that such will be the case, where, on the contrary, the recovery of the woman after the frightful operation of tearing the infant piecemeal through the passages is looked upon as a remarkable event, a wonderful recovery, I repeat, that the practitioner is deeply responsible who will sacrifice human life for such a doubtful result.

Having no faith whatever in conclusions derived from statistics in reference to this question, I have endeavoured rather

[a] Lancet, vol. ii. p. 226. 1851.
[b] Science and Art of Obstetrics, by Meigs, p. 510.

to compare similar cases, and the results of each operation, as leading us nearer to the truth. The inquiry has led me to the following conclusions:—

1st. That there are certain cases of mollities ossium in which it is impossible to extract the child; in others, it may be possible to do so, but by an operation of such difficulty and danger to the mother, that we are not justified in sacrificing human life for such a doubtful chance.

2ndly. There are cases of distortion, in consequence of rickets, in which the disproportion is confined to the antero-posterior measurement of the brim of the pelvis; but that space is sometimes so diminished that the operation of craniotomy becomes equally difficult and dangerous as in the former case. Under these circumstances, the same rule applies with even more force; because, as the woman is generally in good health, the chances of recovery from the Cæsarean section are greater. This operation seems to me justifiable, if the conjugate axis of the brim is only two inches.

3rdly. When tumours obstruct the pelvic cavity so as to leave a space of little more than two inches through which to extract the child, the practitioner is not justified in attempting craniotomy; not only because of the danger to the mother of the operation itself, as in Dr. Shekleton's case, but because the pre-existing disease in the parent renders her life so doubtful that we are not justified in taking human life when there is every probability of the mother sinking under the disease, even if she escape the dangerous operation of craniotomy.

Lastly, I may add, that my objection to statistical conclusions is founded on the fact—1st. That the number of cases in which the Cæsarean section has been performed in these countries is not sufficiently numerous to correct the errors produced by accidental causes. The operation has been performed in several cases under every disadvantage, arising from long-protracted labour, pre-existing inflammation, and such like causes of a fatal issue, the mortality being thereby disproportionately increased. 2ndly. It is at present impossible to separate those cases in which craniotomy was performed in consequence of extreme disproportion in the pelvis from those in which the disproportion is only so great as to prevent delivery by the forceps. Consequently, the total results of such cases must be erroneous. With this objection, I shall place in a tabular form the whole number of cases reported.

Place.	Total Cases.	Mothers.		Children.		Observations.
		Living.	Dead.	Living.	Dead.	
Great Britain,	57	10	46	34	25	Cause of death in Mr. Whitehead's case doubtful.
America, .	12	8	4	6	4	Two results not reported.
Europe, . .	409	158	251	237	110	Dr. West's Table.
Total, .	478	176	301	277	139	

British Cases of Cæsarean Section.

No.	Year.	Practitioner.	Cause.	Duration of Labour.	Mothers.		Children.	
					Living.	Dead.	Living.	Dead.
1	1737	Mr. R. Smith. .	Mollities ossium.	7 days.	. .	1	. .	1
2	1739	Mary Donnelly,	. . . . .	12 ,,	1	. .	. .	1
3	1740	Dr. White. . .	. . . . .	. . .	. .	1	. .	1
4	1769	Mr. Thompson. .	. . . . .	. . .	. .	1	. .	1
5	1773	Dr. Young. . .	Rickets. . .	. . .	. .	1	. .	1
6	. . .	Mr. A. Wood. .	. . . . .	. . .	. .	1	. .	1
7	1774	Mr. Chalmers. .	. . . . .	12 ,,	. .	1	1	
8	1774	Mr. John Hunter.	Mollities ossium.	. . .	. .	1	1	
9	1774	Dr. Cooper. . .	. . . . .	2 ,,	. .	1	1	
10	1775	Mr. W. Whyte,	Ditto.	. . .	. .	1	. .	1
11	1777	Mr. Atkinson. .	Ditto.	3 ,,	. .	1	1	
12	. . .	Mr. Clarke. . .	. . . . .	8 ,,	. .	1	. .	1
13	1793	Mr. Barlow . .	. . . . .	5 ,,	1	. .	. .	1
14	1794	Dr. Hull. . . .	Ditto.	. . .	. .	1	1	
15	1795	Dr. Hamilton, Jr.	Ditto.	2 ,,	. .	1	1	
16	1798	Dr. Hull. . . .	Ditto.	10 ,,	. .	1	. .	1
17	1798	Mr. Kay. . . .	. . . . .	3 ,,	. .	1	1	
18	1799	Mr. Wood. . .	Ditto.	. . .	. .	1	1	
19	1800	Mr. John Bell. .	. . . . .	. . .	. .	1	1	
20	1801	Mr. Dunlop. . .	Ditto.	. . .	. .	1	1	
				Forward,	2	18	10	10

AUTHORITIES.

Case.	
1	Smellie, vol iii., p. 422.
2	Edinburgh Essays, vol. v.
3	Hull's Defence, p. 67.
4	Medical Observations, vol. iv.
5	Manuscript Lectures, by Dale.
6	Hamilton's Outlines.
7	Do. Do.
8	Medical Observations, vol. v.
9	Do. Do
10	Hull's Defence.
11	Hull's Defence, p. 67.
12	Mem. Med. Society, vol. iii.
13	Medical Records, p. 154.
14	Hull, p. 172.
15	Hamilton's Outlines.
16	Hull, p. 162.
17	Do. Do.
18	Mem. Med. Society, vol. v.
19	Medico-Chirurgical Transact., vol. iv.
20	Appendix to Hull's Translation.

No.	Year.	Practitioner.	Cause.	Duration of Labour.	Mothers.		Children.	
					Living.	Dead.	Living.	
				Forward,	2	18	10	10
21	. . .	Mr. Wood. . .	. . . . .	. . .	. .	1	. .	1
22	1817	Barlow and Cost.	. . . . .	. . .	. .	1	1	
23	1820	Dr. Radford. . .	Mollities Ossium.	34 hours.	. .	1	. .	1
24	1821	Dr. Radford[a]. .	Ditto.	. . .	. .	1	. .	1
25	1821	Barlow & Dugdale.	. . . . .	. . .	. .	1	1	
26	1821	Henderson. . .	. . . . .	. . .	. .	1	1	
27	1825	Dr. Radford[b]. .	Ditto.	83 „	. .	1	2	
28	. . .	Dr. Radford. . .	. . . . .	53 „	. .	1	. .	1
29	1826	Dr. Crichton. .	. . . . .	6 days.	. .	1	1	
30	1827	Mr. Knowles. .	Ditto.	30 hours.	1	. .	1	
31	1829	Dr. M'Kibbins. .	Exostosis. .	. . .	. .	1	. .	1
32	. . .	Mr. Ward[c]. . .	. . . . .	. . .	. .	1	. .	1
33	1833	Mr. Greaves. . .	. . . . .	. . .	1	. .	1	
34	1834	Dr. Montgomery.	Fibrous tumour.	. . .	. .	1	. .	1
35	1841	Mr. Ross. . . .	. . . . .	. . .	. .	1	1	
36	1843	Dr. Elliot. . . .	. . . . .	. . .	. .	1	. .	1
37	1843	Mr. Goodman and Dr. Radford.	Mollities ossium.	5 days.	1	. .	1	
38	1840	Mr. Whitehead[d].	Ditto.	. . .	. .	. .	1	
39	1843	Mr. Braid. . .	. . . . .	. . .	. .	1	. .	1
40	1843	Bailey and Hardy[e].	. . . . .	. . .	. .	1	2	
41	1845	Mr. Lyon. . . .	. . . . .	. . .	. .	1	1	
42	. . .	Dr. Wright[f]. . .	. . . . .	. . .	1	. .	1	
43	1847	Mr. Skey. . . .	Rickets. . .	. . .	. .	1	1	
44	1849	Dr. Radford. . .	Mollities ossium.	. . .	1	. .	1	
45	1849	Mr. Campbell. .	. . . . .	. . .	. .	1	1	
46	1850	Mr. Nimmo. . .	. . . . .	. . .	. .	1	1	
47	1850	Dr. Sannerman.	. . . . .	. . .	.	1	. .	1
48	1850	Dr. West. . . .	Ditto.	. . .	. .	1	1	
49	1850	Dr. Oldham. . .	Ditto.	. . .	. .	1	. .	1
				Forward,	7	41	30	21

AUTHORITIES.

Case.
21 Medical and Phys. Journal, p. 346.
22 Barlow's Essays.
23 Edinburgh Med. Journal, vol. lv. p. 67.
24 Do. Do.
25 Merriman and Churchill, p. 317.
26 Do. Do.
27 British Medical Journal, p. 45. 1856.
28 Ranking, vol. x., p. 212.
29 Edinburgh Journal, 1828.
30 Transact. of Prov. Assoc., vol. iv., p. 53.
31 Do. Do. 1831, p. 352.
32 Lancet, vol. ii., 1839–40, p. 28.
33 Lancet, 1833, p. 148.
34 Dublin Journal, vol. vi., p. 418.
35 Edinburgh Monthly Journal, 1842.

Case.
36 Churchill's Midwifery, p. 331.
37 British Obstetrical Record, v ol. i.
38 Medical Gazette, 1841, p. 940.
39 Ranking, vol. vii., p. 330.
40 Do. Do.
41 Edinburgh Medical Journal, Dec. 1845.
42 Lancet, vol. ii., 1839–40, p. 28.
43 Ranking, vol. v., p. 293
44 Do. vol. x., p. 212.
45 Do. vol, x., p. 330.
46 Edinburgh Monthly Journal, 1850.
47 Lancet, July, 1850.
48 Med.-Chirur. Trans., vol. xxxiv., p. 61.
49 Do. Do., p. 89.

[a] The child's head caught by the contracting uterus caused its death. [b] Twins.
[c] One of six cases quoted by the Lancet from "L'Experience," but the details not given.
[d] Mother died on thirty-second day, of hip-joint disease. [e] Twins.
[f] Quoted by Lancet from "L'Experience," vol. ii., p. 28. 1839-40.

No.	Year.	Practitioner.	Cause.	Duration of Labour.	Mothers. Living.	Mothers. Dead.	Children. Living.	Children. Dead.
				Forward,	7	41	30	21
50	1851	Dr. Oldham. . .	Scirrhous tumour.	. . .	1	. .	1	
51	1853	Dr. Waller. . .	Fibrous tumour.	. . .	. .	1	1	
52	1854	Dr. Simpson[a]. .	Mollities ossium.	. . .	. .	1	. .	1
53	1856	Mr. Humphrey.	. . . . .	. . .	. .	1	. .	1
54	1856	Mr. Thornton. .	. . . . .	. . .	1	. .	. .	1
55	1858	Dr. Greenhalgh.	Ditto.	. . .	. .	1	1	
56	1858	Mr. Hawkins. .	Rickets. . .	1 hour.	1	. .	1	
57	1858	Dr. Murphy. . .	Mollities ossium.	. . .	. .	1	. .	1
					10	46	34	25
		American Cases of Cæsarean Section.						
1	1822	Mr. Cellin. . . .	. . . . .	. . .	1	. .	1	
2	1827	Dr. Richmond, Ohio.	. . . . .	. . .	1	. .	1	
3	1827	Drs. Dougal and Vanvalsah[b]. . .	. . . . .	. . .	. .	1	. .	1
4	1835	Messrs. Nacrede and Gibson. . .	. . . . .	. . .	1	. .	1	
5	1837	Dr. Fox and Mr. Gibson, ...	. . . . .	. . .	1	. .	1	
6	1845	Dr. Brodie Herdon.	. . . . .	. . .	1	. .	. .	1[p].
7	1843	Dr. Cyrus Falconer[c].	. . . . .	. . .	. .	1	1	
8	1848	Dr. A. B. Shipman[d].	A tumour. .	. . .	. .	1	. .	1
9	1850	Mr. M. H. Jetter.	. . . . .	. . .	1	. .	. .	1
10	1851	Dr. W. H. Merinar[e].	. . . . .	. . .	1			
11	1851	Ditto.	. . . . .	. . .	1			
12	1851	Ditto.	. . . . .	. . .	. .	1	1	
					8	4	6	4

AUTHORITIES.

Case.	
50	Lancet, vol. ii., p. 226, 1851.
51	Med. Times and Gaz., vol. xxvii., p. 266.
52	British Medical Journal, 1854, p. 1066.
53	Do. Do. 1856, p. 779.
54	Lancet, 1857, p. 313.
55	British Medical Journal, 1858, p. 377.
56	Medical Times and Gazette, 1858, p. 481.

AUTHORITIES FOR AMERICAN CASES.

Case.	
1	New York Journal, March, 1822.
2	West. Medical Journal, Nov. 1827.
3	American Journal of Medical Sciences, Old Series, vol. xvi., p. 346.
4	Do. Do. p. 343.
5	Do. Do. vol. xxii., p. 13.
6	American Journal of Med. Science, N. S. vol. xii., p. 386.
7	American Journal of Med. Science, N. S. vol. vi., p. 264.
8	American Journal, vol. xviii., p. 122.
9	Do. Do. vol. xxi., p. 538.
10	Do. Do. vol. xxxi., p. 567.
11	Do., and Charleston Medical Jour. for March, 1851.
12	Do. Do.

[a] Mother moribund before the operation.
[b] Uterus ruptured before the operation.
[c] A dwarf, 3½ feet high.
[d] Patient sinking before the operation.
[e] Cases 10, 11, and 12—the same patient, who was delivered successfully twice by the Cæsarean section, previous to the third operation, from which she did not recover. Nothing is said about the previous children. Case reported by Dr. F. Owen.