

Notes on a Case of Spontaneous Rupture of the Uterus during Pregnancy through the Cicatrix of a Cæsarean Section Wound, with a brief reference to similar recorded cases.*

By J. M. MUNRO KERR, M.D.

Obstetric Physician Glasgow Maternity Hospital.

THE following is the history of the case which forms the subject of this communication.

Mrs. M., 4-para, was admitted to the Glasgow Maternity Hospital on January 26th, 1904, with a view to having Cæsarean section performed for the second time. Two years previously I delivered her of a living male child by Cæsarean section. Here are my notes of the case on that occasion: "Mrs. M., 3-para, was admitted on October 28th, 1901, to the Glasgow Maternity Hospital. In both the previous labours the children were extracted with difficulty, and were dead. On the last occasion craniotomy had to be performed. The pelvis was of the flat rachitic type, the diagonal conjugate being $3\frac{3}{4}$ in." There seemed to be little if any deformity in the transverse diameter. She was not in labour when admitted but it came on 12 hours afterwards. I intended to do symphysiotomy, and so allowed labour to go on until the os was fully dilated; when however, that stage was reached it was found on examining her and testing the relative sizes of the head and the pelvis that there was too great a disproportion between them to permit of symphysiotomy being done safely. I therefore chose Cæsarean section and employed the "fundal incision" of Fritsch. I came right down on the placenta, which I removed before extracting the child. The child, which weighed 8lbs., was extracted very easily, and the uterine wound stitched with little trouble or bleeding. She was not sterilized. She had a good deal of retching and vomiting during the first three days, but otherwise there were no unfavourable symptoms. The temperature was never above normal, and the pulse after the first three days was not accelerated. The wound healed by first intention, the stitches being taken out on the fourteenth day. She left the Hospital on November 30th, both she and her baby being perfectly well.

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The following note was made on her admission for the second operation. As far as can be judged the patient is now in her 37th week of pregnancy, she has maintained good health and has suffered no special discomfort since she became pregnant. She is well nourished and of good colour, her pulse is of good tension, regular in force and rhythm and numbers 84 per minute. The abdomen is irregularly enlarged, the bulk of the swelling being to the right side. There is a median firm scar of the previous Cæsarean section. Fœtal movements are active but the cardiac sounds are nowhere audible. The cervix is not taken up but admits the tip of one finger.

After an enema, given about midnight, the patient complained of abdominal discomfort—slight pain in the epigastrium; this extended upwards and to the right. She mentioned this to the night nurse, but as she did not complain further and fell asleep the nurse did not think it necessary to report the fact to the House Surgeon. She slept from about 12-30 till 5 a.m., at which time a sanguineous discharge from the vagina was noticed and slight pain in the right iliac region was complained of. At 7 a.m. the temperature was 97.6° and the pulse 80; the pain which had now spread over the abdomen was not very great, so it was taken for painful uterine contractions. There was no sickness or vomiting. At 11 a.m., on making my ward visit, I spoke to the patient quite by accident, for no one considered her condition serious. I then found that there was considerable abdominal tenderness and suggested to those present the possibility that the old uterine cicatrix had given way. As, however, the pulse was 84, regular, and of good tension, I simply advised my House Surgeon Dr. Rodgers to go into the case and note the patient's condition carefully. An hour afterwards I was summoned by him as the abdominal tenderness was now more marked, the pulse 90, the temperature subnormal and the breathing more rapid. At this time the condition of the abdomen was as follows: She lay with her feet slightly drawn up; on palpation there was exquisite tenderness over the whole abdomen, more marked to the right and below the umbilicus; the pain also extended up to the right shoulder. On placing the hand over the abdomen one was struck by the readiness with which the fœtal parts could be defined; above the umbilicus and slightly to the left of the middle line a limb could be made out, while the head lay towards the left iliac fossa. Two tumours could not be differentiated; percussion gave a slightly dull note in the flanks. On vaginal examination the tip of one finger could be pushed through the cervix, but the presenting part could not be felt; on withdrawing the finger it was blood-stained. The pulse numbered

88. A $\frac{1}{60}$ of a grain of strychnine was given and the patient prepared for laparotomy. She was anæsthetised and the abdomen opened along the previous incision. Immediately that was done a large quantity of dark-coloured blood escaped and the intact membranes and placenta with the enclosed foetus presented. The uterus lay retracted behind and down towards the pelvis. The membranes were opened into and a full-time dead child extracted. The uterus was then examined and found to have a transverse rupture extending over the highest part of the fundus evidently through the cicatrix of the wound of the previous Cæsarean section. There were only two slight adhesions, one to the omentum and one to the abdominal wall. The uterus was removed by supra-vaginal hysterectomy, the peritoneum being carefully brought over the stump. Finally all blood clot was removed, and fully two pints of saline solution were introduced into the peritoneal cavity. After the operation the patient was considerably depressed; the lips, cheeks, and extremities were blanched; the pulse was 126, small, easily obliterated but regular. She soon improved however; the following day the pulse was 120 and the temperature 98° . I need not trouble you with details of her progress which was very satisfactory, except that on the second day after the operation she was troubled with a good deal of bronchitis, and on the third day had a faint, which however, was relieved by the administration of strychnine hypodermically and sal volatile by the mouth. She was dismissed a month after the operation perfectly well.

The case just described is one of peculiar interest and that from several standpoints. From the report you see that the true nature of the condition was at first not quite fully appreciated. I was inclined to think that the rupture was incomplete and that the adhesions which I presumed were present, but which did not exist, were limiting any effusion of blood. In this I was wrong, there was a large effusion of blood into the peritoneum and the whole ovum was free in the abdominal cavity. In two other recent cases of complete rupture very much the same features were present—only a slight alteration of pulse tension and rate, but no collapse. It is well to remember this for one is apt to consider complete collapse an essential feature of the accident. The rupture, without doubt, was right through the old cicatrix. The wound simply gave way. It did so, I doubt not, quite quietly, the child being slowly born through the rent.

On reading such a case as the one just described several questions naturally arise to one's mind: (1) Did the fact that the incision was a fundal one predispose to rupture. (2) Was there anything in the

uterine wound at the previous Cæsarean section which favoured the rupture. (3) Is the danger of rupture of the cicatrix such that one should condemn non-sterilization.

As regards the first of these questions it does seem, *prima facie*, highly probable that a fundal cicatrix is more liable to give way than an ordinary longitudinal one, and that chiefly because with the latter there are adhesions to the abdominal parietes acting as firm supports. I would therefore now never employ a fundal incision if I were going to leave the uterus behind. As a matter of fact the incision of Fritsch possesses few advantages, and this I pointed out in a paper read before the British Medical Association at Manchester in 1902.

That what I have said is probably correct is borne out by the fact that in another case, on which I performed the operation for the second time, I found my old cicatrix, which was fundal, thinner than the other parts of the uterine wall. This uterus has already been shown to you, but I have again placed it on the table to-night. In this case there was no trouble during pregnancy. I operated after labour had been in progress for a little time, removing the uterus after extracting the child. The patient's recovery was uninterrupted.

So far I have been able to find only one case of rupture through a fundal cicatrix. It is reported by Meyer (*Zentralblatt für Gynäkol.*, 1903, p. 1416). This operator found on opening the abdomen that the old fundal incision had given way, and that the placenta was projecting through the rent.

With regard to the second question—was there anything in the uterine wound at the previous Cæsarean section which favoured the rupture—I think I will be able to bring out rather an important and interesting point. Perhaps you observed when I read the report of the first operation that I encountered the placenta in my uterine incision; I had therefore to stitch the placental site. Now I can quite conceive—of course I have no proof of this supposition—that union may not be so firm in such circumstances. The placental site is very spongy from being so vascular. Not only that but the placenta on the second occasion was implanted over the fundus and the old cicatrix, and that doubtless also favoured rupture. Meyer's case was just the same, the placenta was implanted over the old cicatrix. Such cicatrices consist solely of fibrous tissue and one knows what a destructive power the chorionic villi often have.

Undoubtedly what conduces to the healing of wounds and the formation of sound cicatrices in any part of the body, uterus included, is that the wound be aseptic, and that it be carefully stitched. In

my case there was no suspicion of any septic mischief, so that may be dismissed. As regards the stitching the methods of Säger and Cameron are usually employed. Some have advocated the stitching of the walls in layers, but that is not easily done and has been but seldom practised. Whether the material used for suturing has any influence I cannot say, but certainly silk can be tied much more firmly than catgut. Personally I employ catgut because there is no chance of troublesome sinuses forming if the sutures become infected as is the case with silk. There is yet one other matter which may have an effect on the healing of the uterine wound: the sutures inserted into the uterus are employed not only for the purpose of bringing the edges together, but to control the hæmorrhage, and in consequence are tied very tightly.

But apart altogether from the danger of a fundal cicatrix giving way it must be remembered that any cicatrix is liable to do the same. There is then a distinct danger in not sterilizing the patient and in allowing her to become again pregnant. The question which we obstetricians will have to settle is whether or not this danger is so great that repeated section should be condemned. At the present time, as you know, the tendency is in favour of not sterilizing at the first operation, and this is largely because the results of the first and subsequent operations are now so good. As regards the statistics of first sections Williams states that "in 335 operations performed by Chrobak, Schauta, Leopold, Braun, Olshausen, Zweifel, Reynolds, Bar, Charles, and Chagrin there were only 23 deaths, a gross mortality of 6·8 per cent." My own results are almost identical with these, for I have now had 30 cases with two deaths, a mortality of 6·6 per cent. As regards the results in repeated Cæsarean sections Wallace, whose paper is the most exhaustive on the subject in the English language, from collected cases makes out the mortality lower than the figures mentioned. From cases which have been recorded since the latter's paper appeared it is quite evident that the mortality is lower. Personally, apart from the cases recorded to-night, I have repeated the operation on two patients with satisfactory results for both mothers and children. But let me now briefly refer to the cases of rupture where the anterior incision was employed on the first occasion. So far I have been able to find cases recorded by Targett, Galabin, Horrocks, Koblanck, Guillaume, Woyer and Everke.

Targett's case (*Obstetrical Transactions*, 1900, p. 262). The patient had had a Cæsarean section $2\frac{1}{2}$ years previously for impacted shoulder presentation but she had not been sterilized; she was re-admitted in a state of severe collapse, and on opening the abdomen the child and

the placenta were found free in the peritoneal cavity, and there was a large rupture on the anterior wall of the uterus along the scar of the previous operation. Targett performed abdominal hysterectomy.

Galabin's case, as mentioned by Horrocks (*Obstetrical Transactions*, 1900, p. 243). The patient had been sterilized after Cæsarean section by ligaturing the Fallopian tubes. In spite of this she became pregnant again and the uterus ruptured near full term along the line of incision and the child and a portion of the placenta escaped into the abdomen. Galabin removed the uterus and the specimen is now in Guy's Hospital Museum; the patient recovered. Horrock's case is really that of Targett; he had performed the Cæsarean section referred to in the latter's case.

Koblanck's case ("Uterus Rupture, Stuttgart," 1895). Rupture occurred through old cicatrix; ovum intact in peritoneal cavity; uterus stitched; recovery.

Guillaume's case (*Ref. Central. für Gynäkol.*, 1896, p. 1286). Rupture through Cæsarean section scar, three years old. Uterus had been stitched in layers. Child palpable in abdomen. Uterus felt to left side with line of rupture palpable. Ovum intact in abdominal cavity.

Woyer's case (*Monats. für Geburt. und Gynäkol.*, Bd. 6. Ht. 2, p. 192). In 1893 Cæsarean section by Chroback, wound stitched with silk. At second pregnancy (full time) sudden pain in the abdomen followed by collapse, child easily palpated, laparotomy, twins, both ova intact, hysterectomy, death. Woyer in same paper reports the case of a 2-para, aged 29, on whom Cæsarean section had been performed five years previously by Braun. At the subsequent labour embryotomy was had recourse to. After delivery Woyer introduced his hand into the uterus to feel the cicatrix and found it very much thinned in one part.

Everke's case (*Central. für Gynäkol.*, 1901, p. 722). Rupture through the old Cæsarean section scar which had been stitched with silk. The patient collapsed suddenly and appendicitis was diagnosed. On opening the abdomen the cavity was found filled with blood. The uterus was removed successfully.