

CASE No. 1. A primigravida aged 30, attended the antenatal clinic for the first time on 19th April, 1937, when 20 weeks pregnant. She was found to have mitral stenosis and attended the clinic regularly until the 38th week, when she was admitted to hospital on account of increasing breathlessness.

Ten days later labour was induced by puncture of the membranes. After 48 hours, labour had made little progress, and the cervix was only 1 finger dilated.

The patient now showed evidence of mental and physical distress, and it was decided to deliver her by Caesarean section. Under general anaesthesia lower segment section was performed, the transverse incision in the uterus being closed by a double layer of continuous catgut sutures and the abdomen closed with drainage. The child weighed 8 pounds 3 ounces (3,757 g.). There was irregular pyrexia until the 16th day of the puerperium, but thereafter progress was normal.

The woman was next seen on 11th January, 1939, when 22 weeks pregnant. At the 36th week she was admitted to hospital with shortness of breath and oedema of the ankles. She was discharged after 10 days, and she was re-admitted in labour at term, having had vague pains for about 6 hours. The pulse-rate was 120; the abdomen was pendulous, there was excess of liquor amnii, and the position of the foetus was in doubt. Seven hours after admission the membranes ruptured, and the foetus was found to be presenting by the breech, which was still above the pelvic brim. Strong pains continued for a further 4 hours, when, as no material progress had been made, Caesarean section was performed. On separating the bladder from the front of the lower uterine segment, it was found that the scar of the previous lower segment operation had ruptured, the tear being about 1½ inches in length. The rupture was extended and a living child weighing 8 pounds 1 ounce (3,627 g.) was delivered. The uterine incision was closed with a double layer of continuous catgut sutures. Sterilization was performed by crushing and ligation of the Fallopian tubes and the abdomen closed with drainage. There was mild pyrexia for the first 3 days, but thereafter the puerperium was normal and the patient was discharged on the 21st day.

CASE No. 2.* A primigravida, aged 36, was first seen in hospital on 20th November, 1945. She had been married 1 year, and her menstrual periods, though the cycle remained regular, had been getting scantier for 2 years: her last period started on 14th February, 1945, and she attributed the subsequent amenorrhoea to early onset of the menopause. On 17th November, 1945, after 39 weeks' amenorrhoea, she consulted her doctor on account of numbness of the hands: the presence of a pregnancy was then discovered for the first time and she was referred to hospital.

She was found to be almost at term; the lie was oblique, the head being in the left flank, the breech in the right iliac fossa, and the spine lying across the pelvic brim. Her blood-pressure was 180/110 mm. Hg. She was admitted to hospital where radiography confirmed the clinical findings. External version was attempted, but even under anaesthesia was not completely successful; the head was pushed over the pelvic brim but could not be made to engage. Labour began spontaneously at 18.00 hours on 23rd November, 1945; by 21.00 hours strong contractions were occurring every 2 or 3 minutes, but the oblique lie had recurred. It was, therefore, decided to deliver by Caesarean section. General anaesthesia was induced, and lower segment section was performed, the transverse lower segment incision being closed by 2 rows of continuous catgut. The child weighed 5 pounds 10 ounces (2,610 g.) and caused no anxiety. Apart from a temperature of 99°F. for the first 48 hours, the puerperium was uneventful, and the patient was discharged on the 15th day.

She was not seen again till 25th February, 1947, when she attended the antenatal clinic. Her last menstrual period had started on 15th July, 1946, and the expected date of confinement was 22nd April, 1947. She was found to be about 34 weeks' pregnant, but owing to her obesity the position of the foetus could not be defined. She was seen regularly thereafter; the position of the foetus differed at each visit, and malpresentation recurred after external version on two occasions.

On 23rd April, 1947, the day after the expected

* This case is included in the checked figures of Marshall and Cox (1949).

date of confinement, the woman was admitted to hospital to await labour. The position of the foetus, which remained unstable, was frequently corrected until 9th May, 1947, on which day (18 days after expected date of confinement) a medical induction was started. After a total of 15.6 units of pitocin (1.2 units half hourly for 13 doses) uterine contractions started at 14.00 hours, and at 17.00 hours became strong. At 17.15 hours the patient complained of severe pain over the pubis: it was persistent and did not vary in intensity. There was tenderness and slight rigidity over the lower part of the abdomen, particularly in the right iliac fossa: there was no evidence of shock, the pulse remaining at 80 per minute and the blood-pressure at 150/100 mm. Hg. The general picture suggested a mild accidental haemorrhage.

The foetal lie was longitudinal and the head appeared to be entering the brim satisfactorily, so it was decided to observe further progress before deciding to intervene. By 22.00 hours there was no material change and, in spite of regular, weak contractions there had been no further descent of the head: the pain in the lower abdomen remained unaltered.

Under general anaesthesia the abdomen was opened through the previous scar, revealing a sub-peritoneal haematoma extending across the front of the uterus, its upper limit formed by the attachment of the visceral peritoneum to the upper uterine segment: on the right the haematoma extended into the broad ligament.

The peritoneum over the haematoma was incised and evacuation of the blood-clot revealed a rupture about 3 inches long in the lower uterine segment at the site of the previous incision, extending mainly to the right lateral border of the uterus. The rupture was extended and a living child weighing 7 pounds 8 ounces (3,375 g.) was delivered. Sub-total hysterectomy was then completed, the uterus being divided at the level of the ruptured scar.

The post-operative course was afebrile and the patient was discharged on the 16th day. She was seen at the postnatal clinic 6 weeks later, when her general condition was found to be satisfactory apart from haemoglobin of only 75 per cent and the development of a keloid in the abdominal scar.

DISCUSSION.

In 1934 Trillat asked "*L'incision transverse du segment prévient-elle mieux les ruptures que l'incision longitudinale habituellement pratiquée?*" and supplied the answer "*C'est un point que l'avenir seul pourra élucider.*"

By this date the lower uterine segment operation was superseding the classical operation but the longitudinal uterine incision was still in common use. During this era rupture of the scar during subsequence pregnancy or labour, though much less common than after the classical operation, still occurred with considerable frequency, and the literature of the period contains numerous accounts of such catastrophes. With the wider adoption of the transverse incision, confined strictly to the lower segment of the uterus, the incidence of rupture, as measured by the frequency with which such cases have been reported, appears to have diminished considerably. The literature of the last 15 years contains only a small number of published cases of uterine rupture after lower segment section. The exact number in which the transverse incision was used is difficult to establish, since, as Erbsloh (1942) points out, many of the cases are reported in insufficient detail to enable the technique to be identified. Marshall (1939) has also pointed out that confusion is caused by the use of many terms, e.g., the lower segment operation, laparotrachelotomy, cervical Caesarean section, coelioisthmotomy, etc., which may or may not be synonymous. It is, therefore, not possible to decide with certainty in every case whether the longitudinal or transverse incision was used, but even if the doubtful cases are added to those in which the transverse incision was known to be used, the total is extremely small.

Cases of rupture have been described by Motta (1938) after *sectio caesarea soprasinfisaria*; by Sheldon (1936) after

Kerr Caesarean section (case number 26); by Hindman (1948) after Kerr hysterotomy (case number 2); by Grusetz and Tisdall (1942) after lower segment Caesarean section; by Fournier and Estienny (1936) after *césarienne basse*, the incision being confined to the lower segment but not more precisely described; by Schebat and Laffargue (1938) after *césarienne supra-symphysaire*; by Ebergenyi (1940) (2 cases); and by Traina Rao (1938).

In addition cases are mentioned by Acken (1940) after "low flap Caesarean section"; by Burkons (1941) after cervical section (2 cases); by Duckering (1946) after "low flap section" (3 cases); by Beacham and Varino (1945) after laparotrachelotomy (case number 50); and by Duepmann (1948) after Doerfler Caesarean section. Erbsloh (1942) mentions a case described by Fuchs, and Grusetz and Tisdall (1942) also mentions 4 cases known to them but yet unpublished.

Among the cases reported there does not appear to be any one in which the transverse uterine scar ruptured before the onset of labour. From this it may reasonably be supposed that the risk of rupture during pregnancy is for all practical purposes non-existent. Calculation of the risk of rupture should therefore be based only on cases in which the scar was subjected to the test of labour. Among 353 patients of whose 472 subsequent pregnancies the results are here analyzed, labour of at least 3 hours' duration was permitted on 310 occasions: the outcome in 121 cases was delivery by the natural passages, and in

189 cases repeat Caesarean section was necessary. The uterine scar was therefore adequately tested on 310 occasions, resulting in rupture in 2 cases. It is considered that these figures provide a reliable index of the strength of the scar and that the risk of rupture (0.65 per cent) is sufficiently small to justify continuation of the existing policy of permitting a trial of labour regardless of the indication for the previous operation.

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