

VAGINAL DELIVERY AFTER PREVIOUS CAESAREAN SECTION

A Survey of 800 cases at the Rotunda Hospital, Dublin

BY

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THE problem of vaginal delivery after previous Caesarean section continues to be of special interest to obstetricians. This is emphasized by the increasing Caesarean section rates which are widely recorded (Colvin, 1952; Harris, 1953; Schneider, 1954; Lawler *et al.*, 1956; Allahbadia, 1963). This increased operative interference is justified in the majority of cases, but undoubtedly some Caesarean sections are performed where "a critical study of records would suggest some doubt as to the complete validity of the indications for the initial Caesarean section on many occasions" (Wilson, 1951).

Numerous articles have appeared concerning this subject, and perhaps there is no other problem in obstetrics which excites so much disagreement. "The controversy concerning 'once a Caesarean section always a Caesarean section' continues with neither side yielding much ground" (Greenhill, 1962).

Theobald (1949) was impressed with the dangers of vaginal delivery after Caesarean section, and predicted that the number of repeat sections would be likely to increase. Dieckmann and Seski (1950) considered it idle to discuss the management of such cases, and Lull and Ullery (1949) stated that the stress and strain on the obstetrician during the conduct of vaginal delivery after section, together with some disastrous results from ruptured uteri caused them gradually to become advocates of repeat Caesarean section. Zarou (1952) noted that vaginal delivery after previous section taxed the obstetrician, not only the scar! Greenhill (1962) considered that most women who had a Caesarean section on one occasion should have repeat Caesarean sections during subsequent pregnancies.

A large number of writers, however, agree that it is not possible to uphold the statement "once a section always a section" in the context of modern obstetrics in a well-equipped maternity hospital. Wolfson and Lancet (1955) and Lawler and his associates (1956) noted that many women with a history of lower segment section could be safely delivered vaginally under certain definite conditions subsequently. It was observed from the Rotunda Hospital (Browne, 1951) that vaginal delivery following a previous section should not be considered an unduly hazardous venture. Harris (1953) called it a rational procedure.

Careful selection of cases destined for vaginal delivery after section is essential, together with competent supervision and delivery in well-equipped units (Jesurun and Simpson, 1958). Harris (1953) warned us that with each additional pregnancy and vaginal delivery the probability of a spontaneous rupture of an old Caesarean scar increases. Schmitz and Baba (1949) gave the warning that successful vaginal delivery on one occasion following a previous section does not guarantee against rupture of the uterus on a future occasion. Schmitz and Gajewski (1951) stated that the greater the number of vaginal deliveries the less the likelihood of rupture. Thus it is apparent that there is considerable difference of opinion regarding vaginal delivery following a previous Caesarean section.

THE INVESTIGATION

The present investigation includes a review of cases delivered during the period commencing 1st November, 1947, and continuing until 31st December, 1963. During this period of

TABLE I
Indications for Previous Caesarean Section

Placenta praevia	189	Unstable lie	10
Toxaemia and eclampsia	92	Bad obstetrical history	9
Disproportion	69	Failed induction	8
Foetal distress	53	Brow and face presentation	7
Accidental haemorrhage	44	Postmaturity	6
Inertia or prolonged labour	33	Obstructed labour	6
Breech presentation	24	Rhesus incompatibility	4
Cord complications	15	Miscellaneous (i.e., unknown indication, repeat section, etc.)	27
Total	596		

sixteen years 566 patients who had previously been subjected to 596 Caesarean sections subsequently had 800 vaginal deliveries.

Indications for the Previous Caesarean Section

The indications for the previous sections are shown in Table I. It should be noted that 69 patients were previously sectioned for disproportion, and that 17 of these were subsequently delivered vaginally of infants of an equivalent or heavier weight. This suggests that factors other than disproportion alone formed the indication for the previous section. Other authors have recorded similar findings. Schmitz and Gajewski (1951) stated that 20 primiparae and 7 multiparae were delivered vaginally of larger infants than were delivered formerly by Caesarean section in each case. Schmitz and Baba (1949) recorded 17 primiparae and 6 multiparae who had vaginal deliveries of infants heavier than those for which they were originally sectioned with disproportion as the main indication. Winchester and Brown (1954) recorded that one-fifth of their patients who were originally delivered by Caesarean section for disproportion subsequently had vaginal deliveries of heavier

infants. They conclude that a previous diagnosis of disproportion necessitating section should not completely exclude the attempt at vaginal delivery in future pregnancies.

Type of Caesarean Section Performed Previously

Lower segment Caesarean section was utilized 522 times, and classical section on 21 occasions in the present series. Other combinations are recorded in Table II.

Many authors are opposed to vaginal delivery after a previous classical section in view of the increased risk of rupture of the classical scar. Harris (1953) and Stern (1954) refuse to consider a patient as suitable for vaginal delivery who has a previous classical scar, and Fleming (1956) stated that repeat selective section is a wiser mode of treatment when a classical scar is present. However, Schmitz and Gajewski (1951) believe that the number of successful vaginal deliveries after previous classical section indicated that the site of the incision does not preclude an attempt at vaginal delivery. Lawrence (1953) noted that whilst former classical section did not preclude vaginal delivery, close observation was essential

TABLE II
Types of Previous Section Employed

Lower segment section	522	Transverse fundal incision	2
Classical section	21	L.S.S. (afterwards extended up into body of uterus to give "T" shaped scar	1
L.S.S. with symphysiotomy	11	Unknown	36
L.S.S. combined with myomectomy	3		
Total	596		

during the course of labour. In the present series from the Rotunda Hospital, 21 patients with a history of previous classical section had vaginal deliveries. Twelve of these subsequently had one vaginal delivery; six had two vaginal deliveries; and the remainder had three, four, and six vaginal deliveries respectively without rupture. In spite of figures such as these, however, the threat of rupture is always present, and such patients require intensive supervision during labour.

In the early years of the present study, symphysiotomy was occasionally performed following a lower section for disproportion. This practice was discontinued as from 1953.

Myomectomy performed immediately following Caesarean section is generally contraindicated due to the risk of haemorrhage, nevertheless this procedure was recorded on three occasions in the present series. All three patients had an uncomplicated puerperium, and subsequently had vaginal deliveries without difficulty. Moir and Kerr (1956) noted that uterine rupture was a rare sequel following elective myomectomy and statistics from the Rotunda Hospital amply confirm their statement.

A trans-fundal incision was utilized in the management of placenta praevia in two instances in the present series. The two subsequent vaginal deliveries in these cases did not cause any problems.

In one case a lower segment incision which was used initially in the management of a neglected shoulder presentation was later found inadequate and was supplemented by a classical incision extending upward from its mid point, thus creating an inverted T-shaped incision. This patient was subsequently delivered vaginally without difficulty.

In 36 cases the type of previous Caesarean section was unknown, as the patients had been

previously delivered in other hospitals, and the details supplied were inadequate to indicate the type of operation performed.

In 22 cases in the present series the patients had undergone two previous sections; two more cases had undergone three previous sections; and one patient had five previous sections preceding three subsequent vaginal deliveries. In this case the original Caesarean section had been performed with disproportion as the indication, and little attempt was made to reassess the situation during her subsequent four pregnancies. On her sixth pregnancy however she arrived at the Hospital in the second stage of labour, and was delivered by a low forceps application. She then proceeded to have two more spontaneous vaginal deliveries which were safely accomplished.

Morbid Puerperium in the Previous Section

The puerperium was stated to be morbid in 91 of the sections preceding vaginal delivery. Schmitz and Gajewski (1951) stress the importance of a proper evaluation of the uterine scar before making a decision regarding the management of a case. They believe weak scars are due to faulty surgical technique, implantation of the placenta over an old section scar, and morbidity in the puerperium. It is sometimes held that a morbid puerperium complicating a previous Caesarean section should be taken as precluding subsequent vaginal delivery. In one case of the present series partial rupture of the uterus occurred following a vaginal delivery in a patient who had a morbid puerperium following a previous Caesarean section.

The Use of Oxytocic Agents

Oxytocic drugs were used 200 times for induction of labour in the present series. In the earlier years Partergine (Methyl-ergometrine malate) was administered on 149 occasions for the induction of labour. This substance was given orally in four doses of 10 m. Twenty-five patients were induced with intermittent intramuscular injections of Syntocinon, using 2.5 international units on four occasions separated by half-hourly intervals. Intermittent injection of 2.5 units of pitocin was used on 19 patients. Intravenous induction using 2 units of Syntocinon per litre

TABLE III

Vaginal Deliveries following Caesarean Section

411 patients subsequently had one vaginal delivery
102 patients subsequently had two vaginal deliveries
36 patients subsequently had three vaginal deliveries
12 patients subsequently had four vaginal deliveries
2 patients subsequently had five vaginal deliveries
2 patients subsequently had six vaginal deliveries
1 patient subsequently had seven vaginal deliveries

TABLE IV
Method of Delivery

Spontaneous delivery	557	Vacuum extractor	15
Barnes forceps	110	Destructive operations	2
Kielland's forceps	42	Twin pregnancies	13
Breech delivery	61		
Total		800	

was used on 11 occasions. The latter routine has now become the standard form of induction at this Hospital, and is regarded as the only permissible route of administration for oxytocic substances to patients who have had previous Caesarean sections. Tokofinal was used on 7 occasions with satisfactory results.

Hindman (1948) advises against the use of oxytocic substances. On the other hand Harris (1953) and Jesurun and Simpson (1958) consider that oxytocic substances may be used wherever indicated with the usual precautions. In the 207 patients recorded in the Rotunda series, no complications were noted with the use of oxytocic substances.

Method of Vaginal Delivery following Previous Section (Table IV)

The majority of cases had a spontaneous vaginal delivery. Forceps application was employed in 152 cases (19.1 per cent). The Hospital incidence for forceps application generally lies around 15 per cent. The vacuum extractor was used on 15 occasions. All were satisfactory except one when a partial rupture of the uterus

was discovered during routine vaginal examination after an easy vacuum extraction. This case was managed conservatively and recovered without incident.

Destructive operations were used on two occasions. In the first instance craniotomy was performed following intra-uterine death resulting from accidental haemorrhage in order to hasten delivery. In the second case craniotomy was used to facilitate the delivery of a hydrocephalic head causing obstruction during the first stage of labour.

In thirteen cases twin pregnancies were delivered without complications.

Internal Version

Internal version was performed on nine occasions in the present series. On five occasions it was used in the delivery of the second twin. It was used four times in the management of unstable lie. In one of these cases internal version and breech extraction for prolapsed cord resulted in a partial rupture of the uterus. This case is described further under the heading Uterine Rupture.

TABLE V

Stillbirths=56 (6.9 per cent)	Neonatal Deaths=16 (2.1 per cent)		
Erythroblastosis	12	Atelectasis or prematurity	5
Macerated (cause unknown)	10	Prematurity	2
Accidental haemorrhage	9	Anencephaly	2
Cord strangulation	5	Atelactasis	2
Toxaemia	4	Post-operative death (imperforate anus)	1
Fresh stillbirth (cause unknown)	4	Congenital heart disease	1
Anencephaly	3	Supra-renal haemorrhage	1
Postmaturity	2	Gross foetal abnormalities	1
Gross prematurity	2	Haemorrhagic disease	1
Foetal distress (earlier intervention indicated)	2		
Hydrocephaly intra-uterine death craniotomy	1		
Intra-uterine hypoplastic adrenals	1		
Diabetes	1		

Foetal Results (Table V)

In the present survey 800 cases of vaginal delivery following previous section resulted in the delivery of 813 infants (including 13 sets of twins). The total perinatal mortality was 72 (88 per 1,000). There were 56 stillbirths and 16 neonatal deaths (Table V).

Stillbirths occurred on five occasions due to cord strangulation; intra-uterine death of unknown cause was recorded on four occasions. Two successive stillbirths occurred in the same patient who was post-mature on two successive occasions. Subsequently she had a repeat Caesarean section at term and had a living child. Two stillbirths were associated with severe foetal distress, and earlier intervention with forceps application might have altered the outcome. Critical retrospective review of these records suggests that in eleven instances where stillbirths occurred Caesarean section rather than vaginal delivery might have resulted in a live birth.

Maternal Mortality

One maternal death occurred in the whole series, and this was not directly associated with vaginal delivery after a previous section, but was primarily associated with very severe bronchiectasis with gross reduction of the available pulmonary tissue. Post-mortem examination revealed that the cause of death was congenital cystic bronchiectasis, and multiple abscess formation.

Uterine Rupture

In this series of 566 patients who had vaginal delivery following previous Caesarean section, partial rupture of the uterus occurred on three occasions (0.53 per cent). These cases were managed along conservative lines following diagnosis and recovery was satisfactory. These cases may be summarized as follows:

Case 1. Caesarean section was performed in this patient's first pregnancy for disproportion. This was followed by three miscarriages. She was admitted on her fifth pregnancy as an emergency case in premature labour at 33 weeks gestation. On admission she had a transverse lie and prolapsed cord. Internal version and breech extraction of a foetus (weight 3 pounds) was performed. Brisk haemorrhage followed delivery and a deep tear of the cervix and adjoining lower segment was discovered during diagnostic examination. This tear extended into the right broad ligament. The patient was treated by

transfusion and packing of the tear. Recovery was satisfactory. The baby died some hours after delivery.

Case 2. This patient had a Caesarean section in another hospital for ante-partum haemorrhage in her first confinement. She was admitted as an emergency in labour during her second pregnancy to the Rotunda Hospital. Clinical assessment of her pelvis was done, and she was considered safe for vaginal delivery. Following 18 hours labour she had an easy forceps delivery of an infant weighing 9 pounds 9 ounces. This was followed by traumatic post-partum haemorrhage, and vaginal examination revealed a partial rupture of the lower segment which was managed conservatively with blood transfusion and packing. Recovery was uneventful.

Case 3. In this case a previous section had been done for uterine inertia and toxæmia. The puerperium was morbid. During her subsequent (second) pregnancy she again developed toxæmia. Her pelvis was assessed clinically and radiologically at 38 weeks and was thought satisfactory for vaginal delivery. Labour commenced spontaneously, and following 20 hours she was delivered by vacuum extraction. This was recorded as being simple. Subsequent examination of the genital tract revealed a partial rupture of the previous section scar. As she was not bleeding no treatment was considered necessary, and recovery was uneventful.

MANAGEMENT

At the Rotunda Hospital patients who have recently had a Caesarean section for a non-recurring condition are in general advised that vaginal delivery should be both possible and desirable in a subsequent pregnancy. They are advised to seek medical advice early in their subsequent pregnancy.

Where a patient has had a section for a recurrent condition, she is warned that she will probably always require Caesarean section for delivery, and is also advised to seek medical advice early in a subsequent pregnancy.

The antenatal care of patients who have been delivered previously by section follows the normal pattern, but they are generally reviewed by the Master of the Hospital about one month before term for decision as to the policy of management. Where disproportion and other factors formed the indications for the previous section, especially if it was the first section birth, a critical re-appraisal of the case is made. As already indicated a substantial proportion of such patients can achieve vaginal delivery of larger babies in a subsequent pregnancy. In considering such patients re-assessment of the pelvic capacity is sometimes advocated using both clinical and radiological methods. Much

importance is attached to keeping the patient informed of the situation at all times, as such patients generally have a high degree of insight into their problems and prefer to be informed of the various possibilities in the management of their case.

Induction of labour is avoided unless proper medical indications exist. Syntocinon infusion is now the method of choice commencing at a concentration of 2.5 units per litre.

The management of labour in cases where elective vaginal delivery following previous Caesarean section is sought follows normal lines. Such patients, however, are singled out for intensive observation, and are never left unattended in labour. Every attempt is made to achieve spontaneous delivery without interference. Forceps delivery is used only where an adequate indication is present. Prophylactic forceps application for patients who are having vaginal delivery after a previous section is not favoured.

Third stage management follows the usual pattern at this Hospital, and significant abnormalities such as retained placenta have not been encountered. It has not been the general hospital practice to examine the genital tract following the completion of the third stage in such cases, but clearly there is much to recommend this practice. The disturbance to the patient is probably outweighed by the advantages gained in early diagnosis of trauma which may cause haemorrhage. Perhaps a compromise, consisting of increased vigilance in the hour after completion of the third stage, would be sufficient management in such cases, and examination of the genital tract should be reserved for those patients who display abnormal signs of bleeding, pain, or a uterus which appears to be rising in the abdomen due to the development of a broad ligament haematoma.

The puerperium is generally uneventful in patients who have had a vaginal delivery after a previous section. Before discharge careful explanations are given to the patient regarding the importance of Hospital confinement and the probability of future successful vaginal deliveries.

DISCUSSION

It is reasonable to lean towards securing a vaginal delivery when a previous Caesarean

section has been performed for a non-recurring condition, especially in a young patient who is likely to have a prolonged reproductive career. Such a course is more satisfactory for the patient, who otherwise faces the alternative of multiple repeat Caesarean sections. Maternal morbidity from the latter course certainly outweighs that encountered in successive vaginal deliveries.

Perinatal statistics in cases of vaginal delivery following previous section can be reduced to proportions comparable to those prevailing in normal circumstances. The perinatal statistics in the present study are disappointing, and retrospective survey of these suggests that in eleven cases earlier interference by section might have produced better results. The perinatal losses in these cases, however, were not due primarily to the fact that the patients were having elective vaginal deliveries following previous sections, but rather to one of the recognized accidents of labour.

In a number of instances patients were delivered by Caesarean section mainly due to their being elderly primigravidae. It was not uncommon for such patients to return a year or so later pregnant again. Such cases pose an intriguing problem, and indeed once reproduction has been successfully achieved it tends to recur readily. The management of the pregnancy subsequent to a Caesarean section done on slender indications often poses greater problems than were originally present. Whilst the problem is an interesting exercise in the elderly patient, it is of course most commonly encountered in patients of a younger age group who face a protracted reproductive career. Such patients are commonly treated in the Rotunda Hospital, and this problem therefore is one of great significance and interest.

It may be concluded, however, that the choice of elective vaginal delivery in the management of patients formerly delivered by Caesarean section may be exercised with due regard to careful selection with a high degree of safety. The low complication rate recorded in the present series warrants this conclusion, but it is emphasized that such cases must be conducted with special care in properly equipped surroundings. These observations have been made before by other authors as stated above, but it is well to note that this is an increasing problem due to

the more frequent use of Caesarean section. It is mainly on account of this fact that the present authors decided to re-examine Hospital records of patients delivered vaginally after a previous section, in order to re-assess the principles of management of this problem.

SUMMARY

Eight hundred vaginal deliveries of 566 patients who had previously undergone 596 Caesarean sections are presented.

The indications for the previous sections, together with the type of operation used are analysed.

The management of pregnancy and labour is discussed.

The maternal and foetal complications are reviewed. It is emphasized that although complications are uncommon, their effective detection and treatment requires intensive care during labour.

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