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VAGINAL DELIVERY AFTER PREVIOUS CESAREAN SECTION*

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THE MANAGEMENT of the obstetric patient who is known to have a uterus which has been subjected to previous trauma is fraught with worry not only for the patient herself but also for the attending physician. The discussion of these cases frequently leads to such dogmatic statements as "Once a section always a section." To view this problem in broad perspective it was decided to obtain as large and unbiased a series of cases as possible. For this purpose the Dublin Rotunda Hospital Reports, from 1889 to 1957, were consulted and an attempt was made to obtain from these not only the approach of that teaching hospital to the problem, but also any relevant factors which might have a bearing upon the divergence of views between various centres on this side of the Atlantic and the European midwifery schools.

Briefly, the method of management of the Rotunda Hospital which was in effect during the period covered by this report is as follows. The obstetric policies and management of all patients in the hospital is under the supervision of a Master who is appointed for a period of seven years. During the period under consideration one Master died in office after five years and one Master, owing to war service, had a broken period in office (his total mastership was extended to nine years if the two years covered by ex-Masters as locum tenens is included), while the last Master had not completed his term of office when this paper was written. The total number of obstetrical cases in the hospital during this period was more than one-quarter of a million (Table I). Each

TABLE I.—REPORTS OF ROTUNDA HOSPITAL, DUBLIN, 1889 - 1957

Total deliveries		277,110
Cesarean sections		3098
Cesarean section rate		1.1%
Vaginal delivery after section		621
Total ruptured uteri		141
Ruptured through section scars		12
Classical	7	
Lower segment	5	
Mortality rate—Total sections		2.39%
Ruptured uteri		29.00%

Master laid down his own policy and was, as a rule, uninfluenced by his predecessor though he might carry on some traditions from the Master under whom he himself served his assistantship, 14 to 21 years previously. All patients cared for in the hospital are fully described in the hospital reports which cover each 12-month period up to the beginning of November when normally, each seven years, the new Master takes office.

In these reports, with the exception of one seven-year period, all the vaginal deliveries which followed a previous Cesarean section have been reported, since the first such delivery was recorded in 1913. The Master, whose term of office is not reported, does not give a complete record of his cases of vaginal delivery after Cesarean section as he did not include these data in all of his reports (see footnotes, Tables II and V). However, despite this discrepancy there is a total of more than 621 cases of vaginal delivery following previous Cesarean section. Cesarean section, however, was not abandoned in this hospital, for during this period a total of 3098 Cesarean sections were performed, of which 885 were repeat sections.

A personal series, set out in Table III, is small, and many of these cases have already been covered in the overall figures of the Rotunda Hospital for 1947 to 1950. However, there is sufficient material in a series of 73 cases to justify some conclusions about the management of the cases that are dealt with later in this paper.

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TABLE II.

Master	Vaginal delivery after section No. of cases	Ruptured Uteri Spontaneous rupture	Classical section	Lower segment section	Sections	Total deliveries
Smyly, 1889-1896	—	5	—	—	4	17,274
Purefoy, 1896-1903	—	11	—	—	6	23,647
Tweedy, 1903-1910	—	9	—	—	13	27,135
Jellett, 1910-1919	5	12	—	—	83	31,859
FitzGibbon, 1919-1926	6	15	3	—	121	24,759
Solomons, 1926-1933	25	15	1	1	253	26,959
Davidson, 1933-1940	57	10	1	1	273	33,401
Falkiner, 1940-1947	52*	23	1	1	820	38,444
O'D. Browne, 1947-1952	175	15	—	1	682	26,518
Thompson, 1952-1957	301	14	1	1	843	27,134
Totals, 1889-1957	621	129	7	5	3098	277,110

*No tables for vaginal delivery after Cesarean section reported during this Mastership.

When faced with the problem of allowing a patient to enter labour subsequent to previous Cesarean section, the following points must be considered: (a) the risk of rupture of the uterus, (b) whether the previous indication for Cesarean section still exists, (c) whether there was morbidity subsequent to the hysterotomy and whether the appearance of the abdominal wall scar allows one to assume adequate healing in the uterine wall, and (d) the type of Cesarean section performed.

Ruptured uteri.—Table II shows a uniform incidence from year to year of spontaneous rupture of the uterus, of which there was a total of 129 cases between 1889 and 1957. Rupture of the uterus subsequent to Cesarean section was first seen in 1919-26, and thereafter recurred in each term, but only to the extent of one or two cases per year. These catastrophes are very evenly divided between patients on whom the classical Cesarean operation was performed and those subjected to the lower segment technique. The total number of cases of uterine rupture after classical section was seven, while five followed lower segment Cesarean section.

From the time of the introduction of antibiotics in 1936, a very marked increase in the number of Cesarean sections performed in the hospital is evident, but there is no evidence of a corresponding rise in the number of ruptured uteri subsequent to Cesarean section, while the frequency of uterine rupture not associated with any previous intentional trauma to the uterus remains the same as it was before the antibiotic era.

Indications for Previous Cesarean Section.—Table IV shows the remarkable increase in the indications accepted for abdominal delivery. Many of these conditions would have been considered very definite contraindications to operative interference two decades ago; this applies in particular to prolonged rupture of the membranes, subacute bacterial endocarditis and intrauterine infections. Table V shows the indications for the previous section in cases afterwards delivered *per vaginam* and the largest number of these is disproportion, a recurring indication for abdominal delivery. When this indication is added to that of poor obstetric history, it makes up one-third of the known indications for previous section. It is reasonable to assume that, of the 147 Cesarean sections in which the indications were unknown, there were also some other recurrent indications for section. Toxemia and placenta previa have a tendency to recur and might be included in the category of permanent indications for section. This would bring the total of cases that might be expected to require "repeat" sections to over 50% in this series.

Table III shows the results in the author's personal series of 73 cases delivered vaginally after previous Cesarean section; these patients included those who had had a Cesarean section for their first delivery and those who had had vaginal delivery prior to Cesarean section. In talking to such patients it is of interest to ascertain their feelings in regard to the mode of their delivery. Those who have had a vaginal delivery prior to their Cesarean section are usually complacent in their acceptance of the suggestion that they can deliver normally. Those who have never had a vaginal delivery are inclined to be a bit more apprehensive, but when reassured that they will be carefully watched and, if necessary, a Cesarean section can be done whenever it is indicated during the labour, they are willing to proceed with a trial labour.

In this respect, rupture of the uterus did occur in one patient while she was under observation;

TABLE III.—PERSONAL SERIES

Vaginal delivery after section		73
Type of section		
Classical	14	
Lower segment	59	
Mortality		nil
Reason for failed trial delivery		8
Rupture	2	
No progress	3	
Failed induction	3	
Indications for previous section		
Disproportion	20	
Toxemia	15	
Prolonged labour	3	
Placenta previa	5	
Prolapsed cord	4	
Fetal distress	6	
Elderly primiparity	2	
Malpresentation	5	
Diabetes	3	
Failed induction	5	
(Prolonged) rupture of membranes	5	

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TABLE IV.—INDICATIONS FOR CESAREAN SECTION

Period	*1889-1896*	*1896-1903*	*1903-1910*	*1910-1919*	*1919-1926*	*1926-1933*	*1933-1940*	*1940-1947*	*1947-1952*	*1952-1957*	*Totals*
Repeat	—	—	2	17	39	101	38	225	196	267	885
Disproportion	4	5	14	58	112	212	188	477	203	276	1549
Soft part dystocia	—	1	—	3	—	1	3	14	7	20	49
Toxemia	..	..	..	8	1	2	12	113	83	149	368
Placenta previa	..	..	..	1	1	10	15	71	85	135	318
Genital abnormality	..	..	..	2	3	5	1	1	1	3	16
Extragenital	..	..	..	2	—	—	3	5	1	4	15
Rupture of uterus	..	..	..	..	1	—	—	—	1	4	6
Cardiac	..	..	..	..	1	2	3	6	2	2	16
Elderly primiparity	..	..	..	..	3	1	2	21	14	37	78
Previous myomectomy	..	..	..	..	..	1	—	9	—	—	10
Prolapse of cord	..	..	..	..	..	3	5	—	12	12	32
Inertia	..	..	..	..	..	8	4	39	11	38	100
Fetal distress	..	..	..	..	..	..	2	10	8	41	61
Malpresentation	..	..	..	..	..	..	..	11	24	23	58
Previous bad obstetrical history	..	..	..	..	..	..	..	13	7	51	71
Erythroblastosis	..	..	..	..	..	..	..	4	1	3	8
Poor uterine scar	..	..	..	..	..	..	..	..	8	—	8
Advised repeat section	..	..	..	..	..	..	..	..	1	—	1
Tuberculosis	..	..	..	..	..	..	..	..	..	1	1
Psychosis	..	..	..	..	..	..	..	..	..	1	1
Acute yellow atrophy	..	..	..	..	..	..	..	..	..	1	1
Intra-uterine infections	..	..	..	..	..	..	..	..	..	10	10
Diabetes	..	..	..	..	..	..	..	..	..	2	2
(Prolonged) rupture of membranes	..	..	..	..	..	..	..	..	..	5	5
Subacute bacterial endocarditis	..	..	..	..	..	..	..	..	..	1	1
Incidental conditions	..	..	..	..	..	..	..	..	..	14	14
Previous vaginal repair	..	..	..	..	..	..	..	..	..	3	3
Maternal distress	..	..	..	..	..	..	..	..	..	2	2
Multiple factors	..	..	..	..	..	..	..	..	..	16	16
Totals	4	6	16	91	161	346	276	1019	665	1121	3705

section was performed immediately and the baby survived. The uterus had ruptured into the broad ligament and it was not possible to repair the organ; this was the patient's second pregnancy and hysterectomy was performed. On another occasion a patient showed signs of threatened rupture, and immediate laparotomy revealed that the muscularis was torn through completely but the peritoneum and chorion were still intact. A live baby was obtained, after which the scar was freshened and resutured. This patient subsequently went on to further pregnancy and delivery by elective Cesarean section. There were three other cases in which, owing to ill-defined pain, slowness of labour and poor advance, section was decided upon after a trial of labour varying from two to twelve hours. There were three additional patients in whom induction failed and who were subjected to section without labour ensuing; in each of these cases in which labour was faulty or failed to occur there was an associated occipito-posterior presentation and the android type of pelvis.

ASSESSMENT

In evaluating the suitability of a patient for trial labour following previous section, the important criteria are (1) the indication for the previous section, (2) the state of healing of the previous operative wound (in general if there is healing of the abdominal wound it is probable that the

TABLE V.—INDICATIONS FOR PREVIOUS SECTION

Period	*1889-1896*	*1896-1903*	*1903-1910*	*1910-1919*	*1919-1926*	*1926-1933*	*1933-1940*	*1940-1947*	*1947-1952*	*1952-1957*	*Totals*
Disproportion	..	..	..	4	5	20	33	?	27	53	142
Toxemia	..	..	..	1	—	—	1	?	24	85	111
Prolonged labour	..	..	..	..	1	—	—	?	—	—	1
Placenta previa	..	..	..	..	1	1	2	?	13	100	117
Prolapsed cord	..	..	..	..	..	2	1	?	—	—	3
Soft part dystocia	..	..	..	..	..	2	1	?	1	—	4
Fetal distress	..	..	..	..	..	..	6	?	11	18	35
Inertia	..	..	..	..	..	..	1	?	11	10	22
Contraction ring	..	..	..	..	..	..	1	?	—	—	1
Postmaturity	..	..	..	..	..	..	1	?	—	—	1
Elderly primiparity	..	..	..	..	..	..	—	?	2	—	2
Malpresentation	..	..	..	..	..	..	1	?	3	11	15
Bad obstetric history	..	..	..	..	..	..	3	?	1	6	10
Peritonitis	..	..	..	..	..	..	..	..	1	1	2
Failed induction	..	..	..	..	..	..	..	..	..	3	3
Obstructed labour	..	..	..	..	..	..	..	..	..	1	1
Erythroblastosis	..	..	..	..	..	..	..	..	..	1	1
(Prolonged) rupture of membranes	..	..	..	..	..	..	..	..	..	1	1
Unknown	..	..	..	..	..	..	6	52*	81	8	147

*No tables for vaginal delivery after Cesarean section reported during this Mastership.

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uterine wound will also be satisfactorily healed), and (3) the morbidity of the patient on the occasion of her previous delivery. The patient's attitude toward vaginal delivery should also be fully considered. In the latter part of pregnancy, tenderness of the lower abdomen, over the area where the uterine scar is assumed to be, is considered to be a contraindication to labour, as is any other condition which would be a contraindication to labour in a woman without a previously damaged uterus.

MANAGEMENT

The induction of labour two to three weeks before the expected date of delivery is preferable. The induction of labour is attempted first by a simple low puncture of the membranes; oxytocic drugs are not used for induction of such patients. Careful observation by the attending physician is essential, as it should be in every case of labour, whether complicated or not. During the course of labour any deviation from the normal *demands* reconsideration of the mode of delivery. The second stage of labour should be shortened if this can be done without employing a high forceps or rotation of the head. If the third stage is prolonged despite the administration of intravenous ergometrine, manual removal of the placenta should be carried out before the patient recovers from the anesthesia given for delivery. Even with spontaneous delivery of the secundines the uterine cavity should be digitally palpated to exclude the presence of any morbid adherence of the placenta to the old uterine scar. Under these conditions many patients can be safely delivered vaginally after having had a Cesarean section at a previous pregnancy.

From the Rotunda Hospital data, there is a vast difference between indications for which Cesarean section was performed in the period after the discovery of the sulfonamides and those sections which were done in the preceding 50 years. Coincident with this there has also been a great change, not only in the postoperative course of these patients, but in their tendency to become pregnant again. The antibiotic era has resulted in sounder healing of the uterine wound which permits the uterus to withstand the stress of subsequent labour better. However, such patients, at or about their third vaginal delivery, often tend to sustain uterine damage which may escape recognition and subsequently rupture either during pregnancy or during subsequent labour. This condition carries a very high mortality and morbidity. The mortality rate (Table VI) in the overall figures from the Rotunda Hospital was 29% for those patients with a ruptured uterus, while the Cesarean section mortality rate over this period of 71 years was 2.39%; almost 60% of these deaths occurred in the antibiotic era. Table VI shows the mortality from Cesarean sections compared with the mortality due to rupture of the uterus, with the

TABLE VI.—MATERNAL MORTALITY

Master	*Deaths from Cesarean section*	*Deaths from ruptured uterus*
Smyly	1	3
Purefoy	4	4
Tweedy	2	5
Jellett	6	3
FitzGibbon	4	8
Solomons	12	4
Davidson	13	5
Falkiner	17	6
O'D. Browne	10	3
Thompson	5	0
Totals	74	41
(comparative)	2.39%	29%

percentages of each for the 68 years. These data represent a remarkable achievement because of the type of case likely to require section, especially in the first 30 years covered by this report.

The prevailing attitude among many obstetricians, that the third Cesarean section is an indication for sterilization of the patient, should be subjected to careful scrutiny if the parturient *per via naturalis*, who is more likely to rupture the uterus as a result of repeated "normal deliveries", is to be denied this privilege. There would appear to be some muddled thinking on this subject. Is sterilization, indeed, ever truly justifiable at the conclusion of one pregnancy to avoid a subsequent delivery? The author would answer this question in the negative.

CONCLUSION

Vaginal delivery after previous Cesarean section was first permitted in the Rotunda Hospital in the year 1913, and there has been a steady increase in the number of cases so treated. While rupture of the uterus is a constant threat to the parturient woman, it is striking how few of these cases are associated with previous Cesarean section in the Rotunda reports. This catastrophe is a far more serious threat to the patient having her third or fourth pregnancy than to one who has had previous operative injury to the uterus. The usual cause of rupture of the uterus during a normal labour appears to be a minor degree of disproportion occurring in the multiparous patient who is having a slightly larger baby on each occasion. The history is usually given of "a severe pain which was not like a labour pain" at the end of the second stage of labour in her previous delivery, and was the climax which achieved delivery. This pain is believed to indicate a partial rupture of the uterus; this becomes a complete rupture on the subsequent pregnancy with varying degrees of shock depending on the stage of labour and the extent of the tear, and whether large vessels are torn.

Vaginal delivery after Cesarean section, if undertaken after an adequate evaluation of the state of the uterus, the current pregnancy and with adequate medical supervision during labour, is a safe procedure and should never be denied any patient.

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SUMMARY

From personal experience with 73 cases and from the Rotunda Hospital, Dublin, reports from 1889 to 1957, 694 reported cases of vaginal delivery after Cesarean section have been collected and are evaluated here. The indications for allowing labour to take place after previous section are considered and the changing outlook regarding Cesarean section is discussed. The indications for previous section with subsequent vaginal delivery are tabulated. It is proposed that vaginal delivery after previous Cesarean should no longer be feared by either physician or patient.

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