Observations

ON

UNSUCCESSFUL FORCEPS CASES:

CAUSATION, MANAGEMENT, AND END-RESULTS.*

BY

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THE anxiety which follows the unsuccessful application of forceps, the difficulty of determining how best to effect delivery whether the patient is kept in her own home or transferred to hospital, and the frequency with which life is lost or serious disability incurred combine to invest the "unsuccessful forceps case" with special importance and make it a subject peculiarly suitable for discussion at a meeting of this kind.

The contribution which I would make is based on the study of 558 cases. I am indebted to Professor Fletcher Shaw for placing at my disposal the records of 281 patients delivered in Manchester, and to Professor Hendry of Glasgow for the details of a further 125 cases. The remaining 152 patients were delivered in the Edinburgh Royal Maternity Hospital.

ETIOLOGY.

An analysis of these cases shows that in 211, or in rather more than one-third of the total number, the underlying cause of dystocia was disproportion, due for the most part to pelvic contraction, and in a small number to abnormal size of the child. The pelves were chiefly of the flat rachitic and generally contracted types, the former variety predominating, especially in the Glasgow series. In 14 cases deformity of the pelvic outlet was encountered. In 6 cases a contraction ring of the uterus was an additional obstacle to delivery.

The degree of disproportion varied within wide limits. In more than one-half the head was found to be still freely movable at the pelvic brim when the patient was admitted to hospital; in many disproportion was so extreme that even when the head was crushed much difficulty was experienced in its extraction. In other cases the head was engaging satisfactorily in the brim and would have descended normally to the pelvic cavity had assistance been withheld to allow of further moulding and of more complete dilatation of the birth passages.

A posterior position of the occiput was found to be an almost equally common cause of difficulty, and was encountered on 161 occasions. Twenty-two additional cases in which this abnormality was associated with pelvic contraction have been included in the category of the latter. In a few the malposition had been recognized as such, as a rule after moderate forceps traction had failed. For the most part, however, the cause of obstruction had not been appreciated, the delay in labour being commonly attributed to a contraction of the pelvis which did not exist. The frequency with which such an error in diagnosis causes difficulty emphasizes the importance of accurate orientation of the head as a preliminary to the application of forceps; in this connexion the ear is a more reliable guide than are sutures or fontanelles, and in doubtful cases should always be sought for.

In the majority of these cases of occipito-posterior position it was found, on admission, that the head was deeply engaged, with the occiput either in the hollow of the sacrum or still obliquely posterior. In a considerable number, however, the head was still high in the cavity or movable at the pelvic brim. Such cases in particular frequently showed severe bruising and laceration of the soft parts from slipping of the forceps. In many in which a high forceps operation had been attempted the cervix was only partially dilated, and was, as a rule, more or less seriously torn; in seven cases a tear in the cervix had extended upwards so as to involve the lower uterine segment.

A third group comprises cases, 151 in number, in which no abnormality of the pelvis was present, the child was of average size, and presentation and position were normal. It is possible that some of these were patients in whom an occipito-posterior position had been present when forceps delivery was first attempted, rotation of the occiput to the front having occurred during the patient's transit to hospital. In a large number, however, no obvious explanation of failure could be found, or it was apparent that anxiety to relieve suffering had prompted an attempt to assist delivery before sufficient dilatation of the soft passages and adequate head moulding made this practicable. In many of these patients the first stage of labour, through premature rupture of membranes, rigidity of the cervix, or ineffective uterine contractions, had been unusually prolonged and difficult. We all know how trying such cases may be and how easily the anxiety or impatience of relatives may combine with mental and physical fatigue to unbalance judgement and invite unwise intervention.

As in many cases of contracted pelvis and occipito-posterior position above referred to, so in this group intervention failed largely because it was premature. Of necessity, serious injury to cervix and vagina was not infrequently entailed.

Finally, in a fourth group in which forceps delivery was unsuccessfully attempted there fall to be catalogued 12 face cases, 5 of them mento-posterior, 8 cases of brow presentation, 8 cases of hydrocephalus, 2 cases of breech presentation, 2 cases of shoulder presentation, 2 cases of ovarian tumour obstructing labour, and 1 case of locked twins.

TREATMENT.

In a communication read at the Annual Meeting of the British Medical Association a year ago I discussed the diagnosis and outlined the general principles of treatment which should govern the management of the failed forceps case. To-day I would concern myself shortly with the different methods of treatment which have been employed, and indicate what the results, immediate and remote, have been.

In general, treatment varied with the cause of failure and with such other conditions as the degree of disproportion, the presence and extent of injury to the birth passages, and the general condition of mother and child. Shock, consequent on severe trauma and intensified by transport to hospital, often over long distances, was not infrequently a serious complication, and was a primary consideration in the treatment of many cases. On occasion it was so profound as to make the outlook one of the utmost gravity, irrespective of whatever method might be employed to effect delivery.

Dystocia due to Disproportion.

There were 211 such cases; in 139 of these the patients were primigravidae; where previous pregnancies had occurred a history of difficult labour was commonly obtained. The management of cases in this group was influenced largely by such factors as the degree of disproportion, whether or not there had already been an adequate test of labour, and the condition of the child. In approximately one-half of the total number the child was judged to be already dead or dying at the time of the patient's admission to hospital.

In many cases it was apparent that, with further moulding of the head, such disproportion as was present could adequately be overcome by the natural forces. Reference to Table I will show that in 78 patients, in whom earlier intervention had failed, spontaneous delivery eventually occurred or was accomplished by low forceps. Further, in many cases in which craniotomy was employed spontaneous delivery would probably have occurred had not this operation been performed merely to facilitate the extraction of a child already dead.

In other patients disproportion was so marked as to preclude any possibility of delivering the child alive by the natural passages. In such circumstances there arose the difficulty of deciding which of the two operations, Caesarean section or craniotomy, entailed the less serious risk.

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Farquhar Murray has recently drawn attention to the difficulty and danger which craniotomy entails in the presence of serious disproportion, and has strongly urged more frequent resort to Caesarean section in such cases, even where there is undoubted infection and the child is dead. On the other hand, the statistics of Holland and Kerr and of Routh indicate clearly how much more grave is the prognosis where Caesarean section is done in the potentially septic than in the "clean" case, the mortality in the former varying from 10 to 34 per cent.

In the series of cases now presented Caesarean section was performed on twelve occasions, with three maternal deaths and five stillbirths. While such material does not afford an adequate basis of comparison of the relative merits of the two procedures, the trend of modern obstetrical opinion is reflected in the comparatively small number of cases in which abdominal delivery was preferred. In Edinburgh, however, the tendency in recent years has rather been to increase the scope of Caesarean section, so as to avoid the extreme mechanical difficulty and severe trauma which may be associated with a high craniotomy for marked disproportion.

It is significant that in none of the three centres from which the cases under analysis have been drawn was delivery in any case effected by pubiotomy.

Of the 29 maternal deaths in this group, 21 were due to puerperal sepsis, 3 to post-partum shock, 2 to post-partum haemorrhage, 2 to shock and collapse associated with rupture of the uterus, and 1 to pneumonia.

TABLE I.—Analysis of 211 Cases of Dystocia due to Contracted Pelvis.

Method of Delivery.	No. of Cases.	Children Dead or Dying on Admission.	Maternal Deaths.	Foetal Deaths.
Spontaneous	13	6	0	7
Low forceps	65	15	3	27
High forceps	15	2	2	11
Version	8	1	2	6
Craniotomy	98	22	20	98
Caesarean section ...	12	3	2	5
Total	211	109	29	154

Dystocia due to Occipito-posterior Position.

There were 161 such cases, rather more than half of whom were primigravidae. This figure is exclusive of 22 cases in which pelvic contraction was also present, but includes a large number in which incomplete dilatation of the cervix had contributed to dystocia.

The treatment of cases in this group depended largely on the level in the pelvis which the head had reached, on whether or not the cervix was fully dilated, and on the condition of the child. In the majority of cases the patient was advanced in the second stage of labour with the head arrested on the pelvic floor. In such circumstances an attempt was made, as a rule, to correct the malposition by manual rotation and thereafter to complete delivery with forceps. Occasionally the head was found to be impacted so firmly as to make manual rotation impossible; for the most part in such cases no hope could be entertained of the child being born alive, and craniotomy was performed; in a few, however, a living child was extracted face to pubes.

Not infrequently it was found that the head was arrested in a posterior position at the inlet of the pelvis or upper part of the pelvic cavity. In approximately two-thirds of these cases manual rotation of the head, combined with external rotation of the body, was carried out. In those in which the os was found to be fully dilated this was generally followed by the immediate application of forceps and delivery completed; in others, in which the cervix was not completely effaced, further intervention had necessarily to be withheld until a later stage in labour. In contrast to the previous delay the rapidity of progress after correction of the malposition was, as a rule, gratifying, and in many cases almost dramatic; in a relatively large number, moreover, no additional assistance was required.

Internal version was a method employed in eleven of these cases of high arrest. Although only three of the children were saved, it should be pointed out that the procedure was employed for the most part as a last resort, after other methods of delivery had failed, and was undertaken in preference only to craniotomy, since the foetal heart could still be heard.

Finally, Caesarean section was performed on three occasions; in two cases a rupture of the lower uterine segment, which had extended upwards from a cervical tear, provided the indication for opening the abdomen; in the third case a marked contraction ring of the uterus made vaginal delivery impossible. All three of these patients recovered, and in one case the child was born alive. There were sixteen maternal deaths in this group, the causes being: sepsis, 11 cases; rupture of uterus, 4 cases; pneumonia, 1 case.

TABLE II.—Analysis of 161 Cases of Dystocia due to Occipito-Posterior Position.

Method of Delivery.	No. of Cases.	Children Dead or Dying on Admission.	Maternal Deaths.	Foetal Deaths.
Spontaneous	15	4	1	6
Forceps	95	26	8	46
Version	11	3	1	9
Craniotomy	37	28	6	37
Caesarean section ...	3	1	0	2
Total	161	62	16	100

Dystocia due to Premature Application of Forceps.

There were 151 cases in this group. Where no cause for failure was found other than that forceps had been prematurely applied, treatment was governed by the extent to which labour had progressed and by the general condition of the mother and of the child. In the majority of these cases the patient was placed under the influence of morphine or of twilight sleep, and labour allowed to proceed until delivery occurred spontaneously or could be completed by a low forceps operation. Where the child was already dead or dying craniotomy was commonly performed to make easier its extraction. In two cases in this group a traumatic rupture of the uterus necessitated abdominal delivery. In a third case of rupture of the uterus forceps had apparently been applied outside the cervix; the patient was admitted in a condition of extreme collapse and died within a few minutes of her arrival in hospital. There were in this group 9 maternal deaths, 5 of which were due to sepsis, 2 to rupture of the uterus, 1 to post-partum shock, and 1 to pneumonia.

TABLE III.—Analysis of 151 Cases of Dystocia due to Premature Application of Forceps.

Method of Delivery.	No. of Cases.	On Admission.		Maternal Deaths.	Foetal Deaths.
		Incomplete Dilatation of Cervix.	Children Dead or Dying.		
Spontaneous	47	20	8	1	15
Forceps	75	41	24	6	37
Version	9	6	3	1	7
Craniotomy	18	12	16	0	18
Caesarean section ...	2	2	1	1	1
Total	151	81	52	9	78

END-RESULTS.

The tragic loss of life, maternal and foetal, associated with different types of unsuccessful forceps cases has already been referred to in different parts of this paper. In all, 54 patients died, a mortality of 10 per cent., and one which is scarcely exceeded by any of the major complications of pregnancy or labour. The individual causes of death were: sepsis 37, rupture of the uterus 8, post-partum haemorrhage and shock 6, and pneumonia 3.

In addition, in 132 cases (23.6 per cent. of the total series) the puerperium was morbid according to the British Medical Association standard. Many of the patients recovered sufficiently to leave hospital only after exhausting weeks of fever. Including stillbirths and neo-natal deaths 357 of the infants were lost—a mortality of 64 per cent.

Such figures indicate only too clearly how anxious must be the prognosis where an injudicious use of forceps results in failure to effect delivery. The full significance of such failure lies, however, not only in the immediate grave risk to life which it involves, but also in the frequency with which crippling invalidism may follow as the result of infection or injury sustained. Few patients escaped without more or less serious laceration of the cervix, vagina, or pelvic floor; sloughing of the vaginal tissues with fistula formation occurred in several cases. Further, it will be appreciated that a primary repair was seldom feasible or successful. Many patients were perforce discharged only to face further weeks or months of ill health.

So that the extent of subsequent disability might be determined it was decided to make a follow-up study of such patients in this series as were delivered in the Edinburgh Royal Maternity Hospital. In all, 116 patients were communicated with and asked to report at the hospital for examination. Of these, 18 did not respond or could not be traced. The end-results of 98 cases, however, are available, and may be summarized as follows.

In 24 cases, or roughly one-fifth of the total, the patient stated that her health had not in any way suffered, and pelvic examination revealed no abnormality of importance. The remaining 74, however, had all suffered varying degrees of inconvenience or discomfort, sometimes amounting to serious ill health; in almost all of these one found stigmata of the ordeal through which they had passed.

Laceration of the cervix, with or without downward displacement of the uterus, was the lesion most commonly encountered in this follow-up investigation. The frequency with which such an injury was found is of special importance; in the first place it emphasizes how commonly in unsuccessful forceps cases of all types failure is the result of an attempt to complete delivery before the cervix is fully dilated, and therefore before the patient has had the benefit of the second stage of labour. The corollary is likewise apparent: injury to the cervix and to the upper supporting structures of the uterus must inevitably occur where forceps are applied before the cervix has fully retracted over the presenting part.

Backward displacement of the uterus was present in a considerable number of cases. In a few the condition was unaccompanied by any other pelvic abnormality. In the majority, however, it was associated with subinvolution, with downward displacement, or with pelvic infection; of itself the retroversion was probably of less importance than were the other conditions of which it was a complication.

Pelvic infection, evidenced by chronic subinvolution, impaired mobility of the uterus, or by enlargement and abnormal sensitiveness of the uterine appendages, was found in approximately one-third of the cases examined. In greater or less degree it was met with in almost every case in which the puerperium had been febrile. These patients complained of symptoms varying from minor discomfort to more or less constant and acute misery. In most, such relief as medical measures could offer had already been afforded, and for many the ordeal of a major operation was the only alternative to continued ill health.

Twenty-four patients of those who reported had been subjected to operation for disability resulting directly from the type of dystocia under consideration; in 10 cases a reparative procedure had been carried out for injury to cervix or pelvic floor; in 3 cases an operation for vesico-vaginal fistula had been performed; 4 patients had been curetted for menorrhagia; in 6 cases hysterectomy or the removal of the uterine appendages had been called for. There had, in addition, been one operation for extra-uterine gestation. The majority of these patients now enjoy reasonably good health.

In 19 patients of those who reported, subsequent pregnancy had occurred; in 13 cases the pregnancy had proceeded normally to successful delivery at term; in 5 patients

abortion had occurred, and in one case the gestation had been extrauterine in type.

For the rest, in whom after a reasonable interval conception had not occurred, many admitted that through apprehension of its dangers pregnancy was being avoided. There were others whose chief concern was that they had been denied the privilege of a second chance, and for whom the suffering and danger to life which they had been called on to face had meant less than the disappointment of an empty cot.

Such, in brief, is a record of the consequences which may follow ill-timed or misdirected efforts to supplement or supplant Nature's methods. To what extent the unsuccessful forceps case is the indirect outcome of inadequate undergraduate training, of insufficient co-operation between midwife, family doctor, and consultant, or of defective municipal or public health administration, is open to question. Of this broader aspect of etiology Professor Fletcher Shaw has spoken. More directly it is manifest that many of these disasters could have been prevented by ante-natal recognition of contraction of the pelvis, undue size of the child, or other abnormality.

In its immediate causation the unsuccessful forceps case would appear to be, very largely, the outcome of non-observance of one of three elementary rules in regard to forceps operation. First, that forceps should not be applied in the presence of marked disparity in relation to the head and pelvis, and rarely, if ever, when the head is still movable above the pelvic brim. The frequency with which it was found that forceps delivery had been attempted while the head was still unengaged would indicate that the difficulty and danger of the high forceps operation are not sufficiently appreciated. Secondly, that forceps should not be applied without an exact knowledge of the position which the head occupies in the pelvis. The initial mistake in unsuccessful forceps cases is so frequently one of diagnosis that it would appear necessary to re-emphasize the wisdom of the time-honoured dictum "chloroform and the whole hand" as a preliminary to forceps application. The third essential is that the cervix should be completely effaced and retracted over the presenting part. On so elementary a proviso to the safe use of forceps one would hesitate to insist, were it not so frequently disregarded.

To remove the stigma which to-day attaches to the practice of midwifery by giving effect to such recommendations as various committees of inquiry have made may be an extravagant hope. To insist that forceps should not be applied unless on strict obstetrical indications may be a counsel of perfection. To save many lives which need not be lost and to relieve the burden of much avoidable suffering by a greater discretion and care in the use of forceps—this, surely, is an ideal which we may reasonably cherish.

UNSUCCESSFUL FORCEPS CASES:

—HOW FAR CAN THEY BE PREVENTED BY EFFICIENT ANTE-NATAL CARE?*

BY

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In this newspaper age, is there any citizen who has not been made aware of the unsatisfactory state of obstetric practice in this country? Hardly a week passes without some reference in the lay press to conferences on maternal mortality, to questions in Parliament on the same subject, or to the appointment of departmental committees—for example, "to advise upon the application to maternal mortality and morbidity of the medical and surgical knowledge at present available." Obstetrics is made to appear the Cinderella among the ashes, while her gorgeously arrayed sisters, Medicine and Surgery, go to the ball. Occasionally the dignified weekly or monthly reviews enter the lists. Not many weeks ago the *Spectator's* champion, a well-equipped Crusader, arraigned the General Medical

* Read in a discussion in the Section of Obstetrics and Gynaecology of the Annual Meeting of the British Medical Association, Cardiff, 1928.