THE USE AND ABUSE OF MIDWIFERY FORCEPS.*

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My first duty is to thank the members of Council for the honour they have done me in inviting me to open this discussion on the Use and Abuse of the Midwifery Forceps. I am fully aware of my inability to do the justice to this subject which its importance deserves, but I trust you will grant to me the leniency due both to age and to youth, for I am here to-day representing the oldest University as well as the youngest centre of obstetrical teaching in Scotland.

No more opportune theme could have been chosen for discussion, threatened as we are by the nation's being deprived of 500 children per week, and at a time when the danger of a declining birth-rate is one of the problems of the day. Further, we have still to face the undesirable fact that serious evils exist, causing too high a death-rate from puerperal fever. The questions before us for discussion are: Whether is a frequent or a sparing use of the forceps desirable in midwifery practice, and what are the relative effects upon the fetal and the maternal mortality?

On the one hand, we have it urged by some authorities that the application of the forceps by the general practitioner is often too long delayed, resulting in a loss of fetal life which might be prevented by the timely use of the instrument. On the other hand, equally trustworthy authorities have described the forceps as the bloodiest of all obstetric operations, and as being responsible for many injuries which subsequently fall into the hands of the gynaecologist for treatment. No matter what view one holds as to the necessary frequency of the operation, all will agree that the forceps deserve the eulogy of Baudelocque, who described it as "the most useful surgical instrument ever invented." One can imagine what midwifery practice would be without the forceps, when the practitioner could only resort to Paré's dreadful hooks, involving certain death of the child and indescribable injuries to the mother.

For two hundred years this instrument was the mystery of the medical world. Since the days of the Chamberlen monopoly it has gradually undergone several modifications, as represented by the pelvic curve, and change of lock, suggested by Smellie, and the addition of the shanks and shoulders by Sir James Simpson, terminating in the most important development by Tarnier, who introduced the principle of axis traction. From this sprang the further improved and modified instruments of Professor Simpson and Dr. Milne Murray. I presume it is unnecessary for me at this time to contrast for purposes of discussion the ordinary double-curved forceps with those constructed to fulfil the function of axis traction. In favour of the latter one has only to mention the certainty with which one can direct traction in the axis of the brim without disturbing the ordinary mechanism of labour; less injurious compression upon the fetal head, and greater ease and comfort to the operator. Those advantages far outweigh the more or less imaginary defect of greater complexity urged against it by those who still favour the old pattern of forceps. Professor Simpson, writing upon the advantages of axis-traction forceps, says:

If a practitioner accustomed only to the use of the old forceps will use the axis-traction forceps in one or two difficult cases, he will find that it works with so much safety to the mother and child that he will ever after use it in every case. There is no case, high or low, with presentation and position normal or abnormal demanding forceps delivery where the axis-traction forceps may not be applied. Since it came into use, the range of forceps application has been greatly widened, and the sphere of the competing operations, such as turning, embryotomy, and the induction of premature labour, has been correspondingly narrowed.

INDICATIONS FOR THE APPLICATION OF THE FORCEPS.

It is almost impossible to lay down a hard-and-fast rule as to the indications and contraindications for the forceps. Each case requires to be considered upon its own merits, and it must be to a great extent a matter for individual judgement. There can be little doubt that it is one of the truest maxims in midwifery that as long as the membranes are entire, and the liquor amnii present, no danger will accrue to mother or child by the continuation of labour—except, perhaps, by the occurrence of convulsions and hæmorrhage. Rare conditions, such as certain cases of eclampsia, may demand

the application of the forceps before full dilatation of the cervix. Should, however, further experience with dilators, constructed upon the model of Bozzii's instrument, prove that the cervix can be fully dilated without any serious laceration, then this indication for the application of the forceps will disappear. That the application of the forceps with the cervix undilated may be followed by disastrous results is fully proved by the not infrequent occurrence of vesico-cervico-vaginal fistulae, the result of direct laceration, as distinguished from fistulae the result of sloughing from delayed application of the forceps—now fortunately a vanishing lesion.

Statistics from the Rotunda Hospital further show that during Dr. Johnstone's mastership, when the forceps were applied in about 75 per cent. of the cases, in many of which the cervix was undilated, the result was a doubling of the maternal mortality as compared with the more favourable results attained by his more conservative predecessors and immediate followers. It must, however, be admitted that Dr. Johnstone's rate of infantile mortality was only 9 per cent. as contrasted with 53 per cent. under the mastership of Dr. Clark—a result probably accounted for by the substitution of the forceps for craniotomy. Nowhere are Schiller's words more appropriate:

It is the curse of evil deeds
That they give birth to further evils.

Here the "evil deed" is the untimely application of the forceps, the "further evils" being represented by deep cervical lacerations, parametritis, cicatrizations, and, as a consequence, one-child sterility.

By far the most frequent reason for the application of the forceps is the unsatisfactory advance of the head during the second stage of labour, as the result of feebleness of the pains or rigidity of the soft parts, especially in primiparous patients, or both combined. This is doubtless the class of case where the element of abuse is most likely to come in. Although it is perhaps undesirable that any time-limit should be taken as the basis for operative interference in this type of case, yet it seems to me that it is a tolerably reliable guide. If we take the average second stage in a multiparous patient as being one hour and a-half, and in primiparous patients as two hours and a-half, then, I think, it is desirable—although perhaps not absolutely necessary—to put on the forceps if the second stage lasts over two hours in a multiparous patient, and four hours in a primiparous patient. By following this rule we obey the mandate of Sir James Simpson: "You should only wait till you see what Nature can do, not what she can endure," and the wise injunction of Boer that "everything is not to be taken away from Nature, neither is everything to be left to her." This would surely be a far safer time-limit in the interests of both mother and child, than waiting to fulfil Denman's rule, which was that the forceps should not be applied until the child's head had rested on the perineum for six hours—a rule which was scarcely mitigated by the additional injunction that no case was to be esteemed eligible for the forceps until the ear of the child could be distinctly felt.

This time-limit is not, however, accepted as a guide by some authorities. Winckel, for instance, teaches that weak pains never indicate the forceps, and that they should only be applied when distinct signs of danger to mother or child arise. He further expresses his belief that in general practice weak pains are more frequently diagnosed than they actually occur, and are thus employed as an indication for what he calls "an operation of convenience." Galabin, on the other hand, does not delay applying the forceps until the graver symptoms of protracted labour appear, and he thinks that by the modern practice of having recourse to forceps without great reluctance both maternal lives are saved and the lives of children who would have been stillborn from prolonged pressure. With regard to the abuse of the forceps in such cases, younger practitioners meet with the temptation to yield to the entreaties of the "uneasy gossips" and apply the forceps because in the friend's opinion the strength of a perfectly healthy young woman in the early stages of a normal labour is rapidly becoming exhausted. Perhaps Pajot's principle, which dominates all midwifery, would fulfil the requirements of such a case:

The duty of the accoucheur is patience. One should not interfere without a decided indication. But as soon as ever that occasion is presented it must be attended to without delay, and it must never be forgotten that in midwifery methods of interference which will save two beings are at the right time easy, but become in a few hours dangerous, futile, and impossible.

* The introduction to a discussion at a conjoint meeting of Edinburgh and Glasgow Obstetrical Societies, held in Edinburgh, July 13th, 1904.

In minor degrees of contracted pelvis of the justo-minor type the advantages of the forceps are generally recognized. It is not my intention to do more than touch upon the much-disputed question of the relative advantages of forceps and version as a means of extraction in minor degrees of flat pelvis permitting delivery of a living child by either method. In primiparous cases I am thoroughly convinced that with properly constructed axis-traction forceps delivery by this means is safest in the interests of the child, and in no way increases danger to the mother. In multiparous patients I believe that version has yet a field of usefulness. Many stillborn children, and many lacerations of the maternal passages are due to the too early application of the forceps before the head has had time to mould into what Litzman calls "the most favourable position of the head," which is well-marked Naegele's obliquity, the head being ready to enter the pelvic brim. Statistics, however, clearly show that with a timely and skilful application of the axis-traction forceps the infantile mortality is distinctly less than in cases extracted by version, and is not accompanied by greater risks to the mother, as some German obstetricians would lead us to believe.

In malpositions of the head, as represented by occipito-posterior cases, we know that with the aid of time, in the majority of cases the occiput rotates to the front without assistance. When within a reasonable time this does not take place, there can be no doubt, I think, that the application of the axis-traction forceps, provided the passages are in a fit state, by favouring descent and flexion of the head, promotes anterior rotation more surely than manual attempts at reposition, on account of the uncertainty of the permanency of the latter method. The successful use of the forceps in such cases depends on their efficiency. Although it gave Smellie "great joy" when he discovered that he could rotate the head with the ordinary forceps, yet we know that this could only take place at the risk of injuring the child's head and the maternal soft parts. The superiority of the axis-traction forceps in those cases was clearly pointed out by Sir Halliday Croom many years ago. More recently the late Dr. Milne Murray perfected the instrument by flattening the pelvic curve which insures a firm grasp of the head, increases flexion, and at the same time does not interfere with normal rotation. Although in persistent occipito-posterior cases labour is prolonged, and there is a greater tendency to perineal rupture, yet my belief is that such cases terminate spontaneously more frequently than is generally anticipated. This is corroborated by the experience of Varnier, who found that 30 out of 35 cases terminated within a reasonable time without any instrumental assistance.

In malpresentations of the head as represented by face cases, expectancy is the best treatment to adopt, as the majority of those cases terminate naturally. Should, however, anterior rotation of the chin be unduly delayed, the forceps are quite legitimate. In cases of persistent mento-posterior where immediate extraction is indicated, the forceps have in the majority of cases to give place to some other means of extraction. With regard to brow presentations, the forceps are only of use when the head is impacted in the pelvis, or when it is too late to convert it into a more favourable position. The application of the forceps to the after-coming head as recommended by Smellie should, I think, be reserved for cases where jaw traction is impossible from the mouth being inaccessible, or where the occiput is behind and the chin directed to the pubis. Further, as they are generally applied after failure of manual attempts at extraction, the chances of delivering a living child must be greatly lessened by such previous manipulations.

In cases of prolapse of the cord, ordinary methods of reposition failing, the best chances for the child, in multiparous patients, lie in rapid delivery with the forceps. In primiparous cases, on the other hand, where the condition of the soft parts does not permit of delivery rapidly enough to save the child, without the risk of tearing the maternal tissues, I believe that version is preferable, as this enables the breech to fill up the place previously occupied by the loop of cord.

In marginal placenta praevia, the os being fairly dilated, but the pains not strong enough to deliver the child quickly, the forceps should be applied chiefly in the interests of the child.

METHODS OF APPLICATION.

With regard to the technique of the operation, time does not permit me to enlarge upon that point beyond referring to the mode of grasping the head. There can be no doubt that previous to rotation of the occiput the cephalic application

of the blades over the biparietal diameter of the child's head should always be attempted, although it is more difficult to do than merely introducing them in the transverse diameter of the pelvis without any reference to the child's head. By so doing there is less chance of the forceps slipping and thereby inflicting injuries to the mother and to the child. As to the mode of traction, our motto must be "*Non vi sed arte.*"

FREQUENCY OF APPLICATION AND MORTALITY.

When we come to consider the question of the frequency of the forceps operation, we find the percentage of cases much smaller in hospital than in general practice. Those who urge a limited use of the forceps in private practice quote in support of their plea the present tendency to the restricted use in Continental hospitals. Taking the practice of ten Continental maternities, I find that the average frequency of forceps cases is 3.6 per cent.:

Basle	(1887-93), 5.33	per cent.	Munich	(1884-90), 2.60	per cent.
Bonn	(1885-95), 4.39	"	Prague	(1891-4), 3.60	"
Dresden	(1880-94), 2.56	"	Paris Maternité	(1896-9), 6.00	"
Greiswald	(1887-96), 6.00	"	Wurzburg	(1889-95), 2.36	"
Halle	(1887-93), 4.84	"			
Marburg	(1885-97), 2.50	"	Average	...	3.60

This represents a rate of forceps cases where the conditions and indications are strictly limited and definite. The cervix must be fully dilated, the membranes ruptured, and the head already in the pelvis. The forceps are not applied until danger arises to mother and to child or to both. If we compare those figures with the statistics of maternity hospitals in our own country we find that our percentage of instrumental cases is slightly higher. This slightly increased rate is not accounted for by the indications being any less strict, or definite, but from the fact that cases of the high operation are much more frequent in this country, the axis-traction forceps not having yet received universal favour in German Clinics, where version is employed for cases which we would terminate with forceps. Another reason for our higher percentage is that our lying-in hospitals are smaller, and consequently a greater proportion of the cases admitted require operative treatment. This is apparent when we compare the percentage of indoor with outdoor cases. Thus, for example, in the Edinburgh Maternity Hospital of 300 indoor cases 32 were instrumental, equal to 10 per cent., whilst in the outdoor practice in 506 cases the forceps were applied 23 times, equal to 4.3 per cent. In Glasgow of 482 indoor cases there were 18 per cent. of forceps cases, equal to 1 in 5, whilst of 1,697 outdoor cases the forceps were applied in 6 per cent. of the cases, or 1 in 16. In the Dundee Maternity Hospital of 563 indoor cases there were 42 forceps deliveries equal to about 7 per cent., whilst in the outdoor department of 520 cases there were 29 forceps deliveries, or a little over 5 per cent. In Manchester there was 9 per cent. as contrasted with about 1 per cent. in the outdoor practice. The Rotunda report for last year gives 3.5 per cent. for the indoor and 1.5 for the outdoor department.

The maternal mortality in those hospital reports may be taken as *nil*, there being no case where the maternal death could in any way be attributed to the application of the forceps. When we come to consider the effects of the forceps operation on the infantile mortality, we are confronted with the difficulty that in many reports upon this point no reference is made to the important factor as to whether or not the child was alive when the forceps were applied. After deducting such a possible source of error, I find, from the following reports at my disposal, that the average infantile death-rate where the forceps *might* be responsible for the child's death comes out slightly over 6 per cent.

	Forceps Cases.	Children Dead Before Application.	Deaths Possibly Due to Forceps.
		Per cent.	Per cent.
Dresden...	232	21	5.6
Halle ...	102	19	12.0
Wurzburg ...	66	27	4.0
Prague ...	106	21	3.7
			6.0

Satisfactory in every way as those hospital results are, the question of morbidity has to be considered. The difficulty in estimating the exact morbidity lies in judging to what extent the forceps, *per se*, were responsible for the lacerations

of the soft parts. Many of the less important injuries are wrongly attributed to the forceps, because such tears might as surely have occurred in non-instrumental cases. From the Dresden Klinik, for instance, Münchmeyer reports 85 p.c. of lacerations which he attributes to the forceps even scientifically applied. Schmidt of Basle found 84 per cent. of lacerations in the vaginal and perineal tissues in 132 forceps operations. Few will admit, I think, that the forceps were necessarily responsible for the lesser injuries included in those figures, or that those writers are justified from such results in supporting the opinion that has been expressed by Winckel that "even in the hands of an experienced operator the forceps is an instrument by no means devoid of danger."

When we turn now to private practice we find that even in Germany, where the strictly limited application of the forceps in hospital practice has been quoted as an example of what should be followed in our every-day practice, it is interesting to note that even there the indications become extended, so that the forceps are much more frequently employed in private practice than in the hospitals. As the Germans put it, the "*Schulden indicationen*" as practised in hospital need not necessarily be strictly adhered to in private practice. Now, although I know that it has been said, and perhaps truly, that statistics are sometimes misleading, yet I should like to quote from a paper which appeared in a recent number of the *Zeitschrift für Geburtshilfe und Gynaecologie*. In that paper Bockelmann, of Berlin, states that of 800 cases attended by him in private during a period of fifteen years the forceps were applied in 335 cases, equal to 40 per cent. They were divided as follows:

47 at the brim.
122 in the pelvis.
166 at the outlet.

Of the total, 283 were primiparae, 94 multiparae. There were three maternal deaths, the cause in each case being eclampsia, and thus in no way connected with the forceps operation. Such results are quite equal to the best hospital returns.

Of the children 319 were alive, and 16 died during the forceps delivery, equal to about 4.7 per cent.; of the 16, however, 6 were known to be dead before the forceps were applied, 3 were doubtful, leaving only 7 of the total where the forceps could in any way be responsible for the child's death. It is further of interest to note that of 61 cases in elderly primiparae Bockelmann, with the early application of the forceps, had an infantile mortality of 3.3 per cent., while Münchmeyer, dealing with the same class of patients in hospital, where the time-limit in the second stage of labour was more prolonged, had an infantile mortality of 30.3 per cent.

Recently Dr. Dewar contributed a paper on this subject to the Edinburgh Obstetrical Society. His conclusions may be taken as a fairly good average of careful midwifery in every-day practice. He contrasted his early experience of 700 cases with 300 cases at a later date. In the former group he applied the forceps in 11 per cent. of the cases. There were no maternal deaths. Of the children 20 died, and of those only 6 were delivered with forceps, giving an infantile mortality of 2.8 per cent. Of his second series—and with a larger experience—he applied the forceps in 35 per cent. of the cases. There was one maternal death from a cause quite unconnected with the obstetric operation, and an infantile mortality of only 1.6 per cent. Those figures of Bockelmann and Dewar show a gain in the infantile results as a consequence of a more frequent application of the forceps as contrasted with the results achieved by their more limited use in hospital practice. But we must take into consideration the fact that hospital cases are usually more difficult, and this would account for the higher infantile mortality. With regard to morbidity their results clearly show that severe perineal tears were more frequent in unaided cases, and that the convalescence after forceps cases compared favourably with non-instrumental deliveries.

It has not yet been proved that by a frequent application of the forceps a very large saving of fetal life is obtained. But the figures at our disposal show at least a slight saving, with equally good results for the mother. This being so, I think we are justified in maintaining that in the hands of a skilful operator, the condition being satisfactory for the application of the forceps, a moderately frequent use of the instrument is to be recommended. By so doing we shorten the patient's suffering, without increasing any risk to the maternal or to the fetal life.

Granted that the results of forceps deliveries in the hands of careful practitioners compare favourably with the results

in lying-in hospitals where their use is much more restricted, how does it arise that the consequences of pelvic lesions following upon instrumental delivery form the etiological factor in many gynaecological cases? There can, I think, be but one explanation, namely, too little knowledge in the technique of the application of the forceps, and over-confidence in the safety of the abundant use of antiseptics. No one, of course, undervalues the enormous benefits to obstetric practice since the introduction of antiseptics, but the patient's safety depends not only upon such precautions but also upon how the instrument is used, for that which is "best administered is best." Until such time as clinical midwifery becomes a compulsory part of medical education, ranking in importance with clinical surgery and clinical medicine, we cannot but expect that many of the younger practitioners will meet with difficulties in the manipulation of the forceps. Till then we must bear the reproach of German obstetricians who have criticized our midwifery training as being "*Nur theoretisch*." Most important as it is for our students to be thoroughly equipped in the various branches of medicine and surgery, yet it has perhaps been said with some truth that our students learn surgery which they will never practise and practise midwifery which they have never learned. The abuse of the forceps will to a great extent disappear when our students are able to obtain a sound practical training in obstetrics. As we cannot regulate the time when midwifery cases occur, our students, in order to obtain the full advantage of the experience offered by our maternity hospitals, must reside in or near that institution. Herein lies the superiority of the method in Germany, where a few weeks' residence in a maternity is compulsory before the student presents himself for examination. It may, of course, be argued that he may not in the course of a few weeks' residence apply or even see the forceps applied, and he may not acquire that dexterity possessed by William Hunter, who boasted that "he could turn with one hand and eat bread and cheese with the other." But the student would at least learn such important details as the position of the child's head and methods of pelvimetry. This knowledge would at any rate prevent one frequent abuse of the forceps—namely, that cases of contracted pelvis would be diagnosed before their application, and not for the first time after futile attempts at extraction. Further, he would be impressed with the responsibility he incurs in assuming the care of parturient women, and he would recognize that his attendance at the maternity hospital was not merely to be regarded as a place where he can "look in to see what was going on," but that attendance at it would be one of the greatest advantages for his future success as an obstetrician. I am sure I echo the sentiment of all those interested in the progress of obstetric teaching in Scotland when I congratulate our Edinburgh colleagues in having almost realized this ideal state of obstetric teaching by the acquisition of a residency in connexion with the Simpson Memorial Maternity Hospital. We hope that directors and managers of lying-in hospitals throughout the country may follow this example, and that they will be convinced that whatever increases the teaching efficiency of a hospital, be it lying-in or general, increases at the same time the benefits to the patients. It is but fitting that this advance in the facilities for teaching obstetrics in Edinburgh should be associated with the name of Dr. Milne Murray, who in the short years allotted to him did so much not only to maintain but to enhance the reputation of the Edinburgh School of Obstetrics.

THE PRESENT POSITION OF RADIUM IN THERAPEUTICS: WITH A SUMMARY OF THE FINSSEN LIGHT AND X-RAY TREATMENT.

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FINSSEN LIGHT AND X RAYS.

IN December, 1902, I had the honour of reading a paper before the Royal Academy of Medicine in Ireland on a year's experience of the light treatment, in which I described my method of applying both the Finsen light and x rays, and discussing in brief the conditions in each case which appeared to me favourable to the adoption of one or other or both the methods. I found it difficult then, and it would be much more difficult now, to discuss either method separately, for in the general routine of hospital non-selected cases the