FORCIBLE DILATATION OF THE CERVIX IN "ACCOUCHEMENT FORCÉ,"

MORE ESPECIALLY BY MEANS OF THE BOSSI AND FROMMER
DILATORS.

By J. M. MUNRO KERR, M.B., C.M. GLASG.,
Obstetric Physician, Maternity Hospital, Glasgow, etc.

DILATATION of the cervix as a step in the operation of *accouchement forcé* may be carried out with the hands, rubber bags, or metal dilators. I shall briefly refer to each of these methods, and then devote the main part of this contribution to a consideration of the use of metal dilators in obtaining forced dilatation.

Manual Dilatation.—The obvious advantages of manual dilatation are that the operator requires no instruments, all the stretching being done with the fingers, and that he can tell what he is doing. The disadvantages are that the operation takes time, is sometimes impossible if the cervix is undilated and rigid, and is often very fatiguing. Before manual dilatation proper can be commenced one must be able to get at least two fingers through the canal. Sometimes the preliminary dilatation may be carried out with one finger pushed further and further in, but often even that is impossible, and recourse must be had to the graduated dilators of Hegar or Cameron. Having got the two fingers through the os, the rest of the operation may be carried out by forcing more and more of the hand through, or by employing the fingers of the two hands (Bonnaire's method). Could one always dilate the cervix quickly enough by this method it would without doubt be the best, for there is less chance of tearing it, especially if one moves the dilating fingers about, stretching sometimes antero-posteriorly and sometimes laterally, and one can tell better what is happening. Besides, there is another advantage, but one which I do not remember having seen mentioned, and that is that with finger manipulations the cervix often becomes softer.

Let me with extreme brevity give a few illustrative cases:

CASE I.—Mrs. L., 6-para, six months pregnant, was admitted to the Maternity Hospital for eclampsia, August, 1900. The os admitted a finger with difficulty, and was extremely rigid. Manual dilatation; version and extraction. Duration of operation an hour and a-half.

CASE II.—A 2-para; seen in consultation with Dr. McMillan, June, 1902. *Accouchement forcé* on account of dyspnoea. Manual dilatation and extraction with forceps. Duration of operation fifty minutes.

CASE III.—A 2-para, six months pregnant, seen with Dr. Loudon, of Hamilton, September, 1902. Eclampsia. Os admitted finger. Dilatation with bags and fingers, followed by version. Os very rigid, so sixty minutes at least elapsed before the child was extracted.

CASE IV.—A primipara, about seven and a-half months pregnant, seen in consultation with Dr. Parker, Gartloch. Acute mania. Dilatation with fingers, followed by version and extraction. Duration of operation forty-five minutes.

These cases have purposely been picked out as amongst the most difficult cases of manual dilatation. In my experience the shortest time taken to dilate manually and deliver a woman not in labour has been fifteen minutes. It was a case of contracted pelvis in which I was going to induce labour, but after douching I found the cervix so soft that I easily dilated and extracted the child. The longest time taken was about an hour and a-half (Case I).

Taking an average of my cases I would say that to dilate and deliver a multipara not in labour, and with the cervix not obliterated, forty minutes are required at least, and to do the same in a primipara about sixty to eighty minutes. I do not include, of course, cases of abortion when the os is slightly dilated and will admit only one finger; but I am sure that most persons will agree with me that a very considerable time indeed is often necessary to dilate the cervix in such cases manually, and indeed that it is sometimes impossible.

Dilatation with Hydrostatic Dilators.—Dilatation with rubber bags should hardly come into consideration in *accouchement forcé*. One cannot get sufficient dilatation with such bags alone, a more complete stretching with the hands being necessary after their removal. Other objections are that rubber bags can only be used after the cervix has been sufficiently dilated to allow of their being introduced, and dilatation with them takes some time. Undoubtedly the bag of Champetier de Ribes is the best, but one must always test it carefully as it is liable to burst if at all old. Only the other day one burst in my hands when I tested it prior to employing one for the induction of labour. The advantages of hydrostatic dilators of the type of Champetier de Ribes over those of Barnes are that a more extensive dilatation can be brought about by them. Barnes's bags, if

the cervix is at all rigid, balloon up inside the uterus. This ballooning is doubtless due to the rubber being softened by the soaking in the antiseptic solution or by the boiling; but that is unavoidable, for there are no other means of sterilizing such bags. I have seen it sometimes suggested that for more extensive dilatation two bags should be used simultaneously, but that is really not practicable.

Dilatation by Metal Dilators (Bossi, Frommer).—But of all methods of dilating the cervix none is so rapid as that carried out by means of metal dilators. This method was introduced by Bossi in 1890, when he described his instrument. At first it was not taken up very enthusiastically, but ample amends have been made him in that respect, for in the last few years so much has it been discussed that one can hardly open an obstetric journal without seeing some reference to it. Bossi's first instrument consisted of three prongs, but later a fourth was added. Quite recently Frommer introduced another instrument, which consists of eight prongs, and which is an improvement in this respect, that it allows the pressure being more equally distributed round the margin of the os. It has this disadvantage, however, that the prongs are sharper, and that the operator cannot so readily as with Bossi's dilator get the finger between the prongs and feel how the cervix is stretching.

The great advantage of the instruments of Bossi and Frommer is that with them the os can be dilated much more quickly and with less fatigue than with the hands. Roughly speaking, one takes about twenty-five minutes to dilate the cervix from the time it will admit the instrument. The operation is easiest in multiparae where the cervix is already obliterated. Here are some recent cases:

4-para, eclampsia at term. Seen a few months ago in consultation with Dr. Watson, Langside. She had had about forty fits before I saw her. Os admitted dilator. Dilatation and extraction of child with forceps took twenty-five minutes; no tearing of cervix; patient died following day.

A much more difficult case was the following:

Primipara, eclampsia. Seen July, 1903, with Dr. Jones, Govan. Patient had had seven fits, and os just admitted one finger with cervix not quite obliterated. I dilated without caps, then completed dilatation with caps over prongs. Dilatation up to figure 9 on index took twenty-five minutes. Delivery completed with forceps five minutes later. Slight laceration of cervix, but none of perineum. This patient's recovery was excellent.

The last case of forcible dilatation which I shall give was carried out with Frommer's eight-pronged dilator. It illustrates the danger of the instrument in cases where the cervix is not taken up and when pregnancy is not far advanced.

A primipara five months pregnant was admitted to the Maternity Hospital under my care on account of haemorrhage. It was a case of threatened abortion. I tried to arrest the abortion with rest and sedatives, but profuse bleeding occurred two days later and the patient became much collapsed and showed signs of sepsis, the pulse and temperature becoming quite febrile. I determined to empty the uterus. The cervix admitted a 13 Hegar, after which I got the Frommer dilator pushed well in, steadying the cervix with a volsellum forceps while doing so. I went on dilating a little way and felt that the resistance suddenly became less. I withdrew the instrument and found that I had torn the cervix at the left side, not on the vaginal surface but on the cervical.

My explanation to the students was that the dilator had not gone quite through the os internum, and that was the reason why Gardner, my house-surgeon at the time, entirely with my approval, said in his paper: "In cases where the cervix is not taken up there is a greater risk of doing damage owing, as already detailed, to the prongs not passing completely through the internal os. From reported cases I have not seen this danger referred to; it is the more liable to occur when the cervix is dragged upon and consequently lengthened by the volsellum forceps being used to steady the organ." I am still of opinion that this is possible with Frommer's instrument; but thinking over the case described I doubt if it really occurred, for the internal os was considerably dilated when I removed the instrument. But to return to the case:

I went on with the dilatation very cautiously, and the cervix split completely through on both sides. I then cleared out the uterus, douched, and stitched the tears carefully. This patient died in three days of sepsis. She was of course, as I have explained, septic before the operation.

Taking these three cases there are two deaths, and that may seem at first rather alarming, but let it be clearly understood that the dilators cannot in the slightest degree be blamed for such unfortunate terminations. In the first case the patient had had forty fits, and in the other the patient was septic before operative treatment was commenced. One must remember that as a rule Bossi's or Frommer's dilator is

resorted to only in very bad cases, in which a high mortality will be the rule no matter what treatment is adopted.

We must base our criticism on the extent of injury done to the cervix. Looking at the matter from that point of view, I find that in six cases in which the os was the size of a shilling or less I had one bad case of laceration and two of very slight laceration. In fourteen cases recently reported by Gardner from the practice of the Maternity Hospital, two had very bad lacerations, one being the case described already. Leopold, one of the strongest advocates of this treatment, has reported seventeen cases without a laceration of any account, although in Case II of his first series there was a laceration, for he had to apply stitches on account of the bleeding. Leopold's results are very satisfactory, but if you read over the cases you will find that only in one was the cervix not already dilated to some extent. In his second paper he says: "The os was in some 1 pfennig, in others 1, 3, or 5 markpiece in size."

Now, there are certain factors which influence the occurrence of lacerations, and of these I would mention the following:

1. The manner in which the dilatation is carried out.
2. The number of the pregnancy.
3. The degree to which the cervix has been taken up.
4. The age of the pregnancy.

The influence of the first two factors is obvious. It is perfectly clear that lacerations will be more common when dilatation is carried out rapidly than when it is done slowly, and in primiparae than in multiparae. There remain therefore only the other two to discuss, and they are really the most important. With comparatively few exceptions in the cases which have been reported by different writers, the cervix has been already taken up. Simpson and others, in this country, Germany, and America have, however, recorded cases where the cervix was not obliterated, and the os was not dilated. With time and caution doubtless these cases, if at or near term, can be safely dilated with Bossi or Frommer's instrument, as the recorded cases illustrate. Some of the worst tears, however, have been in such cases. But although the unobliterated cervix at or near term dilates wonderfully well, any one who has dilated to the full extent such a cervix and then tried to deliver with forceps or by version will bear me out when I say that the os externum invariably contracts round the head. One is always disappointed; the canal is never so well dilated as one expects.

I turn now to the last factor, the age of the pregnancy. In dilating the cervix in gynaecological work I have more than once found the cervix give way not externally but internally. I can also remember once having seen the same thing in dilating the cervix in a case of abortion. That this may occur has been pointed out by several writers. It is further borne out by Case XII (abortion at fourth month), which Gardner describes as follows: "Two days after delivery haemorrhage occurred while an intrauterine douche was being given: examination showed that a clot had been washed from a pit or depression within the cervix."

And this brings me to say that the cervix tears readily in the early months of pregnancy, and consequently Bossi's dilator should be used with great caution in such cases. Also, and this is of the very greatest importance, the tear may not always be external; by that I mean that to the finger from the vagina the vaginal portion of the cervix may appear intact, yet if one carefully examines the cervical canal one will find a tear there. Lacerations are commonest in this group, and the case of extensive laceration described was an illustration of this.

Finally, I would sum up my views as regards Bossi's or Frommer's dilator as follows:

1. When the cervix is obliterated and the os will admit the dilator without difficulty, dilatation can be carried out in about twenty-five minutes, and there will be little or no laceration.
2. In cases where the pregnancy has advanced to or near term, even although the cervix is not obliterated, dilatation may be accomplished with comparative safety to the cervix, provided care, time, and patience are expended in the operation.
3. In cases of early pregnancy with the cervix unobliterated there is a decided risk of extensive lacerations, even although the greatest care is taken.

REFERENCE.

¹ Fourteen Cases of Forceful Dilatation of the Os by Means of the Bossi Dilator, *Journal of Obstetrics and Gynaecology of the British Empire*, October, 1903.

OBSERVATIONS ON THE PATHOGENESIS OF GOUT.

By CHALMERS WATSON, M.B., F.R.C.P.E.,

Physician, Eye, Ear, and Throat Department, Marshall Street Dispensary Edinburgh.

PRIOR to Garrod's great discovery of the presence of uric acid in the blood in gout (1847), some authorities expressed the opinion that a derangement of the intestinal tract was the primary factor in the disease. This view was expressed by Van Swieten (1255 A.D.) in the following terms: "Indigestio viscerum pro origine proxima hujus morbi habetur." Since 1847 this theory has been abandoned, and in the writings of Garrod 1876, Duckworth 1889, Ewart 1896, Roberts 1897, and Luff 1898, the possibility of gout being due to an intestinal auto-intoxication or infection is never considered. In 1901 the writer revived this old-time theory in the following terms: "(a) There is ample evidence to prove that the uric acid in the blood is not the primary factor in gout, and (b) uric acid can be deposited in cartilages and other tissues even in considerable amount, without the association of any inflammatory phenomena. (1) The last-mentioned point clearly proves that uric acid is not the factor which causes the inflammatory phenomena characteristic of the acute attack; (2) What, then, are the toxic principles in the blood which possess the power of inducing the characteristic inflammation? and (3) what are the factors which determine the passage of these toxic substances from the blood into the tissues?" In connexion with these queries we have to consider the all-important part played by the alimentary canal. Here we have doubtless one of the important keys to the solution of the problem."

Evidence for or against this theory is difficult to obtain from the human subject, and it is therefore advisable to have recourse to the study of the comparative pathology of the disease. Gout is a rare occurrence in the lower animals. The literature of the subject contains references to isolated records of the occurrence of uratic deposits in the tissues of lower animals, mainly wild animals in captivity, but detailed histological records are wanting. As an indication of the rarity of the disease in poultry, I may say that some years ago the writer obtained the assistance of the editors of leading poultry journals in his quest for "gouty fowls."

A considerable amount of pathological material was forthcoming; this comprised fowls which had died from tuberculosis, fowls which had been affected with swollen joints, others with large chronic inflammatory swellings of the feet, and fowls that had succumbed to disease unaccompanied by any lesions in the limbs which were visible *post mortem*. In no single instance was there any indication of uratic deposit in or about the joints, or in any of the tissues of the dead animals. Three years ago, however, I was fortunate enough to secure one typical case of gout in a fowl (cock). The animal was a year old, and was bred on the farm from which it was sent to me. The clinical record shows that the fowl was observed to be out of sorts for a few days, its comb became dusky, and it was found dead.

The present paper is a record of the *post-mortem* appearances of the case. Particular attention is directed to the histological appearances of the kidneys, pancreas, intestine, and tissues generally, the lesions described being regarded as characteristic of the invasion of the tissues by bacteria or their products. The facts recorded have a bearing on present theories regarding the disease, more especially the well-known views of Ebstein, but the consideration of this point is beyond the scope of the present paper.

Necropsy.

1. The synovia in some joints was of the colour and consistence of cream; this readily gave the murexide reaction. When this creamy layer was washed off there was no visible lesion of the articular or other structures of the joints.
2. A deposit of sodium urate in some extra-articular tissues, mainly in relation to the smaller joints. This was specially abundant in relation to tendons, several of which were completely necrosed. Microscopic sections of these tendons, which were treated by the addition of weak hydrochloric acid, showed copious deposit of uric acid crystals. The murexide reaction was readily obtained.
3. The heart showed early pericarditis, a fine layer of fibrinous

¹ Since the above was written my attention has been drawn to an admirable paper by Gore (*BRITISH MEDICAL JOURNAL*, 1900, II, p. 898), in which the same opinion is clearly expressed.