confer permanent benefit. Instead of using the volsella in the fundus to steady and manipulate the uterus, Laroyenne employed a stem in the uterine canal, which was manipulated by an assistant, a detail of the technique, with obvious disadvantages. But the operation produced permanent adhesion of the uterus to the parietes above the bladder.

Some of the German operations appear to be worthy of imitation with modifications. Olshausen's method is defective in as far as it fixes in the wound the cornua of the uterus. The method associated with the names of Leopold and Sippel appears to be a good operation, but it is not even mentioned by Küstner, who writes the chapters on malpositions of the uterus in Veit's *Handbuch der Gynäkologie*. Küstner makes much of the "*Beweglichkeit*" of the uterus as a condition necessary for success, but the need for mobility is a pure *a priori* assumption. He cannot find a shred of support for his objections in the practice of any one who does an efficient operation, producing firm "fixation."

In performing the operation of ventrifixation I have discarded all suture material except catgut and the finest silk thread which can be conveniently manipulated. At first I used to try to close completely the vesico-uterine fold, but now for years I have introduced for this purpose only two catgut sutures, one at each side, well below the lowest point of the abdominal wound, while the uterus is firmly pulled upwards by means of an ordinary volsella inserted in the centre of the fundus and manipulated by an assistant. This is quite sufficient practically to close the fold without interfering with the distension of the bladder, and it is more of a preventive to any possible insinuation of intestine than shortening of the round ligaments, to the extent practised by most operators, can be. The next step is to suture the peritoneum at the edge of the wound on each side. The fine silk sutures are introduced from the outside surface of the parietal peritoneum, passed through the peritoneum, and after taking a good hold of the uterus low down and near its margin, they are brought back through the peritoneum and firmly tied. The knot is thus always extraperitoneal. Two of such sutures are, as a rule, introduced on each side. The same process is now continued, with the addition that the sutures include the fascia as well as the peritoneum on each side. The transverse sutures are next introduced. These are two or three in number, consist of fine silk, and include fascia and peritoneum at the sides, and each takes a fairly extensive hold of the anterior surface of the uterus. The highest of the sutures is placed about half-way up from the isthmus to the fundus. In complicated cases, and when the prospect of pregnancy is very remote, the sutures have been placed occasionally a little higher, though not often. All the sutures that penetrate to any part of the uterine tissue are buried sutures at the finish; or if any suture includes skin as well, it is never left for more than three days, usually only forty-eight hours. There must never be suppuration in the track of this suture. The highest transverse suture should always be buried. The abdominal wound is closed in the usual way, and it is an advantage to suture separately the edges of the fascia with catgut. The last step in every case is the introduction of a glycerine-pad pessary into the vagina to press forward and support the uterus during the formation of adhesions. The patients are kept in bed for a month or six weeks, and they are advised to lead invalid lives for several months.

There is hardly ever the slightest reaction after operation in simple cases. The pulse and temperature remain normal. No case has given rise to even momentary anxiety.

This operation has stood the tests of efficiency already mentioned in nearly one hundred cases. The details of these cases I hope to find an opportunity of publishing before long. Many of the operations have been done on account of prolapse of the uterus in comparatively young women, but I do not propose to complicate matters by considering the treatment of prolapse on the present occasion.

In only one case has the treatment of ventrifixation been alleged to have failed. The medical practitioner, who sent the case to the Southern Hospital, when applied to a year or so after for information returned a discourteous reply, alleging that the operation was a failure; but he has given no information, and he has never complied with the request for the address of the patient, so that the details of the after-history could be obtained. The patient was perfectly well when she left the hospital.

A considerable proportion of the patients have borne one or more children since the operation. There have been some abortions and one or two cases of malpresentation, but not, I

believe, to an extent greater than might be expected among the same class of women, apart altogether from operations. The after-history of every private patient has left nothing to be desired.

Sometimes there has been some bladder discomfort for a time, but it is remarkable how seldom any complaint is made even temporarily.

Efforts have been made to get at the present state of health of the patients, but it is often difficult or impossible to trace them and obtain information. As far as I can learn, there has been no case of relapse, even after labour. In one woman of the poorest apathetic class, ventral hernia has occurred owing to premature hard work and leaving off her abdominal belt.

I have entire confidence in the future of ventrifixation if an efficient method of operating is generally adopted, while joining in the condemnation of ventral suspension of the uterus, designated improperly by so many operators as ventral fixation.

A WARNING SIGN OF DANGER TO THE CHILD DURING LABOUR.*

By FREDERIC E. DANIEL, M.R.C.S., L.R.C.P.,

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In an ordinary breech presentation, after the birth of the body, there is generally some delay, especially in a primipara, before the head follows. During this time a certain amount of compression of the cord is inevitable, and, if this is prolonged too much, the child's life is threatened from deficient aëration of the blood. While the child is in this position the practitioner is generally cognizant of any attempts it makes at respiration. In fact, the movements of the child are the only indications that we have that the cord is being compressed.

Now, I believe it is not very generally known that during the second stage of labour in an instrumental case with the head presenting, when from any cause the placental circulation is interrupted, the same movement can be felt by the surgeon, communicated through the handles of the forceps. This movement is an indication of a pressing desire on the part of the child to breathe, and can only be brought about by interruption to the free circulation through the umbilical cord. It is quite different to an ordinary kick, and is distinctly characteristic of an inspiratory effort.

CASES.

Before describing it further I will briefly narrate four illustrative cases that have occurred in my practice since February, 1902. I had during that year a run of bad luck, and was unfortunate enough to lose four firstborn children, all of fairly well-to-do people, who had looked forward with lively satisfaction to becoming parents. The mothers were all primiparae, and the four children were fine, healthy, well-developed babies, and at the commencement of labour were undoubtedly alive and, literally, kicking, yet were all from an unavoidable cause stillborn.

CASE I.

The patient was about 34 years of age. The presentation was normal, and everything promised well, and the mother was told that everything was straightforward. All went well until the full dilatation of the os, when progress stopped, though pains continued regularly. After waiting some time, I administered chloroform and applied the forceps. Dilatation was slow, and a good deal of traction during the pains was necessary. Before the head reached the perineum, during the intervals between several pains, I noticed that I could feel a fetal movement through the handles of the forceps. It was quite different to the ordinary kick, and I am sure it was not the first time I had felt it, but it occurred to me for the first time that it might be caused by the child attempting to take an inspiration. This was repeated several times, and eventually ceased.

It was an hour or more before I was able to deliver the child, as the perineum was very rigid, and required a great amount of patience; but delivery was effected without any rupture. Unfortunately, however, the child was dead. The umbilical cord was round the neck, and in a state of great tension, and I was unable to get it over the head, and was obliged to ligature it where it was, and divide, before extracting the body. I, of course, adopted the usual resuscitating methods, but they were of no avail. I had not, however, much expectation of being able to resuscitate, as the pulsation of the heart had clearly stopped. Now the mother had felt the child strongly up to the time of administering chloroform, so that there was no doubt that it had died during the second stage of labour. On thinking the matter over, I came to the con-

* Read at a meeting of the Division.

clusion that the cause of death was stoppage of the circulation through the umbilical cord and consequent asphyxiation. In order to verify this, I measured the cord, and found that it was only 16 in. long. I then measured the distance from the child's navel, round the neck and back again to the navel, and found that it took up 15 in. out of the 16 in., only allowing 1 in. for downward travel. In point of fact the child was tethered by the neck to the wall of the uterus, and even a slight amount of traction would be quite sufficient to stop the circulation through the cord. Further, it seemed probable to me that the death of the child had occurred at or about the time that I felt the peculiar movement communicated to my hand through the handles of the forceps.

CASE II.

This patient was also a primipara, of about 23 years of age. The presentation was occipito-anterior, and there was sufficient pelvic space. All went well till the os was fully dilated and the head began to descend, but before reaching the perineum it seemed to be arrested; at any rate, there was no progress for some time, and the forceps were applied. The succeeding stages were somewhat prolonged, as the soft parts dilated slowly, and I experienced the same movement of the child that I have referred to in the preceding case. At the time I wondered whether it had any real significance, or whether I had imagined the connexion between it and the death of the child; on that account I noticed most particularly the character of the movement. On delivery of the head I found the cord twice round the neck of the child. I had no difficulty in pulling it over the head before extracting the body, which showed no signs of life, the heart's action having ceased; and, though I tried hard and perseveringly, I could not bring it round. The cord in this instance measured 22 in.

The fact that I had clearly felt what I will call "the inspiratory movement" during the second stage of labour, and that the child was found on delivery to be dead, considerably strengthened my view that I had formed a correct conclusion as to the cause of death in the first case related.

CASE III.

This patient was the wife of a small tradesman, also a primipara, aged about 21; a fine strapping young woman, with whom I had not anticipated much trouble. The presentation was face to pubes, and was clearly a forceps case from the beginning. I was with the woman the greater part of a day, and had great difficulty throughout. At one stage I felt most distinctly and strongly the inspiratory movement through the handles of the forceps, and this time I took the precaution to tell the friends that the probability was that the child could not survive. As I expected, the child was dead, but to my surprise the cord was no less than four times round the neck. I omitted to measure the cord in this case, but the length was ample if it had not been wrapped so many times round the neck of the child.

CASE IV.

The patient was a healthy young primipara, and all seemed straightforward, but progress was very slow, and, as the patient was getting exhausted and the pains were becoming inefficient, I decided to expedite matters with the forceps. I did not have more difficulty than is quite usual with primiparae. During the descent of the child I again most distinctly felt the inspiratory movement, and took the precaution to apprise the friends of the danger to the child. I found on delivery as I anticipated, that the heart's action had ceased and the child could not be resuscitated. In this case the cord was 24 in. long, and was once round the neck. It would appear that there could not have been much tension on the cord in this case, and the cause of death is not quite so clear as in the other cases; though in my opinion the feeling of the inspiratory movement, followed by the child being born dead, points very strongly to some interruption to the free circulation through the cord. Possibly the placenta may have been attached at or near the fundus, which would to a certain extent account for the discrepancy.

NATURE OF THE MOVEMENT.

I will now try to describe more particularly the movement I have referred to in the foregoing cases, and to which I attach much importance as a warning sign of great value. It will generally be noticed that the first efforts of respiration are what may be called double or duplicated movements; that is to say, are repeated twice in quick succession. I have repeatedly noticed that the first efforts of respiration differ, according to whether the child is born in a normal manner, and there is no interruption to its supply of oxygen till it is free to take its first breath; or, whether it is born in a condition of suspended animation. In the former case the child is conscious, and both the diaphragm and the more purely voluntary muscles of respiration act in harmony, and the result is a full breath followed by a lusty cry. In the latter case the chain of events is entirely different. The child, when progress has perhaps been delayed at the vulva, finds its supply of oxygen diminished by the contracting uterus arresting, to a certain extent, the free circulation in the placenta; or there is, perhaps, a short cord stretched tightly round its neck. The child attempts to breathe while still unborn, and after several attempts passes into a state of unconsciousness from carbonic acid poisoning. I believe it to be quite possible for this condition to pass on

into death, but in the majority of instances the child is born, and measures are taken to restore life. The first inspirations are purely diaphragmatic, and of spasmodic character. As the child is unconscious the voluntary muscles are quite inactive. This may easily be verified by noticing that the sternum and ribs, instead of expanding, are actually drawn in, until the voluntary muscles come into play, and the respirations become more complete. (I do not mean to infer that the diaphragm is an involuntary muscle, but I am of the opinion that its action in the case under consideration is more automatic than the intercostals, pectorals, etc.)

I wish to lay particular stress on the fact that these first diaphragmatic contractions have a characteristic peculiarity in being duplicated, and that this peculiarity is capable of being recognized by touch. It is sudden and spasmodic, and is easily communicated to the head of the child, and through it to the forceps, if they happen to be embracing the head. We often feel a movement of the child communicated through the forceps; it may be a kick; but such movements are quite distinct from that which accompanies an attempt to breathe.[†]

If immediate delivery is impracticable the movement is repeated, strongly at first and with short intervals, which gradually become longer and the movement weaker, until it finally ceases with the death of the child. In objection to my conclusions it may be said:

(a) That the child was dead before labour began. In answer to this: with the exception of Case 1, where I had the absolute assurance of an intelligent patient that the baby was living, I satisfied myself in each case that the child was alive, and I must ask you to trust to my personal observation.

(b) That the child died from causes other than interruption of the umbilical circulation—for example, too continuous pressure on the child's head or unjustifiable traction on the head. This objection alleges incompetence on the part of the accoucheur. I think I am not below the average in manipulative skill; I have had nearly a quarter of a century's experience in midwifery; I have delivered many hundreds of patients with forceps, with safety to mother and child; I never tie the handles of the forceps tightly together, as I have seen done sometimes, and I always conduct labours with great patience.

(c) That the movement is not characteristic enough to be always recognized. This I emphatically deny. I affirm that the movement is absolutely characteristic, but, from the nature of the case, I can only convince you by asking you to refer to your own experience and to be on the look-out for cases in your own practices, and I have no doubt that you will agree with me. Further, I have very little doubt that the majority of those present are familiar with the movement, and I shall be interested to know whether they appreciate its significance.

TREATMENT.

I now come to the most important consideration, What is to be done? If the patient is a multipara the answer is easy: Hurry on the delivery and you will in all probability be able to resuscitate the child. If a primipara (as all my cases have been) the matter is very different. In a great number of cases it would be a physical impossibility to do this without rupturing the perineum. Are we justified in doing this? In the cases related it was not until the expiration of from half an hour to an hour and a-half after the death of the child that I was able to sufficiently dilate the soft parts to effect delivery without any rupture.

It might be possible to introduce the hand, and ascertain whether the cord was round the child's neck, and if so, liberate it. But, in the first place, it might even then be too late; and in the second, there would be the practical certainty of producing a prolapse of the funis. This might be avoided by placing the patient in the knee-chest position, but it would not be very practicable if she was under the influence of an anaesthetic.

It seems that the main indication is to deliver as speedily as possible, even at the risk of a moderate amount of perineal rupture, though I should prefer to sacrifice the child to producing a very extensive rupture. At the worst, there is always the opportunity of preparing the patient's friends for the disappointment involved in the baby being born dead.

[†] Since reading this paper one of my medical friends tells me that he has once or twice felt it, and that, as he graphically puts it, the sensation resembles the "bite" of a fish, communicated to the hand through the line.

In the discussion which followed, the paper was subjected to much hostile criticism; the senior members especially being very sceptical about the possibility of any movement of the child sufficient to communicate itself to the handles of the forceps taking place while the head is wedged in the maternal passages. In reply, I pointed out that the movement I had described could only be felt during an interval between two pains, when the head always receded slightly; and that the presenting vertex being more or less wedge-shaped, such recession must of necessity involve a certain amount of freedom of movement, not very much, certainly, but quite sufficient for vibration to be felt, and even enough to cause visible movement of the handles, as I have myself seen.

One member suggested that the best plan for dealing with such a contingency, assuming that it was possible to tell that the child was in danger, which he was not at present prepared to admit, was, to turn.

Since reading the paper, I have received the following interesting letter from a member who was not at the meeting:

Dear Dr. Daniel,—At the last meeting of the British Medical Association in your Division, I am told by Dr. Barling that you read a paper on A. Point in Obstetrics; the point being a certain movement of the handles of the applied forceps caused by convulsive efforts at respiration by the still unborn child. The indication, I understand you made out, was for rapid delivery to avoid suffocation of the child, as the convulsive movements were evidently a sign of obstruction of the placental circulation. I am writing to you because of a case which I attended last month, in which, having applied forceps in a primipara, having had them on for five or ten minutes, I noticed the handles (I used axis-traction forceps) give two distinct movements forwards to the pubes and back again. I at once thought of what Dr. Barling had told me about your paper, and decided that if there were anything in it, I had better deliver at once—which I did, not sparing the perineum. In the result it was most fortunate I did so, because on delivery the child was not breathing, was black in the face, and the cord was twisted over the shoulders. It took me nearly five minutes to bring the child round by artificial respiration.

I must acknowledge myself much indebted to you for your hint, and think you will be interested in this case. I had never noticed the movement before, or if so, had paid no attention to it.

I am, yours sincerely,

JAS. A. GIBSON.

ADDENDUM.

On February 21st, 1904, I had a most instructive experience, this time with a multipara.

I had been sent for a month previous to the confinement for prolapse of the cervix. I found an enlarged and oedematous cervix protruding from the vulva about the size of a small orange. I replaced it, and advised patient to keep in the recumbent position during the remainder of the pregnancy. There was a history of a ruptured perineum at the first confinement.

I was sent for again on the above date and told that labour had commenced, and on examination found the abdomen enormously distended, a widely dilated os, and the membranes protruding. I could not make out the presentation, as I was unable to reach any part of the fetus with my finger; so ruptured the membranes, when a very large amount of liquor amni escaped, and with it, unfortunately, a loop of the funis. I now found that the vertex presented, with the face anteriorly, the os was drawn very much forward and embraced the head, nipping the cord. I quickly applied the long forceps, though with some difficulty, owing to the position of the head, which was lodged above and almost in front of the os pubis; and though I apparently got them satisfactorily in position, I could not have done so, as when I applied traction, I felt them slipping. I should have said that I attempted to replace the funis as soon as it came down, but, as will be understood by those who have met with these cases, with no success. As the forceps seemed inclined to slip, and as there was no time to be lost, I quickly decided to turn. But, while the forceps had been partly embracing the head, the convulsive movements on the part of the child were most plainly to be seen and felt.

After sterilizing and introducing my hand I with some trouble brought down a leg. While my hand was in the uterus I could feel the child gasping for breath, and if confirmation were wanted as to the cause of the movement felt through the forceps, here it was.

I delivered the body and shoulders without much trouble, but it was a long time before I effected delivery of the head. The cause of the delay was afterwards apparent in a large hydrocephalic head. The child was, of course, dead.

This case proves beyond the possibility of a doubt that the gasping of a child for air occurs *in utero*, that it is caused by the suspension of the supply of aerated blood, and that it can be felt by the practitioner through the forceps.

SOUTH AFRICAN LEPROSERS.—It is stated that the possibility of removing the leper settlement from Robben Island to the mainland, and of some relaxation of the regulations at present in force with regard to leprosy, is under the consideration of the Cape Government.

CLINICAL NOTES ON THE USE OF BOSSI'S DILATOR.

By W. B. ARMSTRONG, M.B., C.M.,
Kirkintilloch.

DURING the past year I have on several occasions made use of Bossi's dilator. The ease, safety, and rapidity with which the cervix can be dilated by it give me confidence in recommending its use to the medical profession. There is no doubt that the instrument can be misused, but the same may also be said of the use of forceps. The method adopted by me is as follows: Chloroform is administered to its full surgical extent, and the patient placed in the left lateral position.

If the os be only slightly dilated the cervix is carefully pulled downwards with vulsellum forceps and the dilator, with the sheaths removed from the points, is introduced with a gentle screwing motion. Dilatation is begun and gradually maintained until the os is the size of half-a-crown. The dilator is withdrawn and reintroduced with the sheaths adjusted to the points. Dilatation is very gradually continued, the blades are frequently relaxed and their position changed circularly so that all parts are uniformly pressed upon. When the os is fairly well dilated the finger is used to assist in the dilatation. It is well to remember that the index of the instrument gives only very approximately the amount of the dilatation. When dilatation is complete the membranes are ruptured and the child delivered in whatever manner is indicated.

The following cases, which under ordinary circumstances would have been, to say the least, worrying ones, will illustrate the use of Bossi's dilator.

CASE I.

Mrs. A., aged 30, a multipara, and pregnant a little over eight months. The membranes had ruptured some hours before I was called. There were no pains. On examination the cervix was found to be soft and patulous, it was dilated to the size of half-a-crown and the vertex was presenting. The patient was tired and nervous, and in a weak condition generally. I sent her to bed and gave an opiate, etc. In about ten hours I saw her again. The condition had not improved, the pulse was quick, and the patient showed signs of collapse. I determined to deliver at once. Chloroform was administered, and the os gradually dilated with Bossi's dilator, the dilatation taking fully twenty minutes, then by means of forceps the patient was delivered of a still-born child.

She made a perfect recovery, and on subsequent examination I found the cervix in a normal condition with, it is true, a slight laceration but nothing more than one would expect in any multipara who had been delivered several times with forceps.

CASE II.

Miss B., aged 18. Primipara. I was asked by Dr. W. T. Blakley to see this case in consultation. She had had four convulsive seizures in the three hours previous to my seeing her, and there was a history of albuminuria. The patient was in a very weak condition, the pulse was rapid, and there was a complaint of severe abdominal pain. The cervix was found to be in a softened condition, but there was only very slight dilatation.

We agreed that she should be delivered at once, and as Dr. Blakley was suffering from a dislocated thumb I was asked to operate. Chloroform was given, the cervix was pulled down with vulsellum forceps, and the bare points of the dilator introduced in a screwing fashion. There was considerable difficulty in the introduction of the dilator, and it was slowly accomplished. Very gradually and with great care, the parts being kept in view with the vulsellum, the cervix was dilated sufficiently to allow of the sheaths being put on to the points. Dilatation was continued until complete, the time taken being about an hour. The membranes were ruptured, and a full-time living child was delivered with forceps. The mother made a splendid recovery. There were no more eclamptic manifestations, and Dr. Blakley reports that the patient is in perfect health.

CASE III.

Mrs. C., multipara. I was called to this case on account of her having labour pains accompanied with severe haemorrhage. I found that she had lost a great quantity of blood, she was pale and nervous and in great fear of the return of a pain with its accompanying haemorrhage. The cervix and surrounding parts were in a soft patulous condition, the os was dilated to about the size of a five-shilling piece and the placenta was presenting.

After giving chloroform I detached as much as possible of the placenta from the lower uterine segment, and, introducing the dilator, quickly dilated up to almost full extent. The membranes were then ruptured at the margin of the placenta, version was performed and a full-time living child delivered. The uterus contracted well and the placenta was expelled easily. The whole time occupied was about twenty minutes and the patient made an uninterrupted recovery. There was no laceration of the cervix.