A

Course of Lectures

ON THE

THEORY AND PRACTICE

OF

OBSTETRICS.

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LECTURE XLVII.

EMBRYOTOMY.

GENTLEMEN,—This is the most positive of all the operations of midwifery. The only other procedure with which it bears comparison, is the induction of premature labour before the viability of the child has been reached. In the Induction of Premature Labour after the seventh month; in Turning; in the use of the Forceps, and even in the Cæsarian section, a chance of safety is afforded to both mother and child; but in Embryotomy, the child, if alive before the commencement of the operation, is inevitably sacrificed.

The operation is considered necessary in certain cases of deformed pelvis, obstruction from tumours, &c., when the induction of premature labour has been neglected or omitted; in cases of arm presentations, hydrocephalus, convulsions, hæmorrhage, exhaustion, &c., when the preservation of the mother imperatively calls for delivery, and when the child cannot be extracted by the long or short forceps, or by turning. Under these circumstances, there is no question amongst the great majority of British accoucheurs as to the propriety and fitness of the performance of craniotomy or embryotomy. As Denman justly observes, in deciding in favour of this operation, we are only following the dictates of Nature, who, in difficult labours, commonly sacrifices the child before the mother is destroyed. It is equally a canon in obstetrics, that the operation should never be performed except after consultation, and in the face of the most urgent necessity; and it may be said that apart from all question of the Cæsarian section, there is a general belief on the Continent, and in America, that the operation has always been performed too frequently by obstetricians in this country.

It is of the greatest importance, with reference to the most common condition of instrumental labour—namely, slight or excessive deformity of the pelvis, that the limits should be decided, as far as possible, within which the induction of premature labour by the forceps may, or craniotomy should be, performed. As regards the induction of premature labour, it may be said that it applies to all cases of pelvic deformity, it being the province of art to decide at what time this operation should be performed in each particular case, and whether it should be resorted to before or after the viability of the child. There is, probably, no case of deformity or exostosis, where menstruation and fecundation can occur, so profound but that the detachment and expulsion of the ovum might be procured within the first two or three months after impregnation, by the uterine sound, or an elastic tube and douche. When this has not been accomplished, and pregnancy has gone on to the full term, we have to consider the alternative operations of the forceps, turning, embryotomy, or the Cæsarian section. The use of the forceps is generally inadmissible in cases where the distortion exists to such an extent that the antero-posterior diameter is below 3¼ inches. When the application of the long or short forceps is impossible, turning may be practicable between the limits of 3¼ inches and 2½ inches. The Cæsarian section comes into the field in cases of high distortion, where the antero-posterior diameter is 1½ or 2 inches or less. Between the point at which turning becomes impracticable, and at which there is no resource but the Cæsarian section, lies the domain of craniotomy. It is the proper resource in cases where the antero-posterior diameter is from 2½ inches to 1½ to 2 inches. In cases where some other condition than mechanical disproportion comes into operation, as in cases requiring immediate delivery, and complicated with hæmorrhage, convulsions, &c., craniotomy may be sometimes necessary, but it ought in every case, as far as possible, to be superseded by the forceps or turning where these operations are practicable.

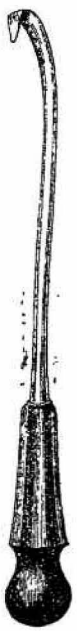
The statistics relating to embryotomy are of great importance as throwing light on the proportion in which the operation is fatal to the mother. Dr. Fleetwood Churchill has collected 342,495 cases of labour in German practice, in which embryotomy was performed 243 times, or in 1 in every 1409½ cases. In 129,331 cases in British practice, embryotomy was resorted to 378 times, or in 1 in every 342½ cases. In France and Italy, out of 38,908 cases, this operation was performed 69 times, or in 1 in every 563¾ cases. Thus the proportionate frequency of the operation stands as 1 in every 342 cases in this country, 1 in every 563¾ in France and Italy, and only 1 in 1409½ in Germany. In 371 cases in which the result to the mother is stated, deaths ensued in 69, a fatality equal to 1 in 5⅓ of all the cases. Thus craniotomy, though a comparatively easy operation, is far more fatal to the mother than the forceps or turning. In this country 1 in every 20¾ amongst the mothers is lost by the use of the forceps; and in France and Germany, 1 in 14¾. In cases of turning, the loss is 1 in every 14½ cases, including deaths from the complications in which turning is required, such as convulsions, accidental hæmorrhage, placenta prævia, &c. Some further light is thrown upon the comparative mortality of the several midwifery operations by a comparison of the results of artificial delivery in this country and on the Continent. Dr. Simpson gives the comparison of the maternal mortality after artificial delivery in the great hospitals of Vienna and Dublin as follows:—Under Boer, 1 in 55 was delivered artificially—that is, by the forceps, lever, version, or craniotomy. Under Arneth, artificial delivery was resorted to in 1 out of every 69 cases. In Dublin, under Dr. Collins, 1 out of every 86 women was delivered artificially; and under Dr. Johnson, as reported by Drs. Hardy and M'Clintock, 1 in 52. Of the cases above mentioned, Boer lost 1 out of every 17 mothers; Arneth, 1 out of every 9; Dr. Johnson, 1 out of every 5; and Dr. Collins, 1 out of every 4. These figures would give Dr. Collins a mortality more than four times greater than that of Boer, and twice that of Arneth. Dr. Collins, it may be observed, resorted to artificial delivery less frequently than the Vienna obstetricians; but Dr. Johnson's proportion of artificial deliveries was greater than either that of Boer or Arneth. On the Continent, the forceps is more frequently used than in this country. The French use this instrument in 1 out of 140 cases; the Germans in 1 out of every 159; while in Great Britain it is only used in 1 out of every 342 1/10 cases. The same may be said of turning. The French turn in 1 out of every 89½ cases; the Germans in 1 out of every 97½; while in Great Britain we turn only in 1 out of every 238 cases. The maternal mortality from forceps cases in this country is 1 in 20¾; in France and Germany, 1 in 14¾. The gross mortality to the mother from turning is 1 in every 14½ cases. Thus on the Continent, a considerable gain of maternal life is obtained by resorting to turning and the forceps, instead of craniotomy. When the child is dead, turning is performed, or the forceps used, in preference to craniotomy; and turning is resorted to in cases of dystosia, when the head of the child is above the brim, and when the pelvis admits of delivery without diminution of the head. Artificial delivery is also resorted to at an earlier period on the Continent and in America, when it is considered necessary, than in this country, and Dr. Simpson has shown that no other circumstance exerts so prejudicial an effect, as the prolonged duration of labour. While it must be allowed that in the matter of artificial deliveries more mothers are lost in this country than on the continent, the gross maternal mortality in this country is more favourable than in foreign

countries. It is not only as regards the mother that our own statistics of artificial delivery are unfavourable. Out of every 100 cases, Boivin lost 28 children; Arneth, 34; Lachapelle, 36; Boer, about 47; Dr. Johnson, 76; and Dr. Collins, 77. If we can rely on these statistics, which there is little reason to doubt, the fœtal mortality in this country in artificial deliveries is nearly double that which obtains upon the Continent. The result of these statistics is to show very clearly that craniotomy is an operation to be avoided upon every possible occasion, and that in no case should it be undertaken, whether the child be alive or dead, when turning or the short or long forceps can be substituted in its stead. It is only less horrible than the only alternative which remains to us, when it is absolutely unavoidable—namely, the Cæsarian section, and in the following proportions:—Embryotomy is fatal to the mother in about 20 per cent., while the Cæsarian section destroys from 60 to 70 per cent. on the Continent, and between 80 and 90 per cent. of the mothers in cases operated on in this country.

When the deformity is not excessive, the operation is a comparatively easy one. It is only in cases of high distortion, where what is called piecemeal extraction is required, that great difficulties are met with in its performance. The instruments used consist of the Perforator, the Crotchet, the Embryotomy Forceps, the Cephalotribe, and several kinds of blunt and cutting Hooks.

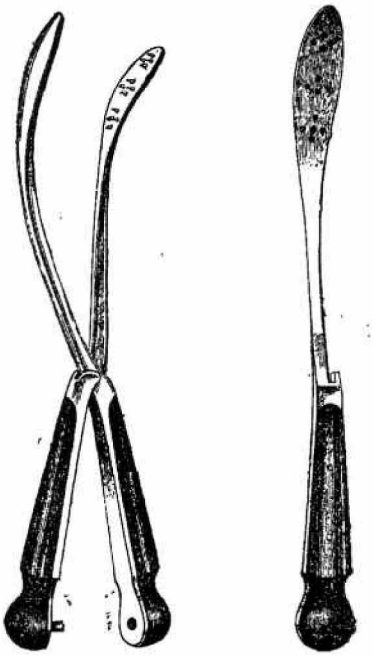
Various forms of perforators are used. The most common is the scissors-like instrument of Smellie, modified to some extent by later obstetricians. It consists of two blades with shoulder-stops, and cutting edges between the stops and the points. In using the instrument, it is inserted as far as the stops, and the handles are then separated by the fingers. The most modern and perfect instrument is a modification of Naëgelé's perforator, which is used by bringing the handles together, and gives the operator considerably more power than the instrument of Smellie. The common crotchet is a modification of the earliest modern instrument of the kind, devised by Mesnard. It is simply a blade, having the forceps curve, with a short hook at the extremity, having a broad cutting edge of moderate sharpness, for insertion into the inner or outer surfaces of the bones of the fœtal cranium. Its construction was probably suggested by the use of the hooked finger and the finger-nail. Various forms of craniotomy forceps are used, some of them with sharp teeth, and others with serrated blades, the latter being in most cases the preferable instruments. In some, the scissors-joint, and in others the forceps-lock, is used. The cutting-hook, invented by Dr. Ramsbotham, for cases requiring decollation or the amputation of limbs, and a blunt hook, complete the embryotomy instruments in general use in this country.

FIG. 168.



Crotchet.

FIG. 169. FIG. 170.

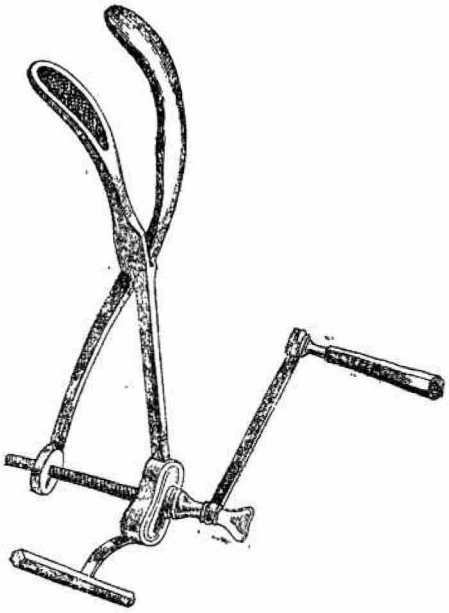


Craniotomy forceps.

In the Cephalotribe, a mechanism altogether different is rerelied upon. Immense strength in the blades, and great power of compression is obtained, and the fœtal head, including its base, is crushed by the grasp of the instrument. The cephalotribe of Baudelocque is two feet in length, and weighs about four pounds, being altogether a most repulsive-looking instrument. The crushing-blades are brought together by a screw movement. A more modern French cephalotribe, consisting of an immensely strong pair of forceps, having narrow blades, without fenestra, was exhibited at the Crystal Palace of 1851. It was several pounds in weight, and its use must have required great strength on the part of the operator. Recently, considerable attention has been given to the construction of cephalotribes of as light a weight as is consistent with the requisite strength, and the racket and pinion has been substituted for the screw in approximating the handles. The latest instrument I have seen measures 18 inches in length; its blades are $1\frac{3}{4}$ inches in width, and it weighs 3 pounds. The lock of the blades is the same as that of the French forceps. It is used by Paul Dubois and the leading French obstetricians, in preference to the perforator and crotchet, in cases where the child is dead, or where the pelvis is too contracted to admit of the use of the forceps. The advantages claimed for this instrument are, that it avoids the dangers of the crotchet, and that it is far less fatiguing to the accoucheur than the ordinary mode of extraction. It is not, of course, applicable to cases of high pelvic distortion. It is impossible to examine the instruments used in embryotomy, and to deal with cases requiring its performance, without feeling that instrumentation has by no means reached perfection in this department of the obstetric art. Ultimately craniotomy will, in all probability be restricted, almost, if not entirely, in the case of living children, to cases requiring piecemeal extraction. We require instruments for this purpose better than any which have hitherto been constructed, and it seems likely that modifications of the lithotrity and bone-cutting instruments used in surgery may be found very useful in breaking up and extracting the fœtal head.

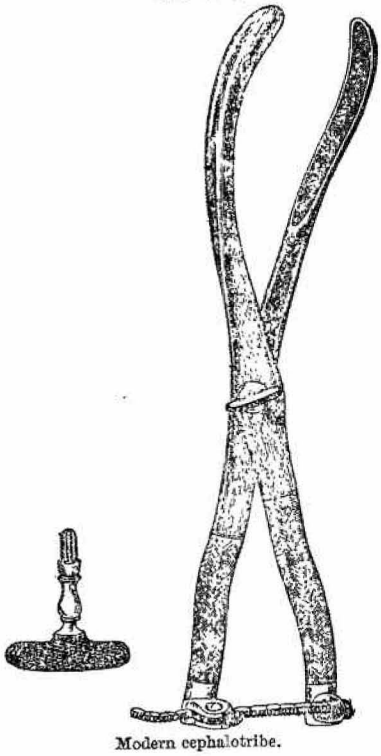
In using the perforator, the first two fingers of the left hand are introduced into the vagina so as to reach the parts of the head selected for puncture. Along these fingers, the instrument is passed as on a director, and, with the right hand, forced gently but firmly, by a semi-rotatory movement, into the head as far as the shoulder-stops. The blades are then opened widely, and the part of the head into which they are introduced is thus divided. The instrument is now withdrawn a little, and reinserted in a direction at right angles to the first incision, when the blades are dilated as before. This proceeding leaves a crucial opening in the fœtal cranium. The point of the head at which the perforation should be made has been

FIG. 171.



Baudelocque's cephalotribe.

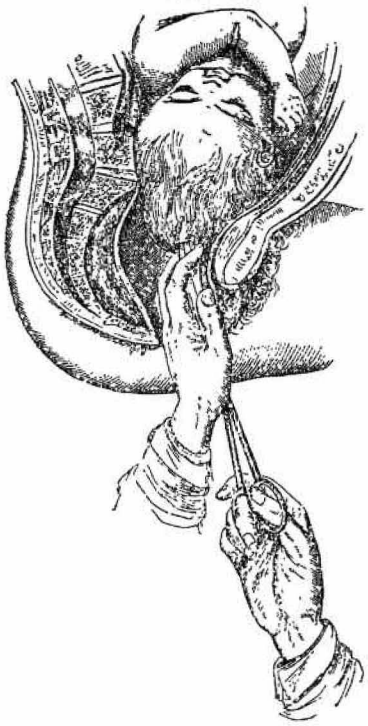
FIG. 172.



Modern cephalotribe.

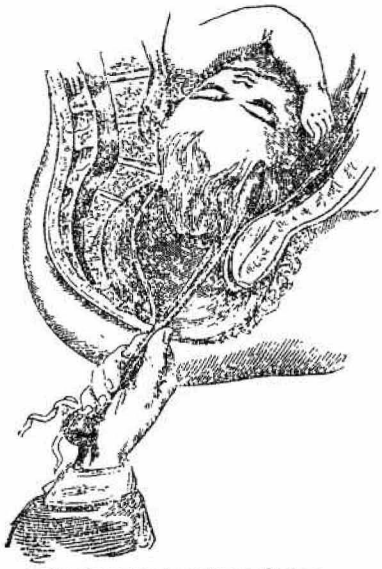
a subject of considerable dispute. Some advocate perforation at the sutures or fontanelles; but it is an objection to this procedure, that when the bones become compressed, the opening is obliterated, and the discharge of cerebral matter interfered with. The best point for perforation is the middle or posterior portion of the parietal bone, because an opening in this situation enables the operator to apply extractive force with the head in the most natural and advantageous position for its passage through the pelvis. When the crucial incision has been made, the perforator is passed into the opening and moved about in various directions, so as to break up the brain. If the child is alive, the perforator should, if possible, be made to pass into the foramen magnum in order to destroy the medulla oblongata; otherwise the child may be born living, notwithstanding the processes of perforation and decerebration. Sometimes the crotchet is perforated for breaking up the brain. Nothing but pithing the medulla destroys the child, which before birth possesses, to a certain extent, the low and tenacious vitality of the amphibia. After these steps of the operation have been completed, it is best, in all cases where immediate delivery is not a matter of great urgency, to wait for some time before proceeding to extraction. The bulk of the fœtus is diminished by loss of blood, and as the brain escapes the spastic influence of the pains moulds the bones of the cranium into a smaller and more convenient shape. Decomposition also sets in with great rapidity, and soon softens the whole mass.

FIG. 173.



Perforation of the head.

FIG. 174.

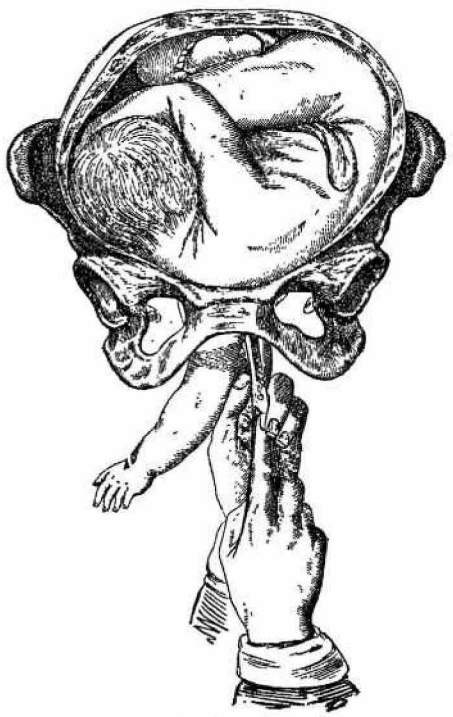


Employment of craniotomy forceps.

For extracting the child, especially when the fœtus is dead before the commencement of the operation, it is sometimes sufficient to pass the finger into the opening made by the per-

forator, and in this way extract the child. More frequently, the crotchet or craniotomy forceps are required; and some cases tax the strength, ingenuity, and patience of the accoucheur to the very utmost. Considerable difference of opinion has prevailed at times as to the mode of using the crotchet. Some have fixed the instrument on the outside, others on the inside, of the cranial cavity; and occasionally, two crotchets, one applied externally and the other internally, have been employed. At the present day, obstetricians are pretty well agreed as to the propriety of passing the crotchet through the opening made by the perforator, and fixing it upon the cranial bones on their inner surface. It is still a disputed question whether the crotchet should be fixed upon the anterior or posterior part of the head. Supposing the head to be in either of the occipito-anterior positions, in applying the crotchet to the anterior part of the head, we can pass the fingers of the left hand up over the frontal bone, to the part opposite to that upon which the crotchet is fixed, and in this way steady the instrument, assist its extractive force, and guard against the injury of the soft part in case of the slipping of the instrument. But these advantages are more than counterbalanced by the circumstance that we in this way bring down the anterior part of the head, and force the cranium through the pelvis in its largest and most unfavourable diameter. In fixing the crotchet on the thickest portions of the occipital, parietal, or temporal bones, we, on the contrary, bring the head down with its smallest diameter opposed to the pelvic straits, and in this way expedite delivery, and avoid the danger of bruising and lacerating the soft parts of the mother. Cases may occur in which we have little choice, and in which the head must be extracted or broken down as it lies; but when we can select any part of the head, or are able to alter its position, undoubtedly the greatest chances of safety are given by following as closely as possible the natural order of labour, and bringing the posterior and superior angle of one of the occipital bones first through the pelvis. Sometimes the craniotomy forceps, the blunt hook, or even the ordinary forceps, are used, after the collapse of the head, to effect delivery; and in the worst cases the craniotomy forceps is more serviceable and less dangerous than the crotchet. With any of these instruments the greatest care is necessary in guarding the soft parts of the mother from injury, and avoiding lacerations of the vagina and perinæum by the instrument or by spiculæ of bone. Great force is sometimes required with the crotchet and craniotomy forceps, and the completion of delivery may occupy many hours. As far as possible, it is a rule in craniotomy to save the scalp and integument, so as to cover and guard the bones from injuring the mother.

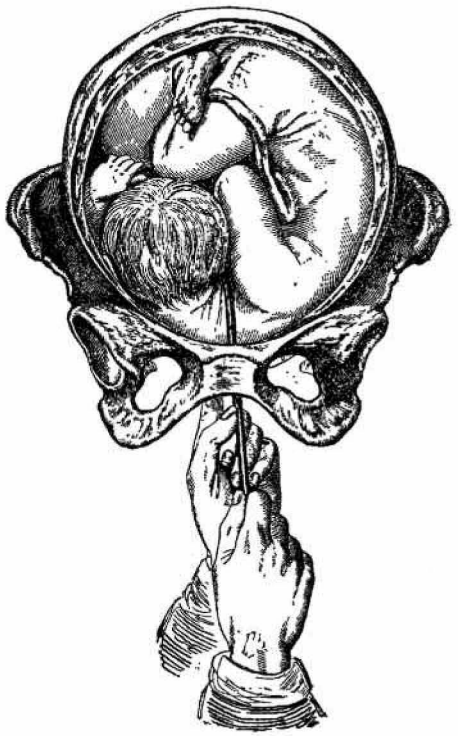
FIG. 175.



Embryulcia.

In embryulcia, when some other parts than the head present, the abdomen and thorax require to be perforated, and the child extracted as in breech cases. Occasionally, it is necessary to effect decapitation. In some cases, when craniotomy has been performed, and the head extracted, it is difficult or impossible to deliver the trunk, and the thorax and abdomen require evisceration. Dr. Oldham has for such cases invented a vertebral hook, considerably longer in the shaft than the ordinary blunt hook, and calculated to be of very great service.

FIG. 176.



Decapitation.

In cases of high distortion, such, for instance, as those described by Dr. Osborn and Dr. Meigs, extraction by any instruments would be impossible without the assistance afforded by the decomposition of the fœtus. These cases sometimes spread over two or three days, in which time the soft parts of the fœtus are reduced almost to a diffluent pulp, and the loose bones are contained within the skin somewhat as in a bladder. The fœtor in these cases is intense, and the uterus may be distended with gases resulting from decomposition; but less mischief arises from these sources, or from the delay and pressure, when the cranium has been decerebrated, than from forcible attempts at extraction. It is very common with those obstetricians who have most distinguished themselves in such cases to express a regret, at the termination of their cases, that they did not wait more patiently, and trust more to the aid afforded by putrefaction. It is almost incredible how small an aperture a fœtus in a state of decomposition will pass through. Dr. Simpson, in a case occurring at Cupar, was able to draw a child 18½ inches long, in a state of considerable decomposition, through an opening in a piece of iron only 2⅜ inches long by ⅛ of an inch wide. When we have to deal with a dead fœtus, the circumstances under which craniotomy can be performed in high distortion, are the most favourable which can exist; but when the fœtus is destroyed early in labour, a few hours will do much towards promoting decomposition, while if extraction can be delayed twenty-four or thirty-six hours, the fœtus becomes greatly disorganized. Death, the admission of air, and the high temperature kept up by the uterus and liquor amnii, afford very favourable conditions for putrefaction in the comparatively soft structures of the fœtus. It were to be wished that art could supply some means of making fœtal decomposition still more rapid in such cases. But even in cases of decomposed fœtus, the cranium has, in the worst cases, to be picked out bit by bit and bone by bone, or the large bones have to be broken up. In his case of pelvis of two inches in

the antero-posterior diameter, Dr. Meigs relates that he was several hours getting away as much osseous matter as would go to make up a parietal bone.

Considerable difference of opinion has existed as to the time at which craniotomy should be performed. Dr. Collins has especially laid it down, with almost the distinctness and positiveness of a law, that in difficult labour the child is always dead before the mother is placed in such a position of danger as to require immediate delivery. Drs. Hardy and McClintock have followed Dr. Collins to a considerable extent in this particular. The wisdom of the rule thus sought to be enforced by these eminent accoucheurs may, however, be questioned. When there is distinct evidence that the child cannot be born alive—when turning is impracticable, and when delivery by the forceps has been vainly attempted, there is no object to be gained by delay. There is little difference, in a moral point of view, between standing by while the fœtus dies, and the actual performance of craniotomy; but it may make every difference to the chances of safety to the mother to have a dead fœtus upon whom perforation has been performed, and in whom the processes of putrefaction and softening are going on, and with the solid head of a living child, pressing under the force of uterine action, upon the soft contents of the pelvis. No doubt it must always be a satisfaction to know, when the certainty arises that craniotomy is inevitable, that the child is already dead; but this event cannot be waited for except with risk to the mother. It would probably be better to be without auscultation altogether, in such cases, than to make it the ally of timidity and procrastination. In every case where the least promise of such a solution of the difficulty exists, turning or the application of the long or short forceps should be attempted; but the moment we are positively certain that the head cannot pass naturally or artificially without perforation, but that with perforation it may pass, we should prepare for craniotomy, with little reference to the question of whether the mother can bear an hour or two of additional suffering, or whether the child may linger a few hours more before it expires from compression.