Observations ON THE CÆSAREAN SECTION AND ON OTHER OBSTETRIC OPERATIONS.

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CHAPTER VI.

*Operations intended to save the Life of the Mother,
and also that of the Infant. (Concluded.)*

III.—On *Premature Labour*. The induction of premature labour was first performed by Dr. Macaulay in England in the year 1756. But, although this is the fact, and though the importance of the operation is acknowledged and its adoption sanctioned by the most eminent British obstetricians, yet, if we consult statistics, we shall find it has only been limitedly employed, in comparison with its practical importance. There is no recognition of this practice in the statute-book, to distinguish it from that abuse of it which is committed for criminal purposes. In this respect, it is estimated in the same way as some other operations which I shall consider in the subsequent part of these remarks, being only sanctioned by the law of custom. This is an unwise legislative omission, because it permits wicked men to cover their crimes under the pretension of a legitimate act. On this account, therefore, great caution should be exercised whenever this operation is intended to be performed. It is justifiable on moral grounds, and it is approved of on every professional and social principle. The object of its performance is noble and humane, as the lives of those infants are saved by it which must otherwise be destroyed; whilst at the same time, according to my experience, the woman incurs little risk, if any more than that which is contingent on ordinary labour, and very much less than that which results from craniotomy. But, notwithstanding its high value, it ought never to be performed without great necessity, nor without having been first well considered and sanctioned by a consultation.

It is a simple, safe, and efficacious operation, and, if duly performed, infants not to be computed in number would be born alive; it saves when its alternative assuredly destroys. It is not intended to supersede the Cæsaean section, for no right-minded practitioner would ever think of adopting such a course if the operation now under consideration were eligible; but the great object to keep in view is, to prevent as far as possible the performance of craniotomy. It has, however, been asserted by one writer, "that premature labour should never be attempted before it has been proved, by the event of one or more destructive foetal births, that the pelvis was so much distorted that life must have been unavoidably sacrificed before delivery could be accomplished, because a single fatal instance is not always a sufficient warrant for the operation."

The destruction of one infant ought to satisfy every obstetrician that premature labour in a future pregnancy ought to be induced, if the pelvis is so

contracted that one full grown cannot possibly pass through it. A second life ought never to be sacrificed in such a case. But, in case such a pelvic deformity were suspected, and, after a careful examination, proved to exist, it would be highly improper to allow a woman to go on to the full period of pregnancy, in order to prove by craniotomy the necessity for the induction of premature labour.

The longer gestation is allowed to proceed before the performance of this operation, a greater chance of living is given to the infant; but the precise period at which labour ought to be induced must entirely depend on the degree of positive or relative diminution in the pelvis.

The express object of the obstetrician is to save the infant; and, therefore, he should allow a sufficient length of time for its intrauterine existence, so as to enable it to support an extrauterine life. Most writers assert that it is not viable before the end of the seventh month of pregnancy; but I think it will live after a shorter sojourn in the uterus. Well authenticated cases are recorded of infants having lived who were born at six and at six and a half months. Similar cases have occurred in my own practice, and also in that of some of my British and foreign medical friends.

The following table shows the progressive development of the foetal head which takes place during pregnancy, from the fifth and half month up to the ninth.

Date of pregnancy.	Bi-parietal diameter.	Occipito-frontal diameter.
At 5½ months	2½ inches	3½ inches
At 6 months	2¾ inches	3¾ inches
At 6½ months	2¾ inches	3¾ inches
At 7 months	2¾ inches	3½ inches
At 7½ months	2¾ inches	3½ inches
At 8 months	3½ inches	4 inches
At 9 months	3½ inches	4½ inches

The above measurements strikingly show that the size of the head will be found greater or less according to the period of pregnancy at which artificial labour is brought on; and the size of each must be relatively compared with the varying pelvic cavity through which any of them have to pass. The pelvis may be only just so much diminished in size as not to permit the passage of an infant at the seventh month, and yet allow an easy transmission of one at the sixth or even at the sixth and a half month. A very slight addition of bulk to the head, or a very little diminution of space in the pelvis, will mechanically oppose the passage of the infant; and, on the contrary, a very little comparative difference in either case will render its egress easy. This fact is exemplified by a very simple experiment. Add a little gold-beater's skin to a ball turned to the size or of the diameter of the space it would only just pass through, and this slight addition will be found sufficient to resist its passage.

In correspondence, then, with the facts just mentioned, I have ventured to recommend for consideration the induction of labour at the end of the sixth and the end of the sixth and a half months of pregnancy, in those cases in which the pelvic space is below that which is required for the safe delivery of an infant at the end of the seventh month.

The gradual development of the infant's head during pregnancy should never be forgotten when this operation is contemplated; and it is of equal im-

portance accurately to measure the pelvis, in order that a correct relative comparison may be made. But if the calculation has been erroneous, and the head cannot pass unassisted, then, under such circumstances, the long forceps ought to be applied.

The value of the long forceps should not in all such cases be merely estimated as an accidental contingent auxiliary power; but, in some, this instrument from the first should be considered and accepted as an essential means for delivery.

The combination of these two operations will enable the obstetrician to safely extract a living infant which must otherwise be destroyed. This operation stands preeminently forward as conservative; and, as its mission is for the saving of both the lives, perhaps it may be said to be specially intended for the salvation of the infant which must otherwise be destroyed. We ought, in every case of difficult labour, whether terminated by forceps, or by turning, or by craniotomy, strictly and minutely to examine and ascertain the precise measurement of the pelvis, so as to be able to compute the advantages and disadvantages which are contingent on any of these modes of delivery, when compared to those of the induction of premature labour.

My remarks have been more particularly directed to the induction of premature labour in cases in which the pelvis is positively distorted. But it must be understood that, in all cases in which there is such a relative disproportion between the head of a full-grown infant and the available pelvic space, that the head cannot pass without a reduction of the size by craniotomy, while the pelvis is of such capacity as would permit one less (still viable) advanced to pass through at the above specified periods, premature labour ought to be induced; such as when the pelvis is regular in shape and symmetrical, yet too small from want of development; or when an exostosis has grown from some portion of it, or fixed solid tumours exist within it. It is also sometimes desirable to shorten the period of pregnancy in some diseases which threaten the life of the woman, as in some cases of albuminuria, or when violent uncontrollable vomiting exists.

If this operation be undertaken, subject to the restriction inculcated in these remarks, there can be no question as to the morality of the practice in such cases.

A very important object in medical jurisprudence is also gained by the practice of inducing premature labour at these specified periods of pregnancy. According to the English law, the descent of property is in some cases governed by the state of the infant when born. If it be living, or so far alive that the slightest vital movements could be perceived, such as a quivering of the lips, or the twinkling of the eyelids, then, under such circumstances, the husband would become entitled (by what is termed "the tenant by the courtesy of England") to the property. But if the infant be dead, then the right of inheritance passes in the line of consanguinity. A case illustrative of the above remarks occurred to Dr. Denman. (*Vide Beck, and Dr. Paris and Fonblanque.*)

Before the operation for the induction of premature labour is performed, the obstetrician should have fully acquainted himself with the relative measurements of the head of the infant and the pelvic space through which it has to pass. It is true, that there is

some variation in the size of the head; but these are exceptions, and the computation must be made on the average size. (See Table, p. 313.) The development of the infant's head continues to increase during its sojourn in the uterus; and, therefore, the labour should be ended as near as possible to the time we had fixed for its completion, as there is some doubt how soon effective uterine contraction may ensue after means have been employed to induce it. It would, therefore, be most desirable to commence the operation a few days before the computed period for the fulfilment of labour; especially so when some of the measures are adopted for this purpose.

So long as the membranes are entire, and the infant is unrestricted in its movement and floating in the liquor amnii, its life is comparatively safe; but, as soon as the water is discharged, it is subject to more hazard, from the compression it must necessarily bear, and especially so if the os uteri be not dilated. If this be true in ordinary labour, it is more decidedly so when it is artificially induced. Besides, there is no other means so effectual in distending the cervix, and in dilating the os uteri, as the membranous bag filled with the liquor amnii, which acts during each pain as a powerful wedge.

If the infant should happen to lie in a bad position, and require turning, either the old operation or the internal and external manipulation (Dr. Hicks's method) could be undertaken with more ease to the practitioner, and with greater safety to the infant.

On these grounds, then, it is of the greatest importance, when labour is artificially brought on, that the membranes should, if possible, be kept entire; and, therefore, those means should be employed which are calculated to accomplish this object.

There are various measures proposed to induce premature labour, which I shall very briefly mention. Stimulant injections thrown into the rectum, and abdominal frictions, and the application of a firm bandage round the abdomen, etc., ought only to be considered as aiding others.

Secale cornutum, in repeated doses, has been prescribed; but, from its well-known poisonous effects on the infant, it ought never to be employed in these cases.

The old, and perhaps the most common method of puncturing the membranes, is certain in its effects, although some days frequently elapse before labour ensues. Although I have formerly frequently adopted this plan, yet it is objectionable, on account of depriving the infant of the protective influence of the amnion fluid, etc. To partly obviate this evil, it has been proposed to carry an instrument through the os uteri and upwards between the uterus and the membranes, before piercing them.

Dr. Hamilton passed his finger through the os and upwards between the membranes and the uterus, and then round so as to detach them; and had the utmost confidence in it. His success was great. "Of forty-six infants thus prematurely brought into the world, forty-two were born alive." Although this method is safer than the older for the infant, several days sometimes elapse before uterine contraction is excited.

The vaginal douche has the confidence of many obstetricians. It consists of a forcible and continuous stream of water, sometimes warm and some-

times cold, being directed against the os uteri, so as to wash out the mucous plug. Although this is comparatively a safe measure, it is not always certain in its effects, and is also somewhat slow in acting.

The uterine douche, or injecting water into the uterine cavity by means of a syringe and an elastic tube passed between the membranes and uterus, has the approval of some practitioners. A considerable quantity of fluid has been thrown up by some; but this is a most hazardous experiment. Others have only injected three or four ounces. The risk of separating the placenta and throwing air into the uterine vessels renders the uterine douche rather objectionable.

Mechanical dilatation of the os by expanding instruments has been recommended; but such a plan ought not to be done; it is attended with great hazard.

Sponges, prepared so as to easily pass through the os, and left to expand, are comparatively safe, and may sometimes be employed as preparative measures. Distending the vagina with sponge-plugs, or by the introduction of a bladder which is afterwards filled by a syringe with water. One formed of caoutchouc is better adapted for the purpose. These latter methods are useful, precursory to other plans.

Elastic bags of various sizes have been contrived by Dr. Barnes, which are to be distended with water when they have been passed through the os uteri. As dilators, these contrivances are both safer and more efficacious.

The attempts to dilate the os uteri should be both gentle and gradual, and made to resemble as nearly as possible the method Nature pursues in opening this part. Forceful dilatation, without preparation, is at all times most mischievous. In cases of labour in which the hand has to be introduced through the os uteri, this operation ought not to be undertaken until this part (the os) becomes dilatable. So, in the operation of the induction of premature labour, our efforts ought to be directed to attain, if possible, this state.

In December 1844, I proposed galvanism as an important means of arresting uterine hæmorrhage, and I also at the same time recommended this agency for the induction of premature labour; and my opinion still remains the same. If, however, galvanism is not used to excite uterine action *de novo* in these cases, its employment will be found most advantageous when uterine contraction does not easily or vigorously respond to the employment of some of the other measures. (*Provincial Medical and Surgical Journal*, Dec. 1844.)

Whatever plan is adopted, we should never forget what has been before said as to the necessity of having the parturient process completed as nearly as possible within the period of pregnancy fixed for its accomplishment.

TEST FOR COFFEE. There is probably no reader of the *Chemical News* who is not familiar with the test for the detection of chicory in coffee just published by M. Coulier; and I only quote it for the sake of the explanation he gives. Coffee, we all know, swims on water, while chicory sinks. The reason for this, says M. Coulier, is, that in the roasting of coffee the berry becomes distended, so to say, with carbonic acid, while in the roasting of chicory no gas is disengaged. (*Chemical News*.)

Original Communications.

CASE OF TETANUS IN AN INSANE PATIENT.

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THE patient was a female, aged 74, well educated, respectably connected, and in comfortable circumstances. She is stated to have been insane for a month previous to admission; but it is also recorded that peculiarities were observable for some months. She was admitted on Dec. 22nd, 1864, and died on January 13th, 1865, having thus been three weeks resident.

On admission, she laboured under a mixed form of insanity, the characteristics of which were excitement, restlessness, vigilance, and abstinence, associated with delusions of a depressing nature. From the persistence of these conditions for some time previous to admission, the patient had become considerably exhausted, so much so, indeed—considering age, etc.—as to render the prognosis decidedly unfavourable. The usual treatment in such a case was followed—rest, sedatives, nutrients, stimulants, etc. By the end of the first week she had considerably improved. In a few days more, improvement had so far progressed as to allow of her associating with her companions in the common sitting-room. The excitement had disappeared; sleep had returned; she was taking the full ordinary diet, with the addition of beef-tea, milk, and wine daily. Her appearance had greatly improved. The only indication of her unsound condition remaining, being a tendency to revert to her delusions when left alone.

On January 3rd—the twelfth day after admission—her appearance struck me as unsatisfactory, and she was ordered to bed. It was then discovered that the right foot was swollen, and the cause was ascertained to be gangrene of the great toe. A corn which had existed on the first joint of the little toe was also in a state of slough. This had been previously noticed by the attendant, who thought it of no importance.

The patient was now kept in bed. Poultices, etc., were applied, and nutrients and stimulants increased. For the next nine days, she was in every respect satisfactory, with two exceptions. She was sleeping well, feeling comfortable, taking food abundantly, and expressing herself rationally. The two exceptions were—the entire absence of reactive inflammation round the margin of the slough, and an unsatisfactory condition of the pulse, which, during the whole period of improvement, was slightly accelerated, and had a peculiar thrill.

On January 12th, the attendant went to give the patient her supper at 10 P.M., when she complained that she was unable to open her jaws. I was immediately sent for; but the spasm had considerably relaxed on my arrival. The nature of the disease; its probable cause; the condition of the toe; and the unsatisfactory state of the patient, were immediately appreciated; and, of course, an unfavourable result was anticipated. Attacks followed at 3, 8, and 10 A.M., at 12 noon, and at 1 P.M. The last terminated in death.

The spasms, excepting the two last, were not severe, and involved only the muscles of the neck, and latterly those of the chest.

Pain was never complained of, except in the jaws and neck during the spasms, and especially in the left side, immediately under the mamma. The sternal pain, so often noticed in this disease, did not exist.