ART. XIX.—*Contributions to Midwifery.* By THOMAS EDW. BEATTY, M. D., M. R. I. A., Professor of Medical Jurisprudence to the Royal College of Surgeons in Ireland, and Consulting Accoucheur to the Baggot-street Hospital, Dublin.

I. On the means of preventing Uterine Hemorrhage after Delivery.

ON THE MEANS OF PREVENTING URERINE HEMORRHAGE AFTER DELIVERY.

UTERINE hemorrhage, after delivery of the child, is one of the most formidable accidents that can befall a parturient woman. The immense quantity of blood that is sometimes thus lost in a single gush, is well calculated to strike terror into the boldest heart unaccustomed to witness this phenomenon. The loss sustained in the bloodiest operations of surgery shrinks into insignificance, when compared with the deluge thus poured out; and it is certainly wonderful that life is not even more frequently extinguished when this accident occurs. It would appear as if the constitution of the woman was better able to bear the sudden abstraction of a large quantity of the vital fluid, at this particular time, than at any other, probably in consequence of the habit so long maintained in the system, of devoting a large portion of it to the purposes of the fœtus, now expelled. The great number and size of the uterine vessels in the advanced stage of gestation, give lodgment to a corresponding quantity of blood, which, as far as the actual wants of the maternal system are concerned, must be considered as so much superadded to the mass of that fluid usually circulating in the body. We do not find that other parts of the system suffer materially in nutrition during the existence of pregnancy;

nay, a general plethora is not an unfrequent concomitant of this state; while we observe, what may be esteemed (in comparison with their former dimensions,) a new series of capacious vessels, filled with blood, destined for the support of a distinct being. The entire of the blood circulating in the uterine vessels at any given moment, may therefore be considered as an extra quantity, useless to the mother; and it is perhaps not going too far to suppose, that if the arteries and veins of the uterus were suddenly obstructed at their entrance and exit, and the mass of blood contained in them thus cut off from the general circulation, the mother would not suffer any material inconvenience.

However this may be, it must have struck every practitioner in midwifery, that puerperal women bear uterine hemorrhage better than any other class of patients do an equal loss from any other source. But there is a limit beyond which this form of hemorrhage can not be borne; differing certainly in different women; some appearing to sink under a loss that will scarcely affect the pulse of others. What the amount of this quantity is in each individual, we can not previously determine; neither can we always foretel when it is likely to occur, as some women, after having borne many children safely, will be attacked and carried off by this form of hemorrhage; while others may have it once or twice, and afterwards pass through several succeeding labours without it. It therefore becomes the duty of every practitioner to be particularly watchful of this dangerous accident, and to treat every patient as if she was liable to its invasion. The means to be used may be unnecessary for many, but can be injurious to none, and if one patient out of a thousand is saved by their employment, it is a sufficient reason for their adoption.

Uterine hemorrhage after delivery, can arise from one cause alone, that is, from a patulous state of some or all of the great uterine sinuses, resulting from a want of due contraction in the

uterine parietes. The only remedy for this is a proper contraction of the fibres through which these vessels pass obliquely. Uterine contraction is, therefore, the only protection against uterine hemorrhage; and unless in the case of morbid adhesion of the placenta, when this mass cannot be expelled by the natural means, it will be always effectual. With respect to the hour-glass contraction, caused by irregular, or partial action of the fibres of the uterus, I am inclined to think that it arises in many cases, from too much haste in delivery, by which the uterus is emptied before it is disposed to expel its contents; or from neglecting to secure a complete and permanent contraction of this organ after it has discharged itself.

Now when we consider the means employed to produce contraction of, and arrest hemorrhage from the uterus, we find that direct stimulus by external force, applied to this organ by grasping, friction, and firm pressure over the pubis, is decidedly the best; and any man who places his chief reliance on these means in such a dilemma will have little reason to regret his confidence in them. I speak now of cases unattended with morbid adhesion of the placenta. I know that this was the course pursued by my father, the late Dr. Beatty; and that during a very extensive midwifery practice for forty-years, he never lost a patient from uterine hemorrhage. Let it not be supposed that I wish to discard other assistance, such as the application of cold, &c., I only desire to place the former in the first rank.

Early impressions are very lasting, and therefore I have a vivid recollection of the first case of serious uterine hemorrhage I ever witnessed. I was called in the middle of the night to a patient, who had been attended by a very young man, a student of midwifery. The labour had been natural and easy; but after the birth of the child, and before the expulsion of the placenta, a deluge of blood escaped; and when I arrived, there was not only a sea of it under the patient, but also a stream along the floor, that had issued from the foot of the bed. I

found the attendant pale as a corpse, and almost frightened to death, with a bucket full of water beside him, and numerous cloths soaked in the same, which he diligently applied to the external parts. Notwithstanding which the bleeding still continued. The woman was blanched, the pulse failing at the wrist, she was tossing her arms about, and crying out for more air. On passing my hand over the abdomen, and feeling the uterus large and flaccid, I immediately exerted all my force, in grasping, and firmly pressing this organ downwards into the pelvis, and very soon found it contracting forcibly under my fingers. At this moment a rush of coagulated blood took place which nearly extinguished the little remaining spark of life in the attendant, but was a matter of great consolation to myself, as I took it as a token of having succeeded in my endeavours. In this I was not deceived; the uterus had fairly contracted, and the hemorrhage was at once arrested. I kept up the pressure on the uterus with my left hand, and passed the forefinger of my right into the vagina, to ascertain the state of the placenta, which I found now lying loose in that passage, from whence, after having put on a tight binder, it was easily removed. The woman recovered; but she had lost so much blood, that some days elapsed before she could be pronounced out of danger.

This case made a strong impression on my mind, and convinced me of the great efficacy of external force in producing contraction of the uterus. I am well aware that many authors direct, in cases such as this, when the placenta is retained, that the hand should be at once introduced for the purpose of extracting that body. But I am quite sure that the proceeding I adopted was the best for the patient, in as much as by it, she lost much less blood, than must have attended that operation; a circumstance of no small moment to an individual who had already suffered so severe a loss. If I had found the natural contraction of the uterus insufficient to expel the placenta, I would then of course have proceeded to extraction.

Now, as I have already said, we cannot tell when hemor-

rhage may take place after delivery; and no one will deny that it is much better to prevent its occurrence if possible, than to have to contend with it after it has commenced. The best way then to effect this purpose is to look for the natural protection; that is, to insure a full and complete contraction of the uterus. This is attained by making the organ perform the whole process of expelling the child itself, even to the feet; and never, by any injudicious haste, assisting the delivery by pulling the child. A practice pretty generally employed in this city, and lately taken notice of by Dr. Maunsell, is of great utility in this part of the process; that is, after the expulsion of the shoulders, to place the left hand on the abdomen of the woman, and follow the uterus by firm pressure, until the whole child is expelled. After this has taken place, if the child be alive and cry, the right hand, which had been employed in supporting its head and body, may now be disengaged, and the child laid in the bed, until more important matters are attended to. The chief of these is the proper application of an appropriate binder, previously passed loosely round the body of the woman. This I consider a very important part of the treatment, for it at once insures an equal and firm pressure on the uterus, and prevents its subsequent relaxation; while it leaves the practitioner at liberty to attend to the child. But the kind of binder usually employed, is very ill calculated to accomplish this end. It is commonly made of some straight narrow material, as a folded towel, a piece of linen, or what is still worse of flannel, any of which, it is utterly impossible to apply in such a manner, as that it shall keep its place, and exert the uniform pressure which is so desirable; as from the shape of the woman's body, it must slip up over her hips, and it finally runs into a simple cord round her waist, no matter how broad it may have been, or how accurately it may have been at first fastened.

To obviate this difficulty, I make all my patients provide themselves with a binder, according to a pattern which I have constructed, and have found of the greatest use and convenience.

It is made of jean, or twilled calico, doubled, and broad enough to reach from the eighth or ninth rib to the trochanters; with two long triangular pieces, termed in millinery gores, let in to enlarge the diameter below, and fit the hips, just as female stays are made. It is furnished with a row of buckles arranged along one end; and at the other, with a corresponding number of straps, made of the same material as the binder. The straps are about seven inches long, and are sewed not to the edge, but about seven inches from it; so that when they are passed through the buckles, the floating portion passes under the opposite end, and protects the skin from pressure. A very thin piece of whalebone, 1-3rd of an inch broad, is inserted, so that when the binder is applied, it runs straight down the middle of the abdomen from the thorax to the pelvis. A bandage such as this fits easily, without any unequal pressure when drawn tight; never shifts its place when made well, and properly applied; and effectually accomplishes the object for which it is intended. I have employed it with several ladies who had been in the habit of using the common kind, and they invariably express the greatest comfort from its use.

It has been said above that the binder should be passed round the patient before the birth of the child, and this whether the ordinary one, or that just described be employed. Such a proceeding will be found possessed of many advantages. We have it ready to tighten at the very time when pressure is most wanted and most useful; and we are saved the necessity of moving the patient to put it on, at a time when perfect quietness is so much required; as it is well known, that in women disposed to uterine hemorrhage, any motion, however slight, may cause it to take place. The binder may be slipped under the patient at any time during the labour; but I prefer delaying it until the head of the child has entered the pelvis; for its application is taken by the woman as an earnest of a speedy delivery from her sufferings, and if the labour is not terminated in a reasonable time after it is put on, she is apt to become disappointed and

dispirited. The method of application is simple. The end to which the buckles are attached, is to be passed under the patient, and caught by the nursetender or other assistant at the opposite side, who pulls it towards her until sufficient has passed to come round the abdomen and meet the straps along the right side. If the membranes have ruptured early, and the waters are draining away, the bandage is easily kept from moisture, by doubling up the part that passes under the left hip of the patient, and keeping folded napkins under her which can be changed as often as is required. If the membranes continue entire until a late period of the labour, we can by similar means preserve the binder dry, whether we allow the waters to break spontaneously, or we rupture them intentionally. In either case then, it is well to double up the part on which the patient would lie, when first put on; and this, when it becomes necessary to tighten the bandage, is easily restored to its proper place. The length of the straps permits some of the uppermost to be loosely fastened before the child is born; but this should be done merely with a view of keeping the bandage in its place, and not at all of exerting pressure at that time. Some ladies prefer having two of them, so as to have a change if by any accident the first should get wet; but by adopting the precautions already mentioned, I have rarely been obliged to change for this cause.

As soon as the child is expelled, and when the uterus is felt by the hand still kept on the abdomen, to be well contracted, the binder may be tightened. It is best to begin with the middle straps, and proceed regularly downwards, after which the upper may be secured. The necessary attentions may now be paid to the child, and the cord divided in the usual manner. By following this line of practice I generally find, after separating the child, that the placenta is thrown down into the vagina, and thus all uneasiness with respect to it is removed. When the placenta is thus detached, and lying loose in the vagina, I see no use in allowing it to remain there any length of time; there is no risk of hemorrhage by its removal, for that is guarded

against by causing and maintaining a proper contraction of the uterus; and to delay its extraction, is only to prolong the anxiety of the patient and her friends. It may, therefore, be withdrawn as soon as suits the practitioner's convenience. If, on the other hand, the placenta should be retained within the uterus, (a circumstance which, except in the case of morbid adhesion I never met in patients treated as above,) it must be dealt with according to the established rules, which it is unnecessary to mention here.

The course of proceeding just detailed is admirably calculated to prevent the hour glass contraction of the uterus, by causing it to contract uniformly, and from its fundus; and it is also our best protection against that insidious, and too frequently fatal accident, relaxation of the uterus after delivery, accompanied by internal hemorrhage; a circumstance which usually does not occur until the practitioner has left the house; sometimes not for several hours after, a remarkable example of which was lately mentioned to the writer by Dr. Montgomery, where it took place twenty-four hours after delivery. This form of hemorrhage is supposed by Dr. Ramsbotham to have been the cause of the death of the Princess Charlotte. One passage from the highly valuable work of the author just named will be sufficient to explain the views I entertain, and the benefit to be derived from permanent pressure on the uterus. Speaking of relaxation of the uterus after delivery, and its subsequent enlargement, he says, "But it sometimes happens, that after the uterus has expelled its contents, after it has seemed to the hand to have acquired a considerable share of contraction, and of diminution in size, it suddenly relaxes, and becomes larger and more flabby; it increases in bulk and extension in every direction. At the time this increase of size is going on, or shortly after, the patient complains of faintness; her countenance loses its colour, and its usual appearance; her pulse becomes quicker and smaller, and she has other symptoms of depression. On examining the napkins and linen, a very trifling discharge of

blood is found to have taken place externally, which leads to the belief, that the patient is not then losing much blood; and therefore little alarm is excited from this obvious loss; but if this security be indulged without farther and more minute inquiry, if the case be not understood, the patient will soon be placed in a situation of danger, from which she will with difficulty be extricated. If at this time the hand be applied upon the abdomen, and such a degree of grasping pressure be made on the uterine tumour, as shall produce some contraction, or if uterine action spontaneously come on, a quantity of coagulated and fluid blood is immediately expelled, which leads the patient to suspect that she is then flooding, and she generally expresses such suspicions with much anxiety for her safety. After such an evacuation of blood, the uterine tumour lessens in bulk, and becomes firmer under the hand. As long as the pressure of the hand is continued, or in case the frequent repetition of natural contraction ensues, the uterus maintains a diminished bulk; but upon the pressure of the hand being removed, or if repeated returns of the after pains do not take place, the same occurrences are renewed, the uterine tumour assumes less firmness and again increases in size; the sensation of faintness also returns; upon external pressure being again made, a similar evacuation is the consequence. These occurrences may be repeated, till either the uterus attains a more perfect and permanent state of contraction, whereby its subsequent distention, and the further efflux of blood from its vessels are prevented, or till the woman sinks from loss of blood."* Now with such convincing evidence of the utility of continued pressure, it appears strange that so experienced and able a writer should overlook the obvious remedy of permanent pressure by means of an appropriate bandage; but so it is, and throughout his otherwise most excellent work, no mention whatever is made of such a resource. I am inclined to think that if the binder had been in

* Ramsbotham's Observations on Midwifery, Part I. p. 187.

more common use, the work would not have contained so long a list of cases of uterine hemorrhage after delivery, and probably the country would not have to lament the premature death of an amiable princess. It is much to be feared that the high authority of Denman has misled many practitioners, particularly in the sister country, as to the true value of the binder, and has induced them to relinquish it altogether in the practice of midwifery. Indeed I have reason to know that in several parts of England it is very rarely used. "Some years ago," says Denman,* "it was a general custom to bind the abdomen very tight immediately after delivery, with the view of aiding the contraction of the integuments, and of preserving the shape of the patient. In some countries, India in particular, this was practised to a degree that one cannot think of without shuddering at the mischief which must of necessity have been very often occasioned. In this country the practice has been very much discontinued as useless and pernicious, and it is now wholly or nearly laid aside, except in particular cases, which have been already specified, till five or six days after delivery; when a broad band, daily but very gradually drawn a little tighter may be applied not only without injury but with some advantage." From this it is evident that he did not appreciate the power of this agent to produce and maintain uterine contraction, the only important object to be attained by its use; the subsequent shape of the patient, although a matter of some moment, being so very light when compared with her present safety, that it is scarcely to be taken into the account. What the pernicious effects of it are, to which he alludes, but which he does not mention, I cannot understand, at least I have never known any to follow its use. Many modern authors recommend pressure, and the use of the binder after hemorrhage has actually commenced. A late distinguished writer,† in speaking of uterine hemorrhage

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* Introduction to the Practice of Midwifery, p. 426, 6th ed.

† Dr. R. Lee on some of the most important Diseases of Women, p. 214.

after the expulsion of the placenta, thus expresses himself: "By far the most important remedies, and those on which I place the chief reliance in these formidable attacks, are constant and powerful pressure over the fundus uteri, and the application of cold to the external parts. These means are always within reach, however sudden and impetuous the rush of blood from the uterine vessels may be, and if promptly had recourse to, they will, in a large majority of cases, prove completely successful in saving life. The abdomen should be strongly compressed with the binder and folded napkins placed under it, and, in addition, the hands of an assistant should be applied over the fundus uteri firmly to squeeze and press this organ."

This is very excellent advice, and should of course be followed in all such cases of emergency. But the object of the present communication is to recommend a precautionary rather than a remedial line of conduct. To prevent is always better than to cure, provided the means employed are safe; and I am sure there is no man who has had to encounter uterine hemorrhage, who would not most anxiously desire to avoid so alarming and dangerous an occurrence. It is very true, as has been already stated, that with a great majority of patients, such precautions as have been mentioned, are unnecessary, but who can tell when they may not be absolutely required. The safe course therefore is, to treat all parturient women as if they were about to be attacked with hemorrhage; they are in fact all in danger of it; and when the means proposed are safe, simple, and easily executed, I do not hesitate to recommend their adoption to every one, anxious to conduct a labour to his own satisfaction, and the safety of his patient.

It is necessary that the binder described above shall be made to fit the patient; for this purpose all that is necessary is to have the measure of her waist before its enlargement by gestation. This is obtained by taking the length of the waistband of one of her dresses worn before the increase in size commenced. This length is to be marked on the binder, measuring from the end

on which the buckles are attached, and the straps are to be sewed on at that place. The length of the straps, and the gores which are inserted below, give sufficient accommodation for the size of the pelvis.