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Chronic Inversion of the Uterus.
Reduction by a New Method.

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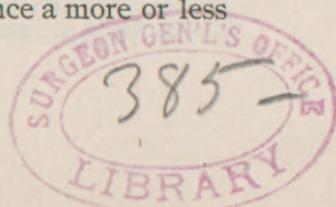
CHRONIC INVERSION OF THE UTERUS. REDUCTION BY A NEW METHOD.

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It is my purpose in this paper to consider only chronic cases of inversion of the uterus, as they are usually presented to the attention of the gynecologist. Cases of partial inversion occurring at labor are believed to be far more common than the teachings of the text-books would lead us to accept. More than once it has occurred under my own observation, and in a recent discussion upon the subject, by the members of the Boston Gynecological Society, a considerable number of cases were reported.

It was undoubtedly more frequent during the earlier practice of the midwives, when traction upon the umbilical cord was commonly practiced, in order to bring away the placenta. There is much disagreement of opinion as to the cause of inversion even in these cases, although it is conceded that the uterus is generally very flaccid, and muscular contraction of the organ is either irregular or wanting. When the inversion is complete, under such circumstances, the hæmorrhage and shock are often so great as to endanger life.

When promptly recognized the reposition of the organ is generally not attended with serious difficulty. If the placenta has not been detached, for the obvious reason of lessening hæmorrhage, it is better to replace, if possible, before separation. This, however, is exceptional, since a more or less



partial separation takes place, accompanied by great hæmorrhage. If the cervix is firmly contracted reposition is no longer easy, but nothing is gained by delay and reduction must be accomplished regardless of difficulty. When reposition has taken place, the uterus must be supported until it is firmly contracted. It has generally been considered wise to tampon the vagina and to retain the patient in the horizontal position, upon the back, for a considerable period, in order to prevent contraction of the abdominal muscles, but it is extremely probable that such precaution is unnecessary and ill-advised.

Intra-uterine growths, usually submucous myoma, very rarely produce inversion of the uterus. When it thus occurs the uterine contraction upon the growth causes a deflection of the fundus or place of attachment, which goes on slowly by traction from above downwards to bring about this result. The late Professor E. Martin, of Berlin, reported a case, in 1869, where a myoma the size of the fist was removed from the fundus of a completely inverted uterus in a multipara, aged 46, which had produced profuse hæmorrhage. Spontaneous reduction of the organ took place a few days later.

Langenbeck and McClintock each report a similar case. Dr. Emmett, in 1869, removed a myoma from the fundus with the *écraseur* and reduced the inversion by taxis. It is variously estimated that from 5 to 8 per cent. of the cases of inversion are due to this cause.

Several writers of prominence have maintained that irregular uterine action is occasionally the cause of inversion, and that it usually commences about one horn of the uterus. This was especially maintained by Kiwisch. Based upon this view, Dr. E. Noeggerath, of New York, has devised his method of reduction, which consists in com-

pressing the uterine body opposite to each horn, so as to indent one of these and thus offer to the cervical canal a wedge which passes up and is followed rapidly by the other and the whole body of the uterus. Dr. Thomas endorses this method as of great value, and states that he has twice reduced an inverted uterus successfully in this way. Dr. Thomas reports a case operated upon by Dr. Budd, of New York, for the removal of a supposed fibrous polyp, the size of a hen's egg, attached to the uterine cavity near the entrance of the right Fallopian tube. Careful examination, however, showed that it consisted of one horn of the uterus, with a part of the corresponding Fallopian tube and round ligament, thus demonstrating the case to have been one of partial inversion. Reports of cases of inversion of the uterus, associated with a variety of growths, usually ascribed as cause, are to be found scattered through the literature of medicine. Pathological preparations showing this interesting condition are also preserved in a considerable number of collections.

Improbable as it may seem, it still must be accepted as demonstrated, that cases of so-called spontaneous inversion have occurred. Several such cases are recorded by Dr. Thomas and others. These, however, as well as cases of spontaneous reduction, must be considered as accidental curiosities. It is very probable that the more careful study of cases of this character would make clear a series of causes altogether overlooked. In the Second Volume of the "American System of Gynecology," recently published, is found an excellent article upon chronic inversion of the uterus, by our distinguished countryman, Dr. S. C. Busey, of Washington. He concludes that about 87.5 per centum of all the cases belong to the puerperal variety. "Of 224 cases collected by Crampton, 196 are noted as having occurred

simultaneously with the termination of labor. Of the remaining 25 cases, in 12 the accident occurred during the first hour after labor; in 7 during the first day; in 2 during the first week; in 2 during the first month; in 1 during the fifth month; and in 1 during the thirteenth month. The direct causal relation of parturition and the puerperal period to the displacement is thus very clearly demonstrated."

Inversion of the uterus is fortunately a very rare accident. "Madden estimates it to occur only once in 190,000 labors. Reeve at one in 140,000 cases, Aveling at one in 100,000. In the Vienna Lying-in Hospital, from 1845 to 1882, in a total of 280,000 labors, but one case occurred."

Crosse's¹ monograph upon inversion of the uterus is still to be considered as one of the most valuable contributions upon the subject. He collected the history of about 400 cases. He states that about one-third of all the cases, under whatever circumstances, or in whatever degree they occur, prove fatal either very soon or within one month. He analyzed 109 fatal cases. Seventy-two proved fatal within a few hours, most of them within half an hour; 8 cases proved fatal in from one to seven days; and 6 in from one to four weeks. If the patient survive a month the case is chronic and the immediate danger is small. But the danger recommences at eight or nine months, when the menstrual function is resumed. Many of these will die within two years. Cases as usually presented to the gynecologist, by a careful examination, should be easily diagnosticated. Yet in the earlier history of uterine surgery the organ was occasionally removed, under the belief that the operator was dealing with a uterine polyp. Con-

¹ An essay upon "Invertio Uteri," by John Green Crosse, London, 1845.

ditions may exist producing complications which render an exact diagnosis very difficult.

The treatment of chronic inversion of the uterus furnishes a chapter of exceptional interest to the surgeon. Until within the present generation the reposition of the organ was supposed scarcely possible, and if life was seriously threatened amputation was advised. It was not until about 1858 that the attention of the profession was seriously called to the systematic attempt at reduction of the uterus in chronic inversion. The few cases that had been successfully treated prior to this date had been reduced by manipulative dexterity and regarded as accidental rather than systematic.

In 1858 the late Professor James P. White, of Buffalo, published his method of reduction by continued elastic pressure. His first case occurred in 1856. His second in 1858. Dr. Tyler Smith, of London, published his method also in 1858, which is a combination of elastic pressure and taxis. Dr. White's procedures are so well known that detailed description is unnecessary. A soft-rubber, cup-shaped end of the instrument receives the fundus. A wire spring capable of sustaining ten pounds pressure is adjusted to the other end, and so arranged that it may be brought to bear against the breast of the operator. Bi-manual manipulation is an important part of Dr. White's method. One hand grasps firmly the uterus thus supported, while the counter pressure is maintained upon the cervix through the abdominal wall by the other. In Dr. White's first case the inversion was of eight days' standing; in his second, of nearly six months' duration. In this last the organ was reduced after about one hour's continuous effort. In Dr. White's article upon "Chronic Inversion of the Uterus," published in the "Transactions of the International Medical Congress," Philadelphia, 1876, he concludes, based

upon the experience of ten cases, "the result has been, in all the cases encountered, restoration by manipulation on the first trial, and, as is believed, without serious injury to the tissues, thus confirming the conviction that all cases are curable, irrespective of their duration."

Dr. Clifton E. Wing, of Boston, reported a case, in 1879, where he reduced an inverted uterus of about three months' duration by continuous elastic pressure. Elastic tubing was attached to the distal end, or stem of a cup-shaped instrument adjusted to the fundus. These ends were drawn tight and attached in front and behind to a waist belt. The amount and direction of the force was found to be easily within control. "The evening of the second day there was evidently some gain. The evening of the third day the patient felt a little restless. . . . She slept well under a dose of morphine, but was waked in the middle of the night by feeling something 'jump inside.' On examination in the morning I found the uterus repleted and the end of the instrument extending up into its cavity." Rapid convalescence followed.

Aveling has modified the methods of Drs. White, Tyler Smith, and Wing, by giving the stem supporting the cup a sigmoid curve, so as to carry the direction of the pressure in the line of the upper axis of the pelvis. A belt is applied around the waist and fastened to braces over the shoulders. By this method elastic tension is secured. The patient must be confined to the bed, morphia given to control pain, and the bladder evacuated by the catheter. In eleven successful cases Aveling reports the average time for reduction at about forty hours, the longest being fifty-four and a half hours, the shortest nine hours.

Dr. Robert Barnes, of London, in his work upon "Diseases of Women," figures an instrument

which he calls his elastic pessary. This he described and first published in the *Obstetrical Journal*, in 1873. He states "that he attempted to reinvert the uterus in 1868, by continuous elastic pressure, maintained for five days, but was unsuccessful."

The elastic pressure applied by the late Dr. Tyler Smith consisted of an air pessary, retained in the vagina by a T bandage. Barnes, Wing, and Aveling, only modified the method of Dr. White by making the pressure in a graduated elastic force minimized in amount, but which was necessarily in the same ratio greatly extended in time. No new principle was involved and the modifications of application, may, at the best, be considered of doubtful value. Manual manipulative measures, modified but systematized taxis, have also their modern exponents.

Dr. Emmett's method consists of "encircling with the fingers and thumb that portion of the body close to the seat of the inversion, which is firmly grasped, pushed upward, and the fingers then immediately separated to their utmost, at the same time the other hand is employed over the abdomen, in the attempt to roll out the parts forming the ring, by sliding the abdominal parietes over the edge." Thus the effort is systematically made to return first the tissues last displaced, rather than to bring to bear the force upon the fundus proper. This is, physiologically, eminently correct and scientific.

Courty² carried the index and middle fingers of the left hand up the rectum and with them fixed the cervix, and then continued the taxis, as advised by Emmett.

Tate³ carried this method further, by the introduction of one forefinger into the bladder, the

² *Maladies de l'utérus*. 1866.

³ *Cincinnati Lancet and Observer*, March, 1878.

better to hold the cervix for the purpose of counter pressure. The uterus held in fixation from above downwards by fingers in the rectum and bladder, the pressure is applied by the thumbs upon the fundus.

Surgical intervention has not been wanting as an aid for the reposition of the inversion of the uterus. Such measures would naturally be applied to the constriction at the neck, the seeming objective factor to be overcome.

Dr. Barnes⁴ writes, "For twenty years I have taught in my lectures that the unyielding cervix may be divided by incisions carried into its substance from above downwards at different points of its circumference. Pressure then applied will cause it to yield more easily. Huguier, Professor Simpson, and Dr. Marion Sims have suggested this plan." It was, however, not until 1868 that Dr. Barnes had the opportunity to carry his teachings into effect. After continuing elastic pressure by the method of Tyler Smith for five days without success, Dr. Barnes secured the fundus by a noose of tape and drew the organ as far externally as seemed safe, and then incised the neck one-third of an inch deep, laterally and posteriorly. The cervix yielded and the restoration was complete, although lacerations extended quite a little from the incisions. A good recovery followed. Dr. Barnes recommended only lateral incisions of moderate depth, as an aid to sustained elastic pressure. He has since used this method with equal success. Dr. Thomas, of New York, attempted it, but the bleeding proved so very serious, from the division of the circular artery, that life was endangered. Hæmorrhage was controlled with much difficulty. About one week later he reduced the inversion by a method, which he had had under consideration for a considerable period, by

⁴Op. cit, page 635.

opening the thin abdominal wall over the cervix and dilating it by a glove-stretcher instrument. This, however, was accomplished with much difficulty, owing to the elastic contraction of the cervix. It has been resorted to several times by Dr. Thomas and others, and is commended by this author as affording another means of dealing with this most distressing accident, which may be accepted in preference to amputation. In case of failure amputation may at once be advantageously performed.

The early statistics of amputation give, as a result, a mortality rate of 25 to 30 per cent. Although the operation for amputation is doubtless ever to be regarded as a major one, involving serious risks to life, there can be no doubt that the death-rate as shown by collated statistics is very much greater than would occur under modern surgical procedure. The comparative absence of danger now attending aseptic laparotomy would cause the profession to look upon Dr. Thomas' operation far more favorably than when first published, seeming, as it then did, a bold, ingenious, but dangerous innovation. It is, however, to be considered if access to the uterus from above gives, after all, the advantages which *a priori* had been expected. The elastic contraction of the cervical fibres is overcome only with the greatest difficulty. In illustration of this I quote from a paper by Dr. Paul F. Mundé, entitled "Laparotomy for Reduction of an Inverted Uterus," read before the Obstetrical Society of New York last October, and published in the *American Journal of Obstetrics* for December, 1888.

"Rapidly making a two-inch incision through the abdominal wall, I pushed the uterus from the vagina upwards, so as to almost bring the ring into the wound, and, first with my fingers, then with a Palmer's steel dilator tried to stretch it

apart. Failing in this, I sent for a glove stretcher, which was disinfected and inserted through the cervical ring to the very bottom of the inverted uterus and separated to the utmost. The ring was thus completely dilated and I expected immediate reduction, but as the glove stretchers were slowly withdrawn to allow the *pari passu* reposition, from the vagina, at the instant the stretcher slipped out of the ring, the latter closed like a vise; and although the attempt was repeated again and again, no rapidity or concurrence of action in pressing the fundus upward, succeeded in anticipating the contraction of the ring. It seemed almost incredible that it should have been impossible to so dilate and keep open the ring, when it was not only easily accessible, but even visible at the abdominal incision, so as to enable me to slip the fundus back through it. But such was nevertheless the case, and my spectators will, I think, give me credit for having tried faithfully to save this woman's uterus. As a last resort I followed a suggestion of Dr. Lillienthal, my house-surgeon, who assisted me, and passed a Peaslee's needle from the vagina through the firmest portion of the fundus uteri and out of the ring and the abdominal wound, attached a long loop of the thickest silk to it, drew the loop out of the vagina and tied a piece of large, double-rubber drainage-tube to it, as a fulcrum upon which to exert traction. I chose a flexible tube in preference to a flat button of horn or metal, which were at hand, because I feared the latter might prove an obstacle at the contracted ring. Then dilating the ring with the glove stretcher, I tried to draw the fundus up through it by making steady traction on the loop of silk. But the pulpy uterine tissue gave away and the drainage-tube suddenly appeared in the abdominal wound." Dr. Mundé recognizing that no further effort for saving the uterus was

justifiable drew the organ as far as possible from the vagina and ligated high up with an elastic cord. From the abdominal cavity he removed the ovaries and tubes and closed the wound. On the thirteenth day the elastic ligature was found loose in the vagina, and after this the patient made an uninterrupted recovery.

Were it possible to find easy and safe access to the cervical canal through an opening in the abdominal wall, Dr. Mundé's case emphasizes the difficulties of overcoming the elastic contraction of the cervical fibres experienced by Dr. Thomas in his first case, and which has been met also by other operators. Again, we have to consider the importance of the danger, and which, so far as I know, has not been referred to by any operator, of pressure upon the inverted Fallopian tubes, carried as they are of necessity quite within the inverted uterus. The method of Dr. Lillenthal is certainly ingenious, is philosophic, and was deserving of a better result. There can be little doubt that the tissues of the fundus were materially impaired in their integrity by the previous prolonged manipulative procedures.

In 1877 I devised a method for the reduction of the inverted uterus by elastic pressure, the same force to be applied simultaneously upon both the fundus and cervix. This was to be effected by first tying into the cervical tissue four metallic rings. A strip of pure rubber about $1\frac{1}{4}$ inches in width and 18 inches long was slit at either end and nearly to the middle. The ends were to be threaded through the rings and continuous traction applied. I was met with the objection that the theory was perfect, but that the rings could not be made to hold in the tissue. In order to demonstrate the fact, as well as to serve another purpose, which seemed to me might possess material advantage, I applied rings as above suggested to a

cervix uteri which I desired to dilate and thus carried by elastic force a conical plug into the cervical canal. When the sutures were deeply applied the cervical tissue was found to bear any reasonable amount of tension protracted through several hours. After a long series of experimentation for the purpose of dilatation of the cervix these comparatively crude and clumsy efforts led up to the construction of the repositor, which in its present form seems to answer every requirement. After waiting twelve years the following case gave the opportunity of testing its value.

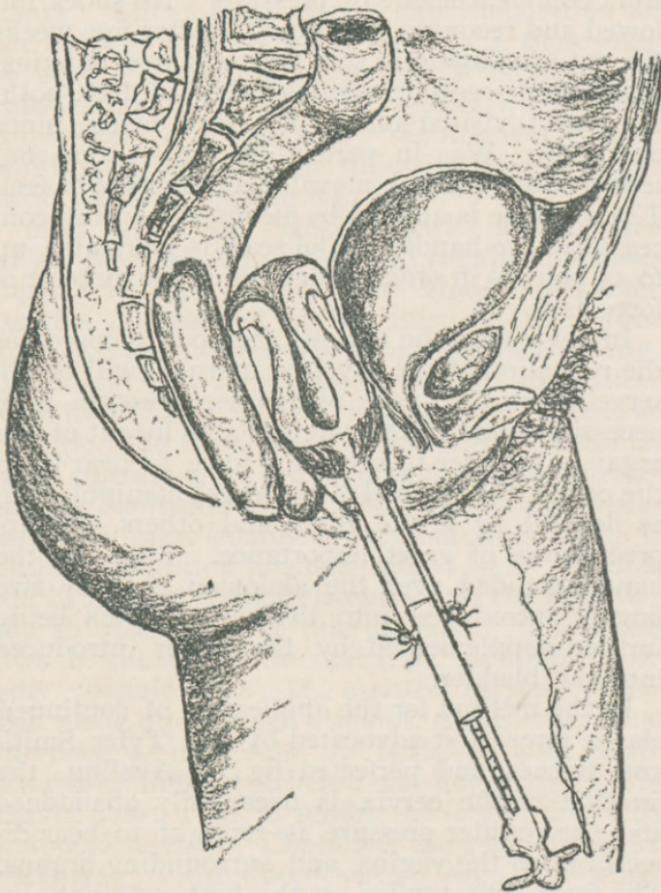
Mrs. B., æt. 33. Healthy girl. Menstruated at 14. Married at 30. Well and regular in menses until marriage, three years since. Eighteen months ago aborted at the third month. June 19, 1888, was delivered at term with instruments, under ether, by Dr. James McDonald, of Boston, after twenty-four hours of severe labor. Made an imperfect recovery, flowing more or less constantly until operation for the reduction of the inverted uterus, September 8th. Was in bed three weeks and had been confined to room since birth of child. Condition first determined by Dr. McDonald in August. He feels quite sure the inversion did not take place at time of labor. I first saw Mrs. B. the day of the operation. Patient markedly anæmic. Dr. M., assisted by Dr. Lynch, had made a prolonged attempt, under ether, that morning at reduction by taxis, without avail. Endometrium everywhere a bleeding surface. The cervix constricted to render the organ distinctly polypoid in shape. Could feel the edge of the cervical ring. I introduced, with a large, full-curved Hagerdon needle, long ligatures of No. 8 braided silk deeply through the cervical tissues on each of the four sides, equidistant, and brought them into fixation with the repositor, A steady, uniform pressure was kept, at about 8 pounds by the

scale. After ten minutes the cervix had yielded perceptibly and in fifteen the organ was half inverted, the cup being covered by the retracted cervix. The operation was completely finished and instrument removed in twenty-six minutes from commencement of pressure. No shock followed and recovery was rapid. After five weeks the patient flowed to soil two or three napkins. The fourth regular menses occurred Dec. 20th. Dec. 28th visited office; not seen before since operation. Was in perfect health. Uterus not tender, not enlarged, movable and normal to feel. The pressure is applied by means of a spring concealed in the handle. The scale is graduated up to 15 pounds in order to determine the amount of force used.

In reviewing the various methods devised for the reduction of the inverted uterus it will be observed that the place of counter pressure is of necessity found in the vaginal attachment of the organ. In order to bring the force to bear upon the cervix the method of bimanual manipulation, as devised by White, Sims, and others, was appreciated as of great importance. First, by the hand extended over the abdomen, then by two fingers introduced into the rectum, this being further supplemented by the finger introduced into the bladder.

In the method for the application of continued elastic force, first advocated by Drs. Tyler Smith and Barnes, and perfected by Dr. Aveling, the fixation of the cervix is necessarily abandoned and the counter pressure is brought to bear directly upon the vagina and surrounding organs. The force thus applied, at the best, acts only indirectly on the cervical ring, which is the chief criticism of the method. Theoretically a force should be applied to draw down upon and invert the constricted cervical fibres at the same time

that pressure is made upon the organ from below upwards. This should be elastic and continuous, but not too great. This force Dr. Emmett wisely recognized in its application by his method of



taxis. As illustrated in the case of Dr. Mundé, the dilatation of the cervix, at the most, is only one factor of the problem. Let that force be converted into one acting at the same time from be-

low upwards upon the fundus and the elastic constriction becomes transformed into a power to serve for the reduction of the organ. When applied in this manner the cervical fibres, little by little as they dilate, receive within their grasp and retain the returning portion of the organ. My method is simple and effective. The criticism of a number of the profession is, "I wonder that it has not been thought of before." I exhibited my repositor to Dr. Priestly, of London, when my guest in Boston, a little before the discussion of Dr. Mundé's paper, and he was kind enough to speak favorably of my method at the discussion above referred to. At the same meeting Dr. B. McE. Emmett exhibited an instrument which he had recently devised. It consists of a ring on three stems which is to encircle the cervix. The reinversion is to be accomplished by passing stitches through the border of the cervix and making traction outward over the rings, at the same time pressure is made from below upwards. Dr. Emmett recognizes, as I claim, that counter pressure to be of value must act upon the cervix itself.

By whatsoever manner applied, it is certainly rational to expect that the reduction of the inverted uterus would be best accomplished by forces acting at the same time in opposite directions. As another means of securing this, Dr. John Byrne, of Brooklyn, has invented a repositor which consists of a cup for the reception of the uterus, at the bottom of which is placed a movable disc attached to a stem which can be projected upwards by means of a screw. In conjunction with it he uses a bell-shaped instrument placed over the abdomen, in order to fix the cervix, through the center of which a plug is projected by a screw attachment, for the purpose of dilating the cervix. In one or two instances this instru-

ment has been used with a satisfactory result. Even so ingenious an instrument, although believed by Skeene to be the best devised, is radically faulty. The abdominal wall and bladder, possibly other organs, must be involved between the opposing forces, and fixation of the cervix can never be absolute, while there is no means of determining the amount of force applied. If, however, a uniform elastic pressure can be brought to bear at the same time, in the opposite direction, upon both fundus and cervix, it is a manifest gain. If this power is so applied that it is, at once, one and the same force, it is possessed of still greater advantage. To place it entirely within the control of the operator without possibility of affecting any other organ, and reducing the power to one of actual observation, as given in pounds, is a still further manifest advantage. All these are rendered as constant and well-known factors in the application of the repositor which I offer the profession for trial and, if found worthy, adoption.



