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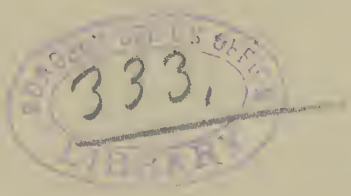

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ON THE USE OF THE VAGINAL TAMPON

IN THE TREATMENT OF CERTAIN EFFECTS FOLLOWING PELVIC INFLAMMATIONS.*

By THOMAS ADDIS EMMET, M. D.,

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At the suggestion of our president, we are to consider the value of a certain mode of treatment with which the name of the late Dr. V. H. Talliaferro, of Atlanta, Ga., is so closely connected. Without any knowledge of my views on the subject, I was requested to treat of it in the affirmative. The president either overestimated my power to present the subject with equal plausibility from either standpoint, or he had come to the conclusion that there would be no opposition to the mode of treatment.

I must confess that until recently I had been greatly prejudiced against the practice of packing the vagina for the removal of pelvic inflammations. I had seen a great deal of damage done in the practice of others, and the patients who may have been benefited had not then come under my observation. It seemed evident to me that too much was alleged for the method so long as no fixed rule had

* Read before the Alumni Association of the Woman's Hospital in the State of New York at its fourth meeting.

been determined as to the condition for which the practice would be beneficial. But, notwithstanding my prejudice, I have endeavored to gain the needed information, and, as a result of my observation, I hope that I can now present a sufficient foundation upon which, with the aid of the experience gained by others, we may rest, for the future, the merits of this mode of treatment. I must, however, express my dissent from the reasons given by Dr. Talliaferro, and I do not consider his method of application the one likely to be followed by the most beneficial results. But, before entering upon a consideration of the subject proper, I must present, briefly, an outline of my course of study bearing upon pelvic inflammations in the female. It has extended over many years, and it is necessary to pass this in review to show that the deductions drawn by me, and to be presented hereafter, are consistent with my observation and experience.

As the first advocate for the use of hot-water vaginal injections in the treatment of pelvic inflammations, I think I may maintain, without fear of being deemed egotistical, that their employment was a great advance. Yet, in common with others, I have long realized the fact that under certain conditions the use of hot injections is but palliative, and is occasionally inert. When properly employed, they seldom fail to soothe and quiet the nervous system, but occasionally it is found that no permanent benefit follows the long-continued use of the agent. It was this failure which led me years ago to study closely the condition of the pelvic blood-vessels in disease. In the course of my observations I attempted to inject, post mortem, the vessels in the female pelvis, but I labored under the disadvantage of knowing nothing of the previous histories of the subjects operated upon. This difficulty I endeavored to meet by selecting several cases where the cervix had been lacerated, and I ex-

pected to find with this lesion a condition which in life had been accompanied at some time with more or less pelvic inflammation. I detected little or no change in the arteries, but was somewhat surprised to find that it was impossible to thoroughly inject the veins, as they seemed at some points to have lost all definite form, and the material employed for injection became easily extravasated.

At a later date, and in a paper on "The Philosophy of Uterine Disease," which was published in the "New York Medical Journal," July, 1874, I made the following statement: "We must appreciate that in no other part of the body have we such a matted network of vessels in the same space. In consequence of the erectile character of all the tissues, these vessels become varicose from any continued obstruction to the circulation, and have an almost incredible venous capacity. As a stream of water will saturate the ground and lose itself in a marsh, so will the circulation through the pelvic cellular tissue, and become in disease equally sluggish. . . . In this overdistended condition of the veins the balance is lost, and they are no longer able to return to the general circulation the quantity of blood received by them from the arterial capillaries. . . . Unless we can control the pelvic circulation, and at least impart a temporary tone to these vessels, it will be found in the end that little has been accomplished."

In a paper presented by me at the last meeting of the American Gynæcological Society, and which many of you now present will recall, I referred to some observations which I had made as to the result of prolapse of the uterus and of traction upon the pelvic blood-vessels. I pointed out that, as the veins were without valves, their extremely tortuous courses were necessary both as a check upon the circulation and to overcome the action of gravity. I stated I had observed, when making traction upon the connective

tissue about a vein in the living subject, that the diameter of the vessel would rapidly increase in proportion as its tortuous course was made a straight one. In this connection I showed that it was evident, as the uterus became prolapsed in the pelvis and the veins were consequently straightened out, that they became proportionately distended. The caliber of the arteries, on the contrary, was not affected by any degree of prolapse until it had become a partial procidentia. As the uterus began to escape from the vaginal outlet, for the first time the diameter of the arteries was influenced by the traction, and with the effect of lessening their caliber so as thus to greatly reduce the amount of blood circulating in the pelvis. But, until the point of procidentia had been reached, the degree of prolapse acted as a source of irritation to proportionately increase the quantity of blood forced by them into the already overdistended veins. These became less and less able, as the degree of prolapse increased within the limit, to advance the current of blood, which would become nearly stagnant at certain points.

It will also be remembered that in this paper and in a previous one I stated as my opinion that what had been generally termed "thickenings in the broad ligaments" were, as a rule, but dilated and overdistended veins; that the veins, following their tortuous courses through the connective tissue of the pelvis, receive, in a state of health, a uniform support to their coats from the natural elasticity of the tissues surrounding them. Therefore the circulation through these vessels would, in a state of health, be so regulated from this uniform pressure that it would be impossible for the veins to become overdistended. When, however, an injury had been received from childbirth, or when a local peritonitis with adhesions had existed, so that the integrity of the pelvic fascia had become impaired, the needed

elastic support from the connective tissue would be lost and the veins must become overdistended. This is the condition, from one or other cause, so frequently met with in practice, and for its relief I pointed out the principle that this varicose condition of the veins could only be corrected by such means as were fitted for "taking in the slack," as it were, of the relaxed fascia, and thus regaining the lost support to the vessels. This support might be obtained, in many instances, after injury, by repairing the floor of the pelvis and thus restoring the proper degree of tension for the pelvic fascia and connective tissue. In other cases the aid of a pessary would accomplish the same end, when properly fitted. I believed its action to be a means for taking in this slack or overstretch, and that it gave the relief by bringing this about, and by lessening the degree of prolapse, more than by a change of version.

One more point remains to be considered. Whenever a local peritonitis occurs in the pelvis and adhesions form, the line must be shortened and in the opposite direction there must necessarily be a proportionate slacking up of the connective tissue. The inflammation from the peritonæum may not involve this tissue to any serious extent, but, in consequence of the adhesions, the natural elasticity of the neighboring tissue becomes thus impaired and rapid distension of the veins follows. Adhesions forming between the opposing surfaces of the inflamed peritonæum have the effect naturally of crowding the uterus lower in the pelvis and thus causing more or less of a prolapse. If, as is frequently the case, the inflammation is situated in Douglas's *cul-de-sac*, we should have, with the adhesion of opposite surfaces, a retroversion in addition to a prolapse of the uterus.

I have called attention elsewhere to the fact that when cellular tissue in different parts of the body has been once inflamed it seldom, if ever, regains its vitality. That par-

ticular tissue must either be absorbed, or it must break down into pus; it disappears, and the space, or cavity, which would otherwise remain is filled up through the natural or inherent elasticity of the neighboring tissues, or by adhesive inflammation. The cellular tissue situated between the folds of the broad ligament is essentially isolated from the connective tissue in the other parts of the pelvis; therefore if it is once destroyed it can not be supplied from elsewhere. But any inflammation of sufficient extent to destroy this tissue must involve the peritonæum covering it. Peritoneal adhesions form as a consequence, the ligament is flattened out by the traction so that the walls of the vagina and the tube on that side approximate, and a lateral version of the uterus to the injured side remains as a permanent deformity.

We have now reached a point in the consideration of the subject when the following query may be presented: Under what conditions are we likely to obtain the best results from the use of the hot-water vaginal injections, and when might we expect a good result from the uniform pressure which will be exerted by properly tamponing the vagina? No other mode of treatment yet known can accomplish so much as is gained by the use of hot-water vaginal injections in all acute pelvic inflammations. The hot water acts as a poultice in exciting contraction of the arterial capillaries. Its continued use can diminish the circulation in the parts with which it is brought in contact, as is done in the hands and arms of a washerwoman while in the exercise of her vocation. Nearly thirty years ago I recognized the fact that the reaction from a continued application of heat was contraction in the muscular coats of the arteries, and hence its application and value in lessening the supply of blood going to the seat of an acute inflammation.

The use of the hot-water injections is invaluable in the treatment of all stages of inflammation involving the cellular or connective tissue of the pelvis, in lymphangeitis, in phlebitis, and in the early stages of pelvic peritonitis. On the other hand, the vaginal tampon in my experience has only been beneficial after all acute symptoms have subsided. If this one feature is not recognized as a cardinal point, the indiscriminate use of this means of treatment will always be attended by unsatisfactory results, and with much unnecessary suffering to the patient.

The only class of cases in the treatment of which I have derived any special benefit from the use of the vaginal tampon has been where I have supposed the blood-vessels had degenerated into a varicose condition, and where this state of the veins has been brought about, as I have shown, from the effects of local peritonitis with adhesions, from the loss of the connective tissue, and from injury where the fascia has been involved.

Let us now consider the use of the tampon in the condition I have described as being the one fitted for its action. I have laid down the rule that its use can accomplish no good but may do much harm, so long as any inflammatory symptoms can be detected. We must trust to the use of the thermometer to show the absence of an elevated temperature in the pelvis, and to the want of other symptoms indicative of existing inflammation. In the absence of other symptoms we must exclude to a great extent the presence of pain on pressure as an evidence of active inflammation, its chief value then being but an indication of the manner in which the tampon should be applied.

Where adhesions have formed and the natural elasticity of the tissues has been impaired, the introduction of the speculum, or pressure made with the finger at certain points, must give rise to more or less pain. Traction is thus made

through the connective tissue on the peritonæum and along some shortened line of adhesion.

But we are to be all the more careful when pain does exist under these circumstances, through fear of setting up a fresh attack of peritonitis. The most important point that we have to consider is to ascertain, if possible, the *modus operandi* of the tampon, for only by the possession of this knowledge can we determine upon the fit subjects for its application. Experience certainly teaches that by the use of hot-water vaginal injections contraction of the arteries is excited, and that these injections are most useful in active inflammations. By the same means we have ascertained that the tampon does positive harm when not indicated, acting as a source of irritation so long as any acute inflammation exists, and that it does not lessen the circulation through the arteries, as their coats are not sufficiently compressible.

We therefore can draw but one conclusion, and in doing so we reach the point that the tampon acts mechanically, by compressing the dilated veins and by lifting the uterus to its natural position in the pelvis, so that the circulation between the arteries and the veins may be equalized. If the floor of the pelvis has been injured in childbirth, one or both agents may have to be employed to prepare the woman for the needed surgical operation. And it is only by the proper execution of this operation that we can restore the fascia and connective tissue in the pelvis to a state of integrity, and thus indirectly give the necessary support to the vessels.

But we have a different condition to deal with in treating the effects of a local peritonitis. As soon as the adhesions have been separated by the steady pressure of the tampon the pelvic tissues begin to regain their tone. And as the prolapse is corrected by the use of the tampon, and

the uterus is steadily maintained in its natural position, the smaller veins are able to regain their natural and tortuous course with the improved condition of the connective tissue. So far in the treatment of a case the use of the tampon is most satisfactory, but as we advance the progress becomes slower. We have at last reached the point where the permanency of our previous success in the treatment of the case must rest upon our being able to effect a radical change in the condition of the degenerated venous diverticula. But it is just in this condition where I believe we gain the chief advantage in the use of the vaginal tampon. We should not, however, be misled by expecting too much, and we must realize that we can only gain permanent good through use of the agent after a long and tedious application, which may extend over the course of months. Moreover, the patient must be, as a rule, favorably situated in a hospital for receiving the treatment, and the operator is only able to do full justice to the patient in proportion to his experience.

I am unable to understand how anything is accomplished unless these diverticula are destroyed through the long, steady, and uniform pressure which is maintained by the tampon when properly applied. It is impossible to suppose that these degenerated vessels ever could regain their tone. A certain amount of shrinkage doubtless takes place after they have been for a long time kept from being overdistended. But the continued pressure exerted by the tampon is but the application of a principle which has been long employed in general surgery. It is reasonable to suppose, therefore, that the contents of these vessels become gradually organized, more or less adhesive inflammation is excited by pressure, and eventually the tract throughout is obliterated.

The length to which my paper has already extended

will not admit of my going into a recital of the cases which I have treated. A brief history of the following one, however, I think will not be without interest and profit:

Shortly after the 1st of October I admitted into my private hospital a woman about thirty-five years of age who had given birth to several children, nearly all of whom were born by unusually rapid labors. She had got up very slowly after the last labor, and the symptoms were clearly given of the existence of some pelvic inflammation for long afterward. After having devoted more than five years to receiving local treatment, and after many efforts had been made to fit a pessary, she became a confirmed invalid from her inability to get about. At my first examination I found a doubly lacerated cervix presenting just within the vaginal outlet, which latter was unusually relaxed and open. There existed an exaggerated prolapse of both vaginal walls, and the dark color of the mucous membrane showed clearly that there was a marked venous congestion throughout the pelvis. There was a small fibroid on the posterior wall of the retroverted uterus, and below it lay both ovaries very much enlarged, with a small mass on each side of them, which seemed to be the fimbriated extremity of the Fallopian tube. Every portion of the pelvis within reach of the finger was tender on pressure, but no distinct inflammatory product could be detected except in the region of the utero-sacral ligaments. The sensation conveyed to the finger was as if the pelvis was filled with air along the sides of the vaginal walls. As the patient lay on her back it was impossible to reduce the uterus, and as one portion of the vagina was pushed up it only caused some other part to roll out. The knee-and-chest position gave her great relief, the uterus easily returned to its place, the vagina dilated to its ordinary size, and in a few moments after her assuming this position the mucous membrane regained its natural color. Her general health was good, and she was free from suffering so long as she maintained the recumbent position. But on assuming the upright one she suffered from nausea and felt "as if she would drop to pieces." For several years she had had the hot-water vaginal injections

properly administered. These at first gave her relief, but for a long time there had been no apparent benefit, and they were finally abandoned as the space in the vagina lessened.

At my first examination the case seemed so hopeless that I gave it as my opinion that it would be necessary to remove the ovaries. She positively declined submitting to the operation, as she had done before in consulting others. In twenty-four hours I satisfied myself that no good could be accomplished by attempting to fit a pessary. From necessity she had acquired some dexterity in the introduction of damp cotton into the vagina to give her some support when she was obliged to be about, but it often proved a source of irritation. I placed her in the knee-and-chest position and introduced a Sims speculum. The instrument, however, proved unnecessary, as the vaginal outlet in this position became sufficiently patulous to allow of the examination of the whole canal without it. I had determined to use the tampon, but before placing it I thoroughly smeared the whole vaginal surface with vaseline. After the parts had regained their normal color, I proceeded to fill, but not to pack, the vagina with dry cotton, the fibers of which I had previously separated as much as possible with my fingers. In a short time I had to remove it in consequence of the pain produced, and I had the same result a few days later when I attempted to repeat the experiment.

I have long held that the practice of packing the vagina, when dilated in this position, is wrong, for it places the veins on the stretch and straightens out their convolutions, as occurs when the uterus is in the position of prolapse. The uterus is certainly thus placed as much above the "health line" in one case as it is below it in the other. But in this instance I had laid in the cotton so loosely that I had not anticipated the result, although I had filled the canal.

At my next attempt with the patient in the knee-and-chest position, so as to get the ovaries out of the way, I introduced only enough cotton to enable me, with the pressure of my finger over

it, to keep them from prolapsing as she turned over to her back. I then proceeded to pack the vagina to a moderate degree. This tampon she retained comfortably for two days with the greatest relief, and from that time to the present she has continued to improve. I daily packed the vagina, and the ovaries gradually became smaller, until at length they no longer presented themselves, and for several weeks they have been beyond the reach of my finger. At the end of two months and a half I discarded the use of the tampon, after having gradually lessened the quantity. I was then able to fit a pessary, which has answered every purpose, and which keeps the uterus moderately anteverted, notwithstanding the small fibroid on the posterior wall. The puffy or air-like condition along the sides of the pelvis has disappeared, and the vagina is not now unusually enlarged. The uterus has decreased in size, the laceration in the cervix is of less depth, and, as there are no reflex symptoms, an operation for its repair will not be necessary. But she can not possibly become a well woman until she has had the operation for restoring the integrity of the pelvic floor. With the pessary she is able to walk a mile and more with comfort. The pessary which I have found applicable for her case is an elastic rubber ring which I procured in London. Its diameter is three or four times that of a similar instrument made in this country, and the increased thickness is a great advantage. The broad surface can not cut into the tissues, and its size is just sufficient to dispose of any slack in the pelvic fascia.

I believe that this case was an extreme one, that the veins were in an unusually enlarged condition, and that the steady pressure excited by the tampon during the two months and a half had obliterated them. And yet I am satisfied that, if she does not have the operation performed, other vessels will become gradually overstretched, and she will relapse into her old condition within a year.

Before closing I will briefly present some practical points as to the material best fitted for the purpose, and give the method of introducing the tampon. Pledgets of cotton

saturated with glycerin would naturally be the first material which would be suggested for tamponing the vagina. But in practice I have found that such a tampon is unfitted for the purpose. It would be as difficult to offer a substitute for the use of pure glycerin as for the hot-water vaginal injection in the treatment of pelvic inflammations in the female. Both eventually produce the same result in exciting contraction of the arterial capillaries, while neither exerts any special action on the venous circulation.

The resilient power is lost to the cotton fiber on being macerated in the serous or watery discharge excited by the endosmotic action of the glycerin. Consequently, the cotton packs closely together; it no longer fills the same space, so that the uniform pressure which should be exerted by the tampon is lost, and it eventually excites irritation by its presence.

Sheep's wool has been used, as experience proves it to be better fitted for the purpose. Doubtless it is so in consequence of the protection afforded to each fiber by the oily substances coating it, so that it is essentially impervious to moisture. But I found difficulty in obtaining the wool in the condition I wanted it and within a reasonable price.

In quest of a substitute I began by smearing the vaginal wall with vaseline and then packing the canal with dry cotton. As I introduced the cotton, while the patient was lying upon her back, I soon found that the dry cotton caused a great deal of irritation and annoyance in its passage through the vaginal outlet. At the beginning it was made evident that the absorbent cotton was unfit for the purpose from its ready absorption of all moisture. At length I decided that the best material was the cleanest quality of cotton wool as sold in the shops and put up in rolls. For the tampon I prepared a number of pieces of cotton of about

the width and thickness of four fingers. I then made a ball of each by turning the four corners or edges together, and while grasping these I thoroughly smeared the outer surface with vaseline. Each ball was then of about the size of an English walnut and kept its shape as it was packed loosely into a tin box for use. It was found advisable to have these balls of cotton as nearly uniform as possible and of about the size that I have indicated.

On beginning the operation it is sometimes necessary to place the patient on the knees and chest before the uterus can be replaced. Then several balls are to be introduced and placed at a point where the uterus can be held by means of the finger while the patient is turning upon her back. I have already stated my reasons for preferring this position in introducing the tampon. One ball of cotton after another should be placed in the vagina and passed closely along the index finger of the other hand which is engaged in pressing back the perinæum and in holding up the uterus or that portion of the tampon already introduced.

If one part of the vagina is more sensitive than another we must learn to "humor" it by making less direct pressure until tolerance becomes established. When the sensitiveness is situated in the neighborhood of one of the broad ligaments we must pack the cotton on the opposite side of the cervix to act as a crutch. If the inflammation is chiefly about the utero-sacral ligaments, it is easy to tampon so that the uterus will be lifted without making direct pressure. The tampon should be placed so as to make as little direct pressure to the left as possible along the course of the rectum. After the introduction of a sufficient amount of cotton we are to pass the index finger carefully over every portion to be certain that it is uniformly placed and to smooth down the entire surface. When this "finishing off" is properly done it is possible, from the coherency of the cot-

ton and vaseline, to pack but a portion of the vagina. It may be but the upper part, or to one side, and it is likely to remain in position.

There are two practical points in the application which, if not carried out carefully, will cause all our efforts to miscarry. The first is to keep the uterus, throughout the whole course of treatment, as nearly as possible in its natural position and at the same plane in the pelvis. The other is to place the fresh tampon without delay after the other has been removed. I have been in the habit of renewing the tampon daily for the patients in my private hospital. But if it could be kept deodorized, the longer it remained undisturbed the more thoroughly would both of these indications be met in practice.

The best instrument for removing the cotton is a piece of whalebone with a rough screw cut in the end, a simple device for the application of which we are indebted to the late Dr. Sims. This is easily passed alongside of the finger and twisted into one portion after another. It is well to leave that part directly under the uterus until the last, so that the finger may be slipped beneath the cervix, at the proper moment, to hold it in place until the fresh tampon can be introduced. To facilitate this, everything should be prepared beforehand. It is very evident if the uterus is allowed to prolapse, that just in proportion as it does so the circulation must be disturbed, and that if there is any advantage to be gained from maintaining a steady and uniform pressure, it must be, as nearly as possible, a continuous one. Therefore there should be no unnecessary delay in returning the tampon, as the blood begins again to rapidly dilate the vessels as soon as the pressure is removed.

A serious drawback to the satisfactory progress to be gained by this mode of treatment is the recurrence of the menstrual period, when the use of the tampon has to be

discontinued. Just before the period is expected I remove the tampon and immediately introduce one of the rubber rings which I have already referred to, and one of a sufficient size to admit of the introduction of the finger between it and the vaginal wall at any point. These rings are about three quarters of an inch in diameter, and so long as the patient remains in the recumbent position their broad surface offers a fair substitute for the tampon both in exerting a direct pressure upon the larger vessels and by taking up the slack in pelvic tissues. As soon as the flow has ceased I have a large hot-water vaginal injection administered and then employ the tampon as before in the continued treatment of the case.