

THE PRESENT STATUS OF IRRIGATION AND
DRAINAGE IN OBSTETRIC AND GYNE-
COLOGIC OPERATIONS

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Though there may never be complete unanimity of judgment and opinion regarding the details of the requirements for irrigation and drainage in gynecologic and obstetric operations, there is a growing disposition among us to simplify our practice in these particulars. This has come about through the gradual elimination of the sloppy flushing practice of a few years ago and the abandonment of things like huge glass drains and suction syringes.

A process of evolution by exclusion has simplified the approved practice of today, and in both obstetric and gynecologic operations better results have been obtained with the simpler methods.

The use of solutions of antiseptic drugs, particularly those of the poisonous varieties, is steadily losing favor. The practical antiseptic efficiency of such solutions for irrigation is questionable and the dangers incident to their use are known and recognized. Not only have serious poisonings occurred but deaths from poison have resulted from this practice, and the diffusion and distribution of a previously localized infection has not infrequently occurred. An example of these dangers is afforded by cases in which uterine perforations have accidentally been made during a curettement following abortion, and a solution of bichlorid of mercury has

been thrown into the peritoneal cavity through the uterine rent. In this event chemical poisoning and the distribution of the infection both take place. I have knowledge of one such instance; many may be found in medical literature, but for obvious reasons most of such unfortunate occurrences have not been reported.

Irrigation is doubtless best employed for its mechanical effect in washing out of the body such loose debris as the cavity being treated may contain. To this end the force employed should be at the minimum for efficiency and the solution used the least irritating possible.

The elementary principles governing the best modern obstetric and gynecologic practice would seem to be about as follows: Never irrigate if it be possible to avoid it through gentle wiping or sponging. Avoid poisonous and irritating solutions, as they are both dangerous and disappointing. In the main, use irrigation for its mechanical effect in flushing out debris, and always at low pressure.

Summarizing the prevalent opinions of today as to drainage in obstetrics and gynecology one finds it contrasting strongly with opinions and practice of but a few years ago, and happily, also, in the direction of simplification. One now finds himself disposed to avoid the use of drainage wherever possible and believes it possible to do without it many times where it was formerly deemed an absolute necessity. So, too, our ideas of drainage methods have undergone a change for the better. Glass drains are now rarely used even in the abdomen, and by only a very few operators. Gauze, always an indifferent drain, is more often employed for packing and walling off infected areas, arresting oozing of blood which may otherwise be difficult to control and for guarding against fecal and urinary infiltration into the tissues, and leaks into the cavities of the body when the hollow viscera have been injured or sutured.

The majority of the best surgeons of today limit the use of intra-abdominal irrigation and drainage to few and to certain specific indications, chief of which are rupture or leakage from some hollow viscus or localized abscess which has poured into the abdominal cavity food, urine, pus or blood in considerable quantities.

In certain cases of ruptured ectopic pregnancy irrigation serves the double purpose of flushing out the clots and debris and supplying the body with much needed fluid for the heart and blood vessels to act on. Also, in certain cases of shock, a normal salt solution instilled into the peritoneal cavity may act well; but that is not the particular phase of the subject this paper is intended to consider.

It is now generally appreciated that some localized accumulations of pus, particularly those of long standing and of tubal origin, may be safely broken down and turned out through an abdominal incision without irrigation or drainage even though the adjacent surfaces be extensively soiled. Indeed the plan of coffer damming and wiping out with dry gauze is believed to give much better results in such cases than did the older practice of irrigation and intra-abdominal drainage. So, too, certain localized peritoneal infections originating in the appendix are better treated without irrigation and intra-abdominal drainage even though the appendix may have ruptured and the adjacent loops of intestine be injected and mottled with many patches of lymph. Often in such cases the peritoneum will take care of its end of the infection without a protest, though the wound in the abdominal wall may suffer a serious infection which, if unprovided for by a superficial drain down to the peritoneum, may cause great anxiety. The interesting pathologic problems of established immunity on one hand and attenuated virility on the other are important factors under such circumstances, but these also lead us far afield and into a

consideration of deeper mysteries than we are prepared to undertake to explain.

Whenever intraperitoneal drainage is really necessary in gynecologic surgery it is certainly better to make it from the bottom of the wound and "down hill" if possible; that is, through the vaginal vault. This plan has so many evident advantages other than the predisposition to hernia which a deep drain through the abdominal wall favors that they need not be enumerated.

Intrauterine irrigations in gynecologic and obstetric surgery have been illogically practiced for more than a generation, and even now poisonous solutions are constantly employed by many physicians who are doing curettements after abortions or after delivery at term, notwithstanding the fact that most of the recent authorities have shown them to be ineffective for good and capable of doing great harm.

The routine employment of such intrauterine douches after uncomplicated normal labors is also advocated and practiced, though the weight of evidence is overwhelmingly against it. In Williams' "Obstetrics"¹ may be found this statement:

It has been shown experimentally by Bumm that mercuric chlorid injections penetrate the tissues only to a very slight extent. He took the liver of an animal dead of anthrax, and after soaking it for thirty minutes in a 1 to 1,000 mercuric chlorid solution, placed it on a freezing microtome, and cut thick sections from it. After cutting off about 1 mm. he inoculated the next section into another animal which succumbed to anthrax, thus showing that the germicidal action of mercuric chlorid had been exerted only on the surface. If this be the case in the laboratory after the tissue has been immersed in the antiseptic solution, what effect can be expected on organisms embedded in the muscular wall of the uterus, from a transitory application to the surface of a few liters of a weak mercuric chlorid solution? Bumm likewise showed that the streptococci made their way through the uterus with great rapidity, traveling 2 cm. or more in the space of six hours. What has been said concerning mercuric chlorid applies equally well to the other disinfectants.

1. *Obstetrics*, 1908, pages 885-886.

Notwithstanding the frequent reiteration of statements like that just quoted in almost all the recent standard text-books on obstetric and gynecologic subjects, many general practitioners and not a few gynecologic and obstetric surgeons persist in the use, or rather the abuse, of the poisonous intrauterine douche. Proof positive has been offered time after time of the fallacies and dangers of the poisonous antiseptic intrauterine douche and there is practical unanimity of opinion among teachers and writers that its effects can be nothing but bad, and yet it is employed constantly by many who should know how dangerous it is.

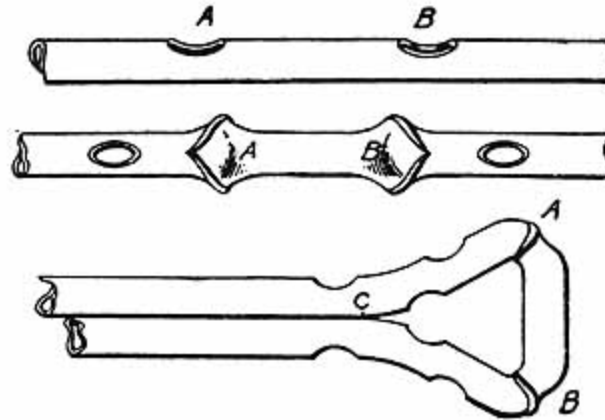
What is there about the practice of the obstetric art that makes the average man so impervious to incontrovertible proof? Our reluctance to accept the truth in regard to the contagiousness of puerperal fever for almost a half century after it had been logically proved is an indictment under the shadow of which we should long stand in deep humility and in atonement for which all our efforts should be exercised in a determination henceforth to keep our minds open to conviction.

Intrauterine drainage is, under some circumstances, a most important surgical detail, but, so far as I have been able to observe, it is rarely employed logically or with a proper regard for the mechanical principles involved in the attainment of the ends sought.

From a mechanical standpoint, a tampon is little more of a drain than a dam is an aqueduct in hydraulics. If the conditions inside the uterus are such as to demand drainage in the true sense in which the word should be used, a gauze tampon, or even a gauze wick, if that term be preferred, does not meet the indications. The capillary action of gauze is incapable of carrying off under any circumstances more than the thinnest fluids, and even those only for a short time, as the meshes of the gauze soon become filled and its capillarity is destroyed. The principles of true drainage require that the drain shall be open and free; that it shall be capa-

ble of conveying thick fluids, such as pus, blood, mucus or necrotic debris, and that it be capable also of being flushed and freed while *in situ*.

Such a drain is often invaluable in the uterine cavity, as it may be in many other situations; but, with the known tendency of the internal os to contract and so retain within the uterus putrescible or infected material, a free drain adapted to flushing and capable of conveying thick fluids is a necessity. Such a drain I devised some years ago and my experience with it has been such that I venture to speak of it here, not-



1. Cut two holes in a long piece of drainage tubing as indicated at A and B. 2. Draw one end of the tube through A and out at B, thus inverting that portion of the tube between the holes as seen in 2. 3. Bend the legs of the tube down so that the holes A and B will be left open for drainage. If bent in one direction they are open, if in the other closed. Tack with a blind stitch at C.

withstanding previous mention of it elsewhere. It is made of rubber tubing of a size adapted to the requirements of the case in hand and of thick or thin walled tubing, depending on the pressure it must withstand from without. It may be adapted to bladder irrigation and drainage, as it makes an admirable and easily constructed retention catheter out of material always at hand and one that can be readily introduced and removed. It works equally well after operations for perin-

eal or suprapubic prostatectomy and for draining the pleural cavity it is admirable, but as an intrauterine drain in infection, sapremia, etc., it has been found most useful. The accompanying drawing and legend will best describe its construction.

One of the most dangerous features of the ordinary intrauterine douche as it is commonly employed is the necessity for frequent and repeated introductions of the irrigator through the infected vagina and cervix with all the risks of a retrograde infection that necessarily attend such a proceeding. When practiced by the physician or nurse several times a day, as is sometimes done, it is inconceivable that the vaginal, cervical, or vulval bacteria are not conveyed into new fields during the operation and the patient may be congratulated if she does not also receive some new infection from the hands or instruments of the operator

Such retrograde infections of the bladder are of common occurrence as a result of the repeated use of the catheter, even though the opportunities for cleansing the field are good.

The advantages of an irrigating and draining device which may be placed once, and once only, with due precautions against infection and through which the drainage and the flushing fluid may always flow from within outward must be apparent, whether the cavity to be flushed and drained be that of the bladder, the uterus or the pleura. This flow from within outward is accomplished in a most satisfactory way by the tube shown. When used with diluted alcohol, according to the suggestion of Carosso,² or with sterile water, salt solution, a solution of potassium permanganate or a dilute iodine solution, it may be a means to a most desirable end.

Through these tubes an intermittent flushing of an infected uterine cavity may be made by a nurse at fre-

² Wetherill: *Am. Jour. Obst.*, 1903, xviii, 5; *Am. Med.*, Jan. 30, 1904, p. 189.

quent intervals without changing the position of the patient in her bed, or, indeed, it may be done without waking her if she should be asleep, as one of the legs of the tube can be permanently connected with the reservoir containing the flushing fluid and the other with the receptacle beneath the bed, so that the fluid can be carried into and out of the uterine cavity by continuous flow, if that should become necessary, and be stopped or started at will with a simple pinch cock.

Dilute alcohol solutions (33 per cent.) so used have given astonishing results in the after-treatment of sapremia and uterine and vaginal infections.

With this simple device for drainage and a continuous flow of boric acid solution at low pressure success has also attended efforts to close large vesicovaginal fistulas in badly infected bladders, one person having been previously unsuccessfully operated on eleven times during twelve years. Success in this instance was made possible by the perfect draining of the bladder and the prevention or solution of the ammoniacal urinary concretions and incrustations which had been deposited on the catheter and bladder walls in her previous operations.

Drainage, real drainage, of the uterus and bladder under certain conditions may be indispensable.

When irrigation of these cavities is necessary it should be made with non-poisonous solutions, and in the main with a view to their mechanical effect in flushing the cavity as in contradistinction to their chemical and antiseptic effect.

Low hydrostatic pressure should be employed and ample provision must be made for the return flow of the flushing fluid.

ABSTRACT OF DISCUSSION

DR. I. W. POTTER, Buffalo: While douching following normal labor has its disadvantages and is said to be dangerous under certain circumstances, I think it also has its advantages,

and with me it is a routine practice. I do it myself, but never do it more than once in each patient.

DR. W. W. GOLDEN, Elkins, W. Va.: I wish to add my testimony from a somewhat extensive experience to the utility of the use of douches of solutions of iodine. This solution serves a useful purpose, especially under certain conditions in which the general practitioner often has to work, when it is not convenient or possible to exercise and practice proper aseptic precautions in intrauterine manipulations. The use of iodine solutions a little stronger than usually recommended has proved satisfactory in my hands and in the hands of a number of physicians who have followed my suggestions.

DR. EDWARD J. ILL, Newark, N. J.: In considering the question of drainage of the uterus we must remember that the uterine cavity is not a hollow space, that the walls come together. No irrigation tube will separate these two surfaces sufficiently to keep the cavity perfectly clean. To do it well, the much-maligned gauze should fill the uterus. If the physician will separate those two uterine walls by gauze and through the center of it put a rubber tube up to the fundus with an opening at the end and pour a 25 per cent. solution of alcohol through it once in three hours, he can thoroughly cleanse the uterine cavity without in the slightest disturbing the patient. These septic surfaces are constantly bathed with a 25 per cent. solution of alcohol. Ahfeld describes scientifically the importance of disinfection with dilute alcohol. I have used this method for fifteen years and whenever I get hold of a patient within two or three days of the infection she recovers. If I get the case later than that, the infection has entered the lymphatics or the veins and the results are not so certain, though in many cases they are satisfactory. At the end of five or six days the gauze and tube are removed and the gauze is found to be just as clean as when it was put in. This gauze is not foul and ill-smelling and filled with all sorts of discharges from the uterine cavity.

DR. HENRY D. FRAY, Washington, D. C.: I protest against what has been said about the use of intrauterine douches after normal labor. I am sorry that the doctor who said there were certain advantages to be derived from it did not state what they were, and I can not see what the benefits are. If the labor is normal and the uterine cavity is not infected there is danger of carrying infection into the uterus by douching it. This method has been tried and we know that the morbidity and mortality have both been increased by the use of the intrauterine douche when there is not distinct indication for its employment. I agree with the essayist that it seems to be very difficult to stop this practice among obstetricians; men who are supposed to be conversant with the best methods of treatment and that they will continue to use the curette also, which I think is dangerous, unless clearly indi-

cated. I think there are distinct indications for it in some cases—infection, especially of the saprophytic kind, also septic endometritis, and when débris, foreign matter and clots have been retained. I think the effect is just as good from the use of normal salt or sterile water as from an antiseptic solution. It is the mechanical effect of the water that does good. If there is colon infection the douches are good. In streptococcus infection there is no advantage in the use of the douche. If streptococci are found, let the uterus alone after a preliminary cleansing.

One point not mentioned and which has given me much trouble is in connection with the vaginal operation for ectopic gestation with extraperitoneal hematocele; in which one opens through the vault of the vagina and through the sac, to get out broken-down tissues and clotted blood. I clean out and put in a double drainage tube, but I have not been able in a single case to prevent fever. I should like to hear the experience of some of the gentlemen in these cases. Notwithstanding my greatest care in washing out the sac and inserting a double drainage tube, I have had septic fever. All my patients have recovered, but I look for fever in such cases for about a week or ten days, and if anyone knows how to drain these cases and not have fever, I should like them to tell me.

DR. H. P. JACK, Canisteo, N. Y.: I do not believe the members of this Section, at least those with whom I have talked, know of the benefits to be derived by following Dr. Wetherill's technic. For the past five years in an extensive consultation practice I have seen many patients with septic infection of the uterus, some of the cases being of longer standing than mentioned by Dr. Hill, some of the patients almost moribund, and yet I have seen them recover under the persistent use of this technic. I commend the method; it should not be withheld in streptococcic infection. The alcohol is absorbed as well as the streptococci and how much good is done we cannot say. I have seen patients in whom the chills persisted, and multiple abscesses had formed at the points of pressure, recover under this treatment carried out for three or four weeks. I have never been able to obtain any such results with anything but alcohol, and I hope we shall have a more general use of a measure which is of such value.

DR. H. G. WETHERILL, Denver: Many of us feel that there is a very limited field for vaginal operation for ectopic pregnancy. While that field is limited, it has special indications which must be met, and one of them is "drainage," so-called, but in my judgment that is one of the forms of "drainage" to which gauze is better adapted than a tube. It approaches more nearly a need for a tampon than for a drain. My own practice, when vaginal operation is done for ectopic pregnancy, is to evacuate and pick out the clots as well as possible

and to tampon with a wad of gauze. If in my opinion this will not meet the indications, abdominal section is done. The opinion of Dr. Ill I should have a great deal of respect for, because he has doubtless had a large experience with the intrauterine douche with alcohol solutions in sepsis and I have no doubt he obtains good results by his method, but in my judgment he is entirely in error in saying that there is no cavity inside the pregnant uterus. In the ordinary case in which pregnancy has advanced beyond six or eight weeks, the uterus is flabby and soft and its walls do not fall together as in the unimpregnated uterus, but whether there is a cavity or not is unimportant. Packing gauze into the uterus and leaving the gauze as a dam and not as a drain, interferes very much with the return flow from the uterus and it makes necessary—what is not necessary with the tube alone—the removal and changing of the gauze at short intervals. This is a menace to the patient because of the risk of retrograde infection.