# NOTE ON DETERMINATION OF PATENCY OF FALLOPIAN TUBES BY THE USE OF SKIARGAN (COLLARGOLUM) AND X-RAY SHADOW.

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IN studying the problem of sterility, I am, in certain cases, attempting to demonstrate the patency of the Fallopian tubes by X-ray examination of the distribution of Skiargan after injection through the uterus and tubes. The principle is simple. If the tube be patent the shadow extends throughout its length and irregularly into the lateral pelvis. The obstructed tube shows a shortened shadow.

Mrs. B. entered Brooklyn Hospital for operation January 5th of this year. Indication for operation was recent continuous pelvic pain. Two years ago I did a Webster-Baldy shortening of the round ligaments for retroversion. Examination on admission showed uterus movable and in position. There was tenderness in each fornix. No mass was palpable. Patient neurotic and fearful of pregnancy. For the purpose of demonstration, 10 c.cm. of Skiargan was injected through the cervix while the patient was under anesthetic before laparotomy. When the abdomen was opened, the silver solution was seen exuding from the right tube. There was no flow through the left tube. As a part of the operative procedure the left tube was removed. Although when freed from adhesions it seemed normal, careful examination showed it to be occluded one-half inch from the uterine end. The Skiargan had extended to this point. The patient made a prompt and comfortable convalesence.

In taking up the question of sterility in the individual case we can seldom feel that our diagnosis is accurate or any prognosis warranted because of our inability to determine if the tubes are unobstructed. An occasional case presents a history of tubal infection with signs of diseased adnexa so evident that a temporary unfavorable prognosis is warranted. Other frank lesions may be present which prevent fertility. More frequently, however, we are consulted by the patient who has no reason to suspect pelvic disease and in whom we find no gross lesion. In these cases a careful detailed history, including an inquiry regarding sexual hygiene and compatability is indispensable. The routine study includes an examination of the vaginal and cervical secretions. We must note whether the cervical canal is obstructed by tenacious mucous or angulation, or if the secretion is destructive to the spermatozoa because of infection. Does the history indicate a condition of the endometrium unfavorable to pregnancy? Our data are only half complete without a detailed microscopical examination of the semen, which involves an estimation of the relative number of spermatozoa and the relative degree and length of activity and also the percentage of deformed and immature cells.

These questions I have discussed in a previous paper. (*Internat. Jnl. of Surg.*, May, 1912, p. 140.)

If in this large group of cases of sterility we can now bring to bear definite knowledge regarding the patency of the tubes, the most important single factor is determinable so far as the woman is concerned. An intelligent prognosis may be given. In this matter one draws attention to the frequency with which, when operating, we find clubbed tubes in the absence of any definite history of salpingitis. No doubt a proportion of our seventy per cent. of failures in treating sterility is due to this condition. With the patency or blockade of the tubes known we may avoid useless local treatment and operations on the uterine cavity or canal. The indications for artificial impregnation or conservative operation by laparotomy may be more clearly defined and the probable importance of minor abnormalities determined.

To carry out this method the patient must be in the dorsal position upon the plate with the apparatus in position to take the picture immediately after the injection of the Skiargan. A speculum and tenaculum to expose and steady the cervix are required. For injection, the Skene glass intra-uterine instillation tube with the Dickinson modification of the curve is used. The rubber bulb should have a capacity of 10 ccm. Two sizes may be at hand. The internal os must be passed but it is to be snugly fitted by the tube. After sterilization of the instruments, the cervix is exposed and wiped with iodine. The silver solution is then slowly injected after entrance of the pipette directly into the body of the uterus. The cavity of the uterus holds 8 minims as a rule. (Veit's Handbuch—Endometritis.) If uterine colic occurs, one waits. After injection the picture is made.

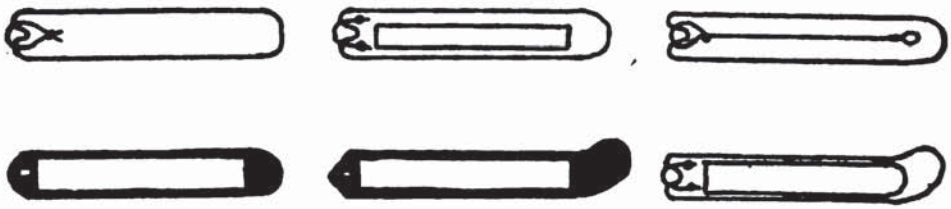
This procedure will not be safe if infection in any form exists. It is therefore contra-indicated if the history indicates a recent pelvic inflammation. Theoretically it will be unsafe indefinitely in those cases where we wish to note the condition of the tubes after post-abortal infection. After three months of freedom from acute gonorrhœal inflammation of the class of cases where the colon bacillus, typhoid, or other simple catarrahal inflammations have occurred we do not expect reaction. (Bacteriology of Periuterine Suppurations. Hartman and Marx V. Gaz. Med. de Paris 1, 9 No. 12 Mch. '94.) Cases with very little or no history of pelvic disease are our hardest problems and in this group the method is applicable. Retrodisplacement of the uterus, prolapse of the adnexa or both may cloud the picture. This may be corrected by reposition and insertion of a pessary before the injection is made. Whether the silver salts thus used have any desired therapeutic action we are not ready to state. I hope to make a more complete study with report of cases later.

DR. JULIUS T. ROSE presented notes on "Large silver stem pessary as substitute for glass intra-uterine stem. Glass stem found broken in the uterus."

DR. ROSE:—I operated on a patient last June in Brooklyn Hospital for dysmenorrhœa and sterility and inserted an ordinary glass stem, held in by silver wire and small lead shot. I examined her when she went home at the end of two weeks, and again a few days later. Both examinations showed stem in good position and unbroken, but the shot had been pulled beneath the mucous membrane. Two days later, on examination, I found that the eye of the stem had broken off, leaving a very jagged prominence at one edge which rested on the posterior vaginal wall. Fortunately no damage had been done, but the possibility of harm presents itself at once from such a condition. Why it should have broken I do not know. It is often broken at the time of insertion by the passage of the wire or needle. I thought I might get some form of

stem made to prevent the eye from breaking at the time of insertion or later, and for this purpose I had a platinum loop placed in the glass stem where the silver suture went through. Then the idea came up that possibly a metal stem might be made instead of glass, thus avoiding any chance of breakage. I found that Dr. Dickinson had used the hollow sterling silver stem. I made up some metal stems which you will notice look like pure silver, but are only a cheap metal silver plated. I should like to have criticism as to their weight and size, and what objection might be made to the plating; is it as reliable as a sterling silver stem? The stems are first made of solid metal, formed and polished. Then the end is sawed off that has the eye and a hole bored out leaving a thin light shell closed at the rounded end. Then the cap containing the eye is cemented on, and the hollow metal stem is heavily silver plated. A very unfortunate thing also occurred in this case. I used perforated shot clamped on to hold the silver wire at the back and front of the cervix, and the shot became imbedded in the cervix beneath the mucous membrane. The broken stem came out readily, but I could not get hold of the shot either front or back. I finally succeeding in getting the one in front out from under the mucous membrance, but I could not get the silver wire out because traction caused so much pain, so I had to give the patient gas to remove it. I then had some flat pieces of lead made to use in the form of a bar. (Diagrams) These can be readily made of any length or weight desired, and when clamped on to the silver wire will hold without being buried beneath the mucous membrane. I have noticed in the cervix that there is often up near the internal os either a false passage or a valve-like piece of membrane which obstructs the entrance of the stem. The stem I have made to overcome that obstruction has a tip like the end of a Coude catheter, so that if it starts to go into the false passage it can be turned in the canal and the tip will then slide by the obstruction. A straight stem would hardly enable one to change the direction, but with the oblique tip, one is able to turn the point in the proper direction. This oblique tip is good also because it corresponds more nearly to the curve of the posterior wall of the uterus and is less likely to cause dangerous pressure.

Dr. Rose illustrated the style of stems by diagrams on the board.



Wire loop for eye in glass stem, solid or hollow. Wire clear through glass stem.

Hollow metal stem. Silver plated. | Hollow metal stem. Oblique tip. Silver plated. | Hollow glass stem. Oblique tip.

Dr. Baldwin:—Glass stems will break sometimes. I once had one break and it was hard to remove it. It was then that I had the eye made by bending over the drawnout end of the stem, and none has broken since. As to criticism of the silver stems; they seem to be too heavy. The other are lighter and patients will carry them for months. I think the lead plates are too long and will undoubtedly cut into the cervical tissue if they are allowed to remain any length of time.

Dr. Dickinson:—I have experience with silver stems, which were made of pure silver hammered out and hollow. They are lighter than glass. The great new thing in Dr. Baldwin's stem is the absence of pressure on the vaginal wall, they are intra-uterine, and those hidden within the uterus are best. If two wires are used why not four. Stems are so valuable that we must keep trying, but with the knowledge that they must not stick out of the uterus and rest upon the vaginal wall. All of these ideas must be given a trial by Brooklyn physicians as they originated here.

Dr. Judd:—Dr. Bonner suggested the use of ordinary buttons for the wire to pass through in holding in the stem, which seems better than the lead plates.

Dr. Taylor:—Lead buttons, made something like a collar button are made for this purpose, and are illustrated in all catalogues.

Dr. Pomeroy:—I might merely mention the fact that in imitation of Dr. Baldwin's button I put a stem in a patient early this week and instead

of using a button I used a ten cent piece and I am waiting to see if it makes a satisfactory retainer.

DR. CARY:—I have had experience with two cases of broken stems; one of the cases my own and one of Dr. Dickinson's. One patient came with the stem protruding from the cervix, and I was very much surprised to find that the eye had been broken and the stem had remained and was protruding. It was easily removed. The other was broken diagonally at the eye. The patient had no knowledge of its occurrence. In that case there was a sharp edge which had imbedded itself in the posterior wall of the cervix, and I had trouble to locate the buried point. By a screwing motion I was able to raise the stem into position and then with forceps succeeded in removing it. In one of these cases I had placed the stem with a silk wound gut suture and in the other Dr. Dickinson operated, using a large wire loop.

DR. HOLDEN:—In the event of a cracked stem it seems as though it must have been cracked at the time of introduction. If perfect after it has been sutured in position it should remain so.

DR. MACNAMARA:—Dr. Cary's paper interested me very much as I am greatly interested in the study of the internal organs by the X-ray method. I do not know how any picture could be taken of the tubes which would not be interfered with by the pubes and pelvic bones. It is working in a very useful direction.

DR. ROSE:—The reason why I was trying to get something different from the solid hammered silver was the matter of cost. Silver plate on an inexpensive metal is all right, and I cannot see a difference between the silver plated stem and the solid silver stem, and it is a question of two and one-half to three dollars for one and twenty-five cents for the other, and that is an element of practical importance.