Clinical Notes, Suggestions, and New Instruments

A RUBBER ENVELOP ABDOMINAL PAD

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At a meeting of the New York Obstetrical Society, Dec. 11, 1917, I made a preliminary report on a device I am now using in abdominal work, for the purpose of keeping the intestine away from the field of operation without inflicting injury to the peritoneal covering. It may be of interest in this connection to recall that the first material popularly adopted to prevent the intestines from protruding from the abdominal wound and from entering the field of operation was the elephant ear, or flat sea sponge. Next in order was gauze, the introduction of which encountered much opposition. Gauze was used in the form of pads or strips, first dry, then wet, and more recently, gauze pads dipped in melted wax. The sea sponge was soft and supposed to be nonirritating to the peritoneum; but in reality it was irritating, as it held in its interstices innumerable silicon needles which were very sharp and constantly in action and being dislodged. The particular reason for the sponge holding its sway for so many years was its power of absorption; but when it was discovered that complete sterilization of it was not always possible without destroying its usefulness, it was abandoned, and gauze was substituted. Although gauze has not the same absorptive capacity as the sea sponge, it can be sterilized without injury, and for that reason, chiefly, it was substituted for the sponge and has ever since been in vogue. Its roughness, however, has long been recognized as acting injuriously to the peritoneum; gauze, therefore, is objectionable. Many efforts have been made to eliminate this objection; one of the best is the wax gauze pad mentioned before. Though this pad possesses some advantage over the plain gauze pad, it has no power of absorption, and when it is manipulated in the abdomen, particles of wax may break off and, as foreign bodies in the peritoneal cavity, may become disturbing elements.

There is a striking similarity in the evolution of the technic for protecting the peritoneum from infection and injury by the hand, and that of protecting it by means of the rubber envelop to be described. The hand was first used uncleansed, as was the sea sponge. Next it was washed and further cleansed in a mild solution of phenol (carbolic acid), as was the sea sponge. The cotton glove was then introduced, at about which time the gauze pad was substituted for the sponge. Next followed the only positive and practical protection, namely, the rubber glove, and now the rubber envelop, in which there is a resisting and an absorbing pad.

This rubber envelop is made from ordinary rubber dam cut into sheets of 16 by 8 inches and folded so as to measure 8 by 8 inches. The lateral borders of the larger size envelop are glued together with rubber cement, the remaining free edges are folded on themselves to an extent of one-half inch or more and thus cemented, and through the middle of each reinforced border, an opening is made sufficiently large to permit the passing of the tape attached to the pad within. The material out of which the pad within the envelop is made should possess considerable resistance and pliability. As the result of experiments, I have found that four thicknesses of a cotton towel best meet these requirements. The edges of these four layers are sewed together, and a tape 10 inches or more in length is doubled on itself and sewed to the middle of one border. The measurements of these pads are just a little less than those of the envelops. After being placed in the envelop, the pad is kept in position, and the envelop is closed by the passing of the tape through one and the other opening in the free borders of the envelop.

Although the pad is in this manner prevented from coming in contact with the intestines, the envelop is not completely closed, with the result that fluids of the abdomen can in part enter the envelop and be absorbed by the pad.

This rubber envelop pad possesses every advantage over all forms of gauze. Any woven material like gauze, coming in contact with the peritoneum, must injure it more or less; but the rubber envelop pad may remain in contact, and under considerable pressure, for an indefinite time without occasioning an appreciable injury to the peritoneum.

When gauze pads are used in intra-abdominal work, particularly in a prolonged operation, it is not an uncommon experience to find them adherent to the peritoneal surfaces of the intestine and field of operation. The rubber envelop pad, even under the most trying conditions, with respect to length of time and severity of operation, does not adhere to the peritoneum, and leaves the peritoneal surfaces showing the same color and gloss they possessed before operation. Two of these larger pads, or at the most three, are sufficient to keep the intestines away from the field of work. If the operation is of the character that demands absorptive material, that is, one in which pus escapes or a considerable amount of blood is lost, gauze pads to any number required can be placed in front of the rubber envelop pads and used as sponges without injury to the peritoneum.

Before the rubber pad is handed to the surgeon during the operation, it should be dipped in warm sterile water, then folded on itself, and grasped at its distal border with a ring probang or sponge forceps.

In pelvic work, if Trendelenburg's posture is used, the intestines are removed from the pelvic cavity and the rubber
envelop pads are placed first in the cecal region, then in the sigmoidal region, and a third, if necessary, is placed deep in the pelvis, its upper border meeting at the middle the other two pads previously inserted. If Trendelenburg's posture is not used, the pads are so placed as to surround the immediate field of operation.

No instrument that has rough or cutting surfaces should be used on the envelop. The pads should be removed from the abdominal cavity by means of the tapes and never with the forceps. The longevity of the envelops depends on the way they are handled. For sterilization they require only ordinary boiling in water five or six minutes, and during the interval between operations they can be sterilized again, and used in successive cases, provided a sufficient number of sterilized towel pads have been prepared to meet the demands.

The narrow envelop pads are particularly adapted to operations in which small incisions are used, such as for the removal of the appendix, gallbladder operations, and operations in which the peritoneal cavity is entered through the vagina. The pad used within the narrow envelop should consist of two thicknesses of towel. To facilitate the placing of the pad, a small opening is made in the closed distal border through which forceps are passed to adjust the pad.

In the smaller envelop a long strip of gauze 4 inches wide may be inserted in place of the towel pad if desired, to which is attached a 10 inch loop of tape. In this way a rubber bolster is formed, which would act practically the same as does the larger rubber envelop with towel pad, if folded once on itself.

Six envelop and twelve or more towel pads are sufficient for active work in any operating room.

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AN APPARATUS FOR HOLDING THE FOOT IN FLEXION AND INVERSION

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A certain number of cases are presented to the surgeon in which there is stiffness or limitation of motion about the ankle joint that will show a tendency to improve under ordinary routine treatment, but in which, nevertheless, it would be an advantage to have constant traction in the position of dorsal flexion and inversion. For this purpose I have devised and used with good advantage an apparatus that will keep the foot in the position desired day and night if necessary.

The apparatus consists of two main parts: 1. A canvas cuff used in a manner similar to the so-called foot-U. This cuff two buckles are attached obliquely, one on each side. 2. A stirrup made of mole skin elliptically shaped that fits under the ball of the patient's foot. To this end of this stirrup are attached two elastic bands one-half inch wide and about 18 inches long made of good strong material. To keep the stirrup firmly on the foot and prevent lateral sliding, an elastic strap and buckle is tuzzo to the inner side of the stirrup, which buckles over the dorsum of the foot.

Ordinary buckles are used, and by simply buckling the elastic straps in the buckles of the cuff, one may apply and maintain the proper degree of traction. In order to hold the foot in inversion, a greater degree of traction is exerted on the internal strap. In one case in which there was a considerable amount of atrophy of the calf muscles, the cuff would tend to slide down the leg. Here I found that by adding an additional cuff fitting above the knee and attached to the calf cuff by lateral adjustable straps, this sliding would be overcome and the degree of traction would not be altered on flexion and extension of the knee.

The practical advantages of this apparatus besides the above mentioned ones are the low cost of the apparatus, the ease of its application and the simple adjustment by the patient himself.

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AN IMPROVED CALIPER METHOD FOR ROENTGEN-RAY LOCALIZATION OF FOREIGN BODIES

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The caliper method requires much calculation, and is subject to error. We have devised a slide rule that enables one to read the depth without calculation.

Slide rule for measuring the depth of foreign bodies.

Metal pins are placed, like the rungs of a ladder, 1 cm. apart, and the ladder is placed perpendicularly between the table and the screen with the tube beneath the table, and the target 60 cm. from the screen. The tube is so placed under the ladder that the shadows of the pins are as but one in the central day; the screen is replaced by a plate, and a brief exposure is made with the diaphragm closed to admit only the central ray, to obtain 0. The tube is then shifted 12 cm. and a roentgenogram made on the same plate. This scale is transferred to the instrument illustrated, and thus the one minute depth measure is secured.

The point 12 cm. to the left, marked B, indicates the distance of tube shift. This replaces all tube locks on the table. The second slide registers the foreign body and skin marker at once. These improvements enable the operator to make all measurements at one lighting of the tube.

This instrument is used in the following manner: The foreign body is located by use of the screen; the tube and the screen are shifted so as to bring the foreign body into the central ray; a skin marker is placed in the central ray over the foreign body. Point A is placed in the central ray over the foreign body and the skin marker, the tube is shifted until point B appears in the central ray, and we know the tube has been shifted 12 cm.; now the diaphragm is opened, C is placed over the shadow of the central ray, and we know the tube has been shifted 12 cm.; now the diaphragm is opened, C is placed over the shadow of the skin marker, and point D over the shadow of the foreign body; the reading at C, which represents the distance from the skin marker to the screen subtraction from the reading at D gives the exact depth of the foreign body in centimeters. This instrument can be used equally well on plates, provided the distance is 60 cm. and the shift 12 cm.

The principal advantages of this instrument over other instruments used in the triangulation method of localization are: No plate is needed; no calculation except the simple subtraction is required; there is no locking of the tube, as the shift indicator point indicates the exact shift of the tube, and all measurements are taken at one lighting of the tube.