SUCTION TIP FOR ASPIRATION IN ABDOMINAL OPERATIONS.

BY EUGENE H. POOL, M.D.,

OF NEW YORK,

Attending Surgeon to French Hospital; Associate Attending Surgeon to the New York Hospital.

AN apparatus for aspiration, described by J. H. Kenyon and E. H. Pool, in *Surgery, Gynæcology and Obstetrics,* December, 1909, is in daily use in the operating rooms of the New York Hospital. The details of the apparatus and its manifold uses were given in that article.

We have found the procedure especially serviceable in operations within the peritoneal cavity for the rapid removal of large accumulations of pus, blood, and other fluids; also, as a substitute for or adjunct to gauze sponging in the removal of small amounts of pus and blood, since its use entails much less trauma to the peritoneum than is produced by sponging with gauze. These applications of aspiration have been adopted by others with some hesitation, because it is not generally understood how any tube connected with powerful suction can be passed into the abdominal cavity without drawing into its lumen intestine or omentum, thus becoming plugged and causing injury to these structures. Such incredulity has led to this report.

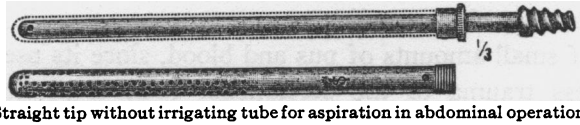
The important feature of the apparatus in abdominal cases is the tip, which consists of an inner, suction tube, and an outer, protecting tube. The inner tube has two openings at its tip. The outer tube has numerous perforations in its distal third and several openings at its proximal or outer end so arranged that the hand of the operator cannot occlude them. These openings at the outer end allow a column of air to pass freely from outside of the wound between the outer and inner tubes to the end of the inner tube. In consequence, a vacuum cannot be formed under any conditions. Therefore, while

fluids which are not too dense and viscid pass through the lumina of the outer tube to the tip of the inner tube where they are aspirated, the intestine or omentum is not sucked into the fenestrations. In its daily use at the New York Hospital for about six years no recognizable injury has resulted.

Many varieties of tips have been made and tried. The one that has finally proved most satisfactory for routine work is a *straight tip without irrigating tube* (Fig. 1). The irrigating tube has been eliminated as unnecessary. In this respect we have reverted to our original type. In the rare event of irrigation being indicated, a separate irrigating nozzle may be inserted by the side of the suction tip.

A few words in regard to our experience as to structural details may be appropriate. As originally made, the tips presented three objectionable features. The tip of the outer tube

FIG. 1.



Straight tip without irrigating tube for aspiration in abdominal operations.

was composed of a separate piece of metal cemented to the main tube. It frequently separated when the instrument was dropped. The curved outer end of the inner tube occasionally became acutely bent or broken as a result of rough usage. Finally, the end for connection with the rubber tubing was difficult to adjust. In the present model these disadvantages are avoided. The tip of the outer tube is made of the same piece of metal as the rest of the tube. The inner tube is comparatively heavy and straight with a coarse screw-thread olivary end for connection with the rubber tubing. The straight tube has proved much stronger than the bent, and the olivary end ensures a satisfactory and easy connection with the rubber tube. The tip here described is of convenient size and its strong construction enables it to withstand constant rough usage.

While suction may be produced by various methods, we

use an "ejector" attached to the steam pipe in the engine room, whence a metal pipe leads to the operating room. A non-collapsible rubber hose (known to the trade as "pressure" tubing or "four-ply insertion" tubing) leads from the suction pipe to a gallon bottle under the operating table. It is essential that non-collapsible tubing be used. From this bottle a comparatively short hose of the above material leads to the operating field. When instruments are prepared for operations, the suction tip and the rubber tube leading from the bottle to the field of operation are boiled as routine and are always ready for instant use.