If, as in Cases 5, 6, and 9, the lateral lobes are much enlarged the finger can be insinuated within the capsule and the adenoid masses can be enucleated with very little difficulty.

Lastly, all loose pieces of tissue are cut away and the parts are left as smooth as possible. In order to disturb as little as possible the cellular surroundings of the bladder the edges of the vesical opening are fixed temporarily to the margin of the wound by a suture on each side before any intravesical manipulations are commenced.

I have found suprapubic drainage efficient in all the cases, and have not thought it necessary to drain through the perineum. In the after-treatment boracic acid is given thrice daily, and the bladder is washed out once or twice daily by syringing a solution of boracic acid through from the urethra to the drainage opening. The drainage tube is removed if possible on the third day, and the patient is allowed to sit up within a few days of the operation. I find that as a rule recovery is attended with very little general disturbance or discomfort, and that the urine begins to be passed by the urethra soon after the patient is allowed to sit up.

In conclusion, I consider that the operation of suprapubic prostatectomy in properly-selected cases is one attended with less danger than is usually thought, and that if thoroughly and completely performed it is capable of affording such relief as may be in many instances genuinely termed a cure, and that in a class of cases which until a few years ago were looked on as incurable.

A MODIFICATION OF THE OPERATION OF CIRCULAR ENTERORRHAPHY.

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THE history of the operation of circular enterorrhaphy shows a constant effort on the part of surgeons to invent some method which would render the insertion of sutures into the bowel more easy, or make their employment partially or wholly unnecessary. Some, however, who speak with authority maintain that all mechanical appliances are unsurgical, useless, or positively harmful.

OBJECTIONS TO SUTURES.

Before drawing attention to a new method of operating in which sutures are supplemented by the use of a decalcified bone tube, I had therefore examined the case for sutures alone, and tried from published cases to justify the position taken up by those who advocate their employment unaided; but this led me to such lengths that I have been obliged to omit the grounds on which my conclusions are based, and simply to state these unsupported by the facts from which they have been deduced.

Briefly the cases in which sutures are employed alone show a high rate of mortality, death being due either to (1) collapse, (2) peritonitis, or (3) intestinal obstruction.

Collapse, when the operation has not been undertaken in an already hopeless case, depends on the length of time necessarily taken for its completion.

Peritonitis is due in a large number to faecal extravasation owing to defective suturing.

Intestinal obstruction is caused by the swelling of that part of the bowel turned in towards the lumen in order to secure apposition of the serous surfaces.

I am convinced, therefore, that sutures in all cases take an excessive time for their accurate introduction, in many when introduced do not hold, and in some, when holding, defeat the ends in view by failing to relieve the condition for which the operation was undertaken.

No better argument that sutures are defective could be advanced than the number and variety which have been from time to time advocated; and the same may be said of the tubes, rings, plates, and bobbins, many of which have been described since mine were first made, now some three years ago.

THE USE OF DECALCIFIED BONE TUBES.

The form of tube which I have employed in seven experiments performed upon dogs during the past year at the

laboratories of the College of Surgeons, the results of which are detailed below, is shown in Fig. 1.

Fig. 1

It is made of bone decalcified in nitric acid, and hardened and preserved in spirit. For use in the human subject the most convenient length is 2 inches, and sizes vary-

Fig. 2.—First stage of operation.

ing in diameter from $\frac{1}{2}$ inch to $1\frac{1}{8}$ inch should be kept in readiness, as the rapidity with which the operation is completed depends largely upon the tube fitting easily, but,

Fig. 2. Operation complete.

at the same time, without too much room to spare. Around

the centre of the tube run two grooves $\frac{1}{4}$ inch apart, sufficiently deep to prevent a ligature from slipping, and the intervening portion is on a slightly lower level than the rest of the tube, in order to allow the fold formed, when the operation is completed, to lie smoothly.

The experiments were performed as follows, a smaller sized tube of course being used than that above described. A coil of small intestine was withdrawn through a median incision, and 3 or 4 inches of its length resected. A stitch was then passed through all the coats of the bowel and the mesentery of one side and then on through mesentery and bowel of the other and tied, thus bringing the divided ends together and preventing retraction of the mesentery. The tube was then inserted and the two ends slipped together evenly over it; each was in turn brought down well over its corresponding groove in the tube and firmly secured by a circular ligature passed through the gap in the mesentery. The part beyond the ligature was trimmed with scissors to remove any excess of tissue in that situation. The seat of operation was well flushed with carbolic lotion, and the enterorrhaphy completed by bringing the serous surfaces together with Lembert's sutures, five in number, one on each side of the mesenteric attachment, the remainder round the rest of the circumference.

OPERATION I. May 30th.—On June 5th the abdominal wound reopened and the animal was therefore at once killed. On *post-mortem* examination the omentum was found firmly adherent to the scar. There was no leakage under considerable pressure of water. On stripping off the omentum which required considerable force, the ends of the bowel were separated for a little space opposite the mesenteric attachment; everywhere else union was good. In spite of this slight imperfection the ultimate result would in all probability have been good as the space was quite closed by adherent omentum and plastic exudation.

OPERATION II. July 17th.—On August 30th the animal was killed while in perfect health. *Post-mortem*: The proximal and distal portions of the intestine were seen to be of the same size. There was no contraction of the scar. Inside the scar was found to be represented by a flattened band scarcely projecting at all into the lumen of the bowel.

OPERATION III. July 31st.—The animal was killed on August 30th, while in perfect health. *Post-mortem*: The intestine was seen to be rather sharply kinked, and the proximal side slightly dilated. There was no contraction of the scar. Inside the scar was represented by a fibrous ring projecting somewhat into the lumen, but admitting the end of the index finger.

OPERATION IV. August 9th.—The animal was found dead on August 14th. *Post-mortem* examination showed general peritonitis, due probably to introduction of septic matter at the operation, as there was no leakage from the bowel.

OPERATION V. October 23rd.—The animal was killed on January 18th, while in perfect health. On *post-mortem* examination, no dilatation of the proximal side was found, and no contraction of scar.

OPERATION VI. November 14th.—The animal was killed on January 18th, while in perfect health. On *post-mortem* examination slight dilatation of proximal side was found, but no contraction of scar.

OPERATION VII. November 16th.—The animal completely recovered from the operation, but died suddenly on December 13th. *Post-mortem*: On the distal side of the scar the intestine was collapsed and empty. The proximal side was dilated to three or four times its normal size, forming a pouch, which contained a hard mass of short straws and pieces of bone, with difficulty broken up and removed. No contraction of the scar was visible from the outside, and on introducing the finger it passed readily through a thin fibrous ring.

Thus, of the seven dogs operated upon: One died on the fifth day from peritonitis, one was killed on the sixth day, one died on the twenty-seventh day from obstruction, one was killed on the thirtieth day, one on the forty-fourth day, one on the sixty-fifth day, and one on the eighty-seventh day. In all the immediate results were good, there being no escape of feces; and in the five which lived for periods ranging from one to three months the condition of the scar was satisfactory.

From the above results I think it may fairly be claimed that the tube I have described satisfactorily meets the objections I have stated to exist in the unaided use of sutures.

(1) It reduces the time necessary for the performance of the operation enormously. This it does by—

(a) Securing absolute steadiness and close approximation of the divided ends.

(b) Lessening the number of sutures required.

(c) Rendering absolute accuracy in the manner of suturing unnecessary, since all that is required is that the serous surfaces should be approximated, the circular ligatures, not the sutures, preventing faecal extravasation.

(d) The immediate restraint of all hæmorrhage from the divided ends by the circular ligatures.

(2) It completely and absolutely prevents escape of the intestinal contents till the tube is absorbed, and prevents the

contact of faecal matter with the sutures, so that union is rapid and sufficiently strong of itself to prevent extravasation when the tube becomes inefficient.

(3) Obstruction by swelling of the edges is impossible owing to the presence of the tube.

No less important than the immediate result is the ultimate behaviour of the scar; and, since this being circular is necessarily badly placed, no effort should be spared to render it otherwise satisfactory. True, in time the contractility of a scar in the intestine may tend to disappear, but the wider the band of uniting material, and the more it encroaches upon the lumen from the first, the less likelihood is there of this result being attained.

In both of these respects the use of the tube contrasts favourably with that of sutures. In the former the intestine is united by a thin layer thrown out between the ends, which are in contact at one point only all the way round, in the latter between a considerable width included between the two rows of stitches. In the former, too, the scar at first does not project into the lumen at all, while in the latter the projection inwards from the first is considerable—in some cases so great as to produce obstruction, as mentioned above.

The description I have given of the operation presupposes the fact that the two ends to be united are approximately of the same size; but should one be larger than the other, a slight alteration in detail, whereby the smaller is invaginated, is easily carried out, and is equally satisfactory. In cases where the disproportion was very great, it might be convenient to have the tubes made conical instead of cylindrical as figured in the diagram.

CONCLUSIONS.

In conclusion, I would insist upon the following details, as more or less essential to the success of the operation:

1. The ends should be drawn together by a single stitch through the mesenteric border, before the tube is introduced.

2. The circular ligatures should not be passed through the mesentery, but through the gap and then round the bowel. The former, though slightly easier, might subsequently produce trouble in two ways; for since the vessels pass in a circular manner round the intestine, the part beyond the ligature might not have its blood supply cut off, and thus might continue to pour out its secretion, which would collect in and distend the space enclosed between the tube and the row of sutures, and then burst into the peritoneal cavity. Later, if this danger were escaped, a polypoid mass projecting into the intestine might result.

3. Too much rather than too little should be included beyond the ligatures, as any excess is easily removed with scissors, whereas, if too little be taken, a portion of the circumference may escape inclusion. If this occur, a second ligature should be applied without removing the first, special attention being paid to the part which at first escaped.

4. Before approximating the serous surfaces, the parts between the ligatures should be thoroughly cleansed to remove any faecal matter which may be adhering to the mucous membrane.

6. In the experiments interrupted sutures were used, as the thick intestine of the dog rendered a continuous suture unsafe; but in human intestine a continuous suture answers well, and is quickly applied.

The tubes have been made for me by Messrs. Maw, Son and Thompson.

THREE CASES OF INTESTINAL OBSTRUCTION TREATED BY LAPAROTOMY.

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In some remarks on a case of intestinal obstruction by a band, which was successfully treated by laparotomy, published in December, 1890, I ventured to insist on the necessity of early surgical interference, and I added that until this doctrine was recognised as a surgical canon it was desirable to record every case with the conditions determining failure or success.