

## DRAINAGE TUBES IN UROLOGY\*

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My attention was first drawn to the importance of the accurate placing of drainage tubes long before I confined myself to urology, at a time when I was doing a fair amount of gall-bladder surgery. I did not always drain the gall-bladder area after cholecystectomy, but when there was a likelihood of the oozing of blood or bile I found that if I stitched my drain lightly to a non-vascular fold of peritoneum in close proximity to the area I wished to drain, the patient convalesced better and quicker than if I merely 'popped in' a tube. I am sure that a tube just 'popped in' wanders away from the vital area it is supposed to drain owing to respiratory movements, coughing, tossing around, bowel movements, etc.; and the result is that the whole peritoneal cavity must first of all fill up with blood and bile before these fluids find exit along the drainage tube, and there is increased tendency to ileus, peritonitis, pain, and residual abscess formation.

A drain was 'popped in' at an operation I witnessed for removal of a stone from a ureter at the pelvic brim. The patient leaked urine here for weeks, even after the ureter was catheterized transvesically. Eventually extensive scar tissue formed, the ureter became stenosed and, when this was explored and the ureter

mobilized, the common iliac vein was so adherent to the ureter that it was torn into with what might have been serious consequences to the leg. The kidney was so damaged that in the end a nephrectomy had to be done.

The *pathological process* is as follows: The drain that has been 'popped in' moves freely in the extensively dissected cavity, so that urine fills the cavity before it finds the tract alongside the tube. The ureter had already had its blood supply interfered with by dissection, and now it is surrounded by urine with its necrotizing effect. This leads to devitalization, a big cavity which turns septic, and extensive scar formation around a severely damaged ureter. What can we expect but extensive stricture formation with all its accompanying risks and complications?

*To avoid this*, use corrugated tubing two or three gutters wide (or other rubber tubing) with the end cut smoothly round. Anchor this end in close proximity to the area you wish to drain, by means of thin plain catgut. If one has done a uretero-lithotomy the stitch is put through the fascia over the psoas muscle, for example, and the end of the tube is so placed that it does not actually rest on the stitches placed in the ureteric wall.

I almost always bring the drain through a stab wound and not through the main wound. This has the advantage (a) that you

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can stitch the main wound more securely, and (b) that if you are draining a septic area the main wound does not become septic. If you have reason to fear that it might become septic, place in it small separate drains, draining only the layers of the abdominal wall. This avoids prolonged wound sepsis, breaking down of the wound, and the development of hernia.

One point about stab drains: There is no need to force your knife right through the whole thickness of the abdominal wall. By so doing you run a risk of stabbing a large vessel. Merely cut through the skin, force a large artery forceps through the other layers, and open it widely; then grasp the tube and bring it out.

If there is a near-by stitch, put the safety pin under the stitch and through the tube. If there is no stitch, make a hole through the skin in order to anchor the tube, which should be secured, not only against slipping inside, but also against coming out when the nurse struggles to get hard caked dressings off the wound. When a tube is removed too early there is not yet an adequate tract through which urine, pus and blood can find their way out, and abscess cavities form inside muscle layers that have closed over, with consequent pyrexia, destruction of tissues, etc.

When the tube is shortened, pull the pin just far enough out to release the tube, but leave the pin through the skin. It only hurts to pull it right out and then to push it in again through the same hole. The thin plain catgut by which the tube is anchored will allow the tube to be partially withdrawn 3 or 4 days after its insertion, by means of a gentle tug. Urine, etc. find their way along the tube without first having to spread far and wide, and when 3 or 4 days later one shortens the tube by half an inch, tissues fall in behind the tube, thus closing the fistula. By this time a fairly good tract has formed and surrounding tissues have adhered to one another beyond the actual leaking area; thus the main danger of big cavity formation has been avoided. It now only remains to shorten the tube judiciously day by day, according to the amount of drainage. If the amount is gross, then do not shorten; if little or none, shorten fairly rapidly.

My experience in a considerable number of cases so drained has been that there has been slight or fair drainage for the first 24-48 hours, and then the tract closed spontaneously, sometimes soon after the first shortening, sometimes even before the tube is shortened at all.

#### Types of Operation

This method of drainage has been found advantageous in the following operations:

(a) *Uretero-lithotomy.* This is probably the most important indication for attending to the minute details that have been mentioned.

(b) *Renal pelvis operation.* In this it is my practice, after having repaired the pyelolithotomy incision, to stitch the corrugated drain to a thin piece of tissue just lateral to the suture line, so that the drain never lies on the stitches and over the wound in the pelvis.

For large hydronephrotic pelvises I have done the Heyns-Anderson pyeloplasty with good results and, even in babies of a few months old, it is usually not necessary to splint the pelvi-ureteric anastomotic site with an indwelling catheter; but, especially in children with thin ureters, where oedema after the operation could easily block the pelvic outlet and so cause a break-through somewhere else in the newly constructed pelvis, I deliberately cut a window in the posterior wall of the pelvis, and to the edge of this window I secure a corrugated drain. Urine leaks out here freely for 2-3 days, and yet, because the drain is not in the kidney pelvis or ureter, these cavities do not become infected. (On the same principle one incises a septic joint and then secures the drain to the capsule, but not *into* the capsule.) After 3 days the drain is shortened by  $\frac{1}{2}$ -1 inch. By this time there is a tract along which urine can reach the drain, but if the pelvi-ureteric junction is adequately patent, tissues quickly fall in and shut the 'window' off. Some of these cases do not leak urine at all, or perhaps only for 24 hours. In such cases one could perhaps have dispensed with the window and the drain, but I have never found them do harm or delay healing and convalescence in any way.

(c) *Uretero-sigmoidostomies and uretero-ileostomies.* In these I similarly drain the anastomotic sites. Even if there is no urinary leakage, a fair amount of serum always comes out past the drains, and it is comforting to know that urine or bowel content will have ready exit should anything go wrong with one's suture lines.

(d) When *draining the retropubic or prevesical space* one is draining a cavity with rigid walls. Here there is no need to secure the drain with stitches, but it is nevertheless important to place it accurately, and to secure it to the skin in some way; for I am sure that if this drain is removed too soon, by accident or on purpose, then there is a real danger of retropubic abscesses and osteitis pubis.

(e) *After removing large vesical diverticuli* it is again an advantage to stitch the drain near where the neck of the diverticulum was cut through, because leakage not infrequently takes place at this site.

#### SUMMARY

Reasons are given why accurate drainage should be instituted after the opening of urine-carrying hollow organs.

Details are given of how this can be achieved.

A few operations are quoted where such drainage has been instituted with satisfying results.