AN IMPROVEMENT IN THE TECHNIQUE OF CATHETERIZATION OF THE URETER IN THE FEMALE.[1]

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WHILE much advance was made in the difficult matter of ureteral catheterization by Pawlik, Simon, and others, who used the tactile method, there can be no doubt that to Dr. H. A. Kelly belongs the credit of a practical suggestion which made the procedure feasible in nearly all cases. This suggestion consisted in the elevation of the pelvis, thus causing distention of the bladder with air, when a catheter or speculum was in the urethra to allow its entrance. The gravitation upward of the pelvic contents raises the base of the bladder and so disposes the trigone and the region of the ureteral orifices that these can be seen by direct light from a head-mirror through a simple tubular speculum open at both ends. Suitable dilatation of the urethra is premised.

While this sounds simple in statement, considerable practice and not a little dexterity are required before the operation of introducing a catheter into the ureter can be accomplished. The mere recognition of the orifice, for example, is by no means easy when the neck of the bladder is covered by easily-bleeding and exquisitely-tender granulations, as in two of my cases. Many tiny depressions between granulations greatly resemble it.

The location of the orifice with relation to the urethra also varies, though ordinarily it may be found by directing the specu-

[1] Read before the Surgical Section of the College of Physicians of Philadelphia, April 12, 1895.

lum at an angle of thirty degrees from the long axis of the body. In my hands, however, especially in cases where pelvic inflammation interferes with the mobility of the pelvic contents and a favorable disposition of the bladder wall, the chief difficulty and annoyance consists in the rapid filling up of the field of search by a few drops of frequently turbid urine as it escapes from the ureters, and, under some conditions, the formation of large bubbles in the speculum caused by respiratory or other movements of the patient. This is of the more importance as a prolonged search for the orifices is not infrequently necessary. Dr. Kelly[1] reported recently a case where, owing to disease of the base of the bladder, he had many discouraging failures before succeeding. In order to keep the field dry during this search, Dr. Kelly uses a long, soft rubber tube, with a suction bulb on the end. This is put through the speculum from time to time and the major portion of the urine withdrawn, while the field is afterwards dried by mopping with little balls of cotton held in forceps. These manipulations result not only in discontinuance of the search, but often, from movements of the patient, of the speculum, of the artificial light or the mirror, the field is lost, perchance, at the moment of success.

One of my patients flinches in spite of cocaine and moves the whole body every time the cotton touches the inflamed bladder wall, causing most annoying loss of field and refilling the speculum with urine. It was to remedy this difficulty of constant interruption that the appliance here shown was devised. It is intended to supplement Dr. Kelly's method and make it more easy of application. It consists essentially of an apparatus which will cause suction of air constantly through a fine tube, which extends to the internal opening of the speculum,—that is, to the field of work. There are necessary a hand air-pump, a bottle with perforated cork through which two tubes pass. Two pieces of light rubber tubing, one connecting the pump with the air-bottle, the other connecting the air-bottle with the tube (or catheter) extending to the field of work. The apparatus is not unlike the ordinary surgical aspirator with all valves open.

[1] Johns Hopkins Bulletin, February, 1895.

To the suction tube is attached, in one arrangement (Fig. 1), the end of a ureteral catheter constructed with a single opening, and that at the point and not at the side. If now the air-pump be kept constantly and gently at work while search is being made with this catheter through the speculum, any urine which may appear in the field is at once whipped off by suction through the ureteral catheter to the bottle, and the field will thus be kept dry indefinitely. It is not intended that a decided vacuum be established, but that the pump be kept going constantly and

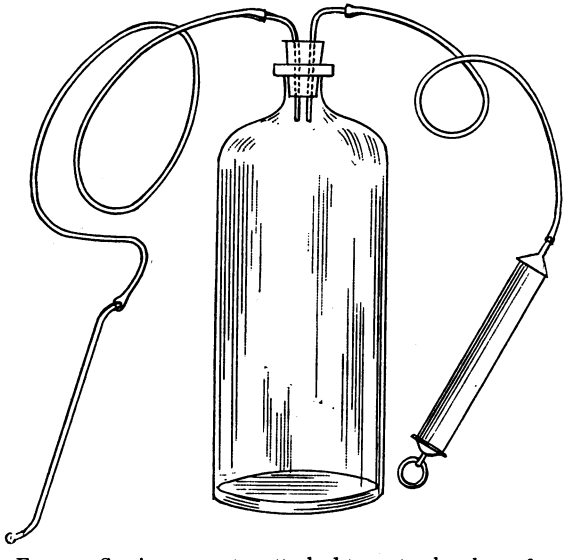

FIG. 1.—Suction apparatus attached to ureteral catheter for removing urine from speculum.

gently, the bottle, which should hold a quart at least, serving only as an air-chamber to equalize suction between strokes, and as a reservoir for waste urine. As soon as the ureter is entered, the suction-tube is to be slipped off the catheter and the specimen collected in the ordinary way. Any ureteral catheter may be used which has a single eye at the point, but preferably there should be no enlargement to serve as a handle, as this interferes with vision. A slight curve at the outer end is all that is necessary for the delicate grasp required.

While the above described arrangement is more satisfactory, the same principle may be applied in another way.

A firm of this city has made for the writer a speculum, through the interior of which runs a fine suction-tube rigidly attached at the side. To this inner tube the suction apparatus is attached. This arrangement leaves one hand of the operator entirely free to use a searcher or other instrument. The obturator is suitably grooved at the side to allow for the presence of the suction-tube.

The handle of this speculum is modified by being fenestrated and directed upward at an angle of thirty degrees, so as to keep clear of the patient's body when turned to one side, and in order that the direction of the speculum itself may be more readily kept in mind (Fig. 2).

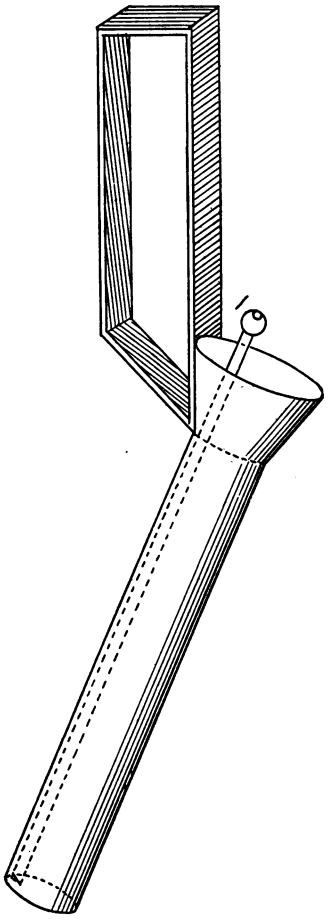

FIG. 2.—Urethral speculum with inner tube for draining urine (full size).

In catheterization of the ureter, and especially in passing a flexible instrument to the kidney for the detection of obstructions or the draining of collections, it is of very great importance that traumatism be avoided.

It is sufficient to use cocaine for all ordinary cases, and if dilatation is not carried beyond ten millimetres, nothing more than a temporary frequency of urination or slight pain will be encountered, providing everything is aseptic. Lubricating oils should be replaced by boroglyceride, and the patient should lie down for a few hours afterwards, unless accus-

tomed to the operation. When using a catheter of small calibre with eye in the end, it is sometimes observed that some of the urine escapes by the side of the catheter, a fact to be borne in mind in estimating the relative secretion of the two kidneys. It is safer to wash out the bladder with boric acid solution before and after the manipulations, while particular care should be taken that the mouth of the urethra and surrounding parts are made clean before beginning.

Cases are not numerous where the use of the ureteral catheter is necessary, but its field is important and likely to increase. Certainly, all cases should submit to this examination prior to a nephrectomy. The writer has now under observation a hydronephrosis from obstruction in the ureter, due to old pyosalpinx which was removed. Serious danger has threatened from rupture of the hydronephrosis. Catheterization has shown that nephrectomy is forbidden by the condition of the other kidney. The diseased ureter has now become pervious, however, the stricture is under course of dilatation, and the sac is being well drained, with great relief to the patient.