

# The Technique of Catheterization

Pages with reference to book, From 371 To 374

J. Talati ( Holy Family Hospital, Karachi. )

Catheterisation is a very frequently needed minor surgical procedure done to relieve the bladder of the discomfort of overdistension by retained urine. Indeed so frequently is it needed that any doctor, whether he be in hospital or general practice, will at some time or the other be called upon to catheterise.

Whilst the introduction of a small number of organisms of low virulence into the normally voiding bladder may not result infection, the ill patient with an indwelling catheter and a raised blood urea will succumb to even a minor invasion by bacteria. As the catheterisation could introduce hospital strains of resistant bacteria, it is vitally important to ensure a completely aseptic technique.

## **The Anatomy of the Urethra**

The procedure in males and females is essentially the same, barring a few points. The male urethra is long and sinous and therefore needs to be anaesthetised, more so in the nervous patient. The female urethra is short and straight, but is shrouded by the vulva which falls back onto the cleansed external meatus unless held apart with one hand.

## **A Systematic Approach**

A systematic approach prevents frustration and ensures smooth catheterisation. One needs a helper to stand by and pour out solutions as required, and to hold the bottle of lignocaine to be drawn into a sterile syringe. Collecting all equipment beforehand saves time and avoids unnecessary multiple to and fro trips; or worse, the embarrassment from missing items when catheterising at home.

## **The Steps of Catheterisation**

If the steps of catheterisation are remembered, the armamentarium is easy to collect.

One needs to scrub and glove; cleanse and drape the area; anaesthetise, lubricate and pass the catheter; collect the urine in a sterile receptacle for possible culture studies; retain the catheter (at times) and connect to a bag. A torch will be helpful in the catheterisation of females, specially at home, where the lighting may be inadequate. The equipment required for each step is listed in the Table.

Table I Steps of Catheterisation	' Equipment' needed	Is this equipment in the catheterisation set ?
Position the patient	(Interpreter and helper)	
Scrub and glove	gloves (double wrapped)	No
Cleanse	Cotton balls, sponge holding forceps	Yes
	Sterile container for cetrimide savlon	Yes
Drape	Salvon/Cetrimide bottle	No
Anesthetise	* Sterile towels x 2	Yes
	2% or 4% Lignocaine	No
	disposable syringe 10 cc	No
Lubricate	K Y jelly/ or other STERILE lubricant	No
Pass the catheter	Red rubber catheter or	Yes
	Foley Catheter	No
Collect urine	C & S bottle	No
	Sterile Kidney tray	Yes
Retain catheter	Sticking plaster	No
	10 cc syringe	No
	2 ampoules of distilled water	No
Connect to bag	Urine Bag	No

### **Sterile Catheterisation Sets**

An unsaid corollary to the above is that there must be access to a sterilised catheterisation set and there is no reason why a general Practitioner or any doctor cannot have a simple set made up and autoclaved in his own clinic (a very small autoclave is needed) or in an adjacent hospital.

### **The Procedure**

The procedure is briefly explained to the patient who is reassured that it will not hurt. Premedication is not necessary, except in the very apprehensive patient. The patient is made comfortable, laid supine; the male with his ankles wide apart, the female with the soles of her feet in apposition so that the heels, knees and perineum form a diamond.

The catheter set is laid out between the patients legs, and its outer covering opened out. A pair of gloves in their inner covering are shaken out of their outer wrap and dropped onto the top of the opened catheterisation pack. (Gloves are sterilised at a different temperature from metal instruments and drapes, hence they cannot be included in the pack. Every autoclaved pack must have two wraps, as the

outer wrap gets contaminated by contact with the storage shelf and all handlers). The operator then scrubs up, dries his hands on the inner wrap of the gloves (aftershaking out the gloves first) and then dons the gloves. The inner Cover of the catheter set is now opened and the bowl is filled with savlon or cetrimide. A very common mistake is the use of Savlon straight from the bottle, or worse still the hospital concentrate. Severe burns can result and the dilution instructions should be followed carefully. Cetrimide is used in a 1% strength. It should not be stored for long, as the solution may allow pseudomonas organisms to persist and even grow.

Lignocaine is filled into the syringe and a suitable catheter and lubricating jelly are dropped onto the pack.

The penis and hypogastrium, the thigh and the anterior surface of the scrotum in the male, or the hypogastrium, thighs and vulva in the female are cleansed, using the sponge holding forceps. In the male, the penis is then wrapped in a sterile gauze and the meatus cleansed again. In the female the vulva is held open between the left thumb and forefinger and the meatus cleansed. From now on the left hand remains in this position (preventing the vulva from falling back onto the urethra) until the catheter is passed.

For the male, 4 c.c. of 4% lignocaine are drawn up into a syringe, the needle is taken off and the nozzle of the syringe inserted into the urethral meatus and the lignocaine instilled into the urethra. The lignocaine is gently massaged backwards, pinching the glans between the index finger and the thumb so as to prevent egress of fluid.

After a suitable period ( 1-2 minutes ) the lubricated catheter is gently manoeuvred into the urethra using a rotatory movement. The distal end of the catheter is left in a kidney dish. The catheter is introduced 1" beyond the point at which urine flows. It is then temporarily clamped. The balloon of the Foleys catheter is then filled with 5-10 cc of distilled water. A common mistake is the filling of the balloon with an amount of fluid corresponding to the stated capacity of the balloon. It is not only unnecessary but large quantities of water in the balloon cause pressure necrosis, ulceration, border heaping of the mucosa inflammatory changes and hemorrhage. The use of saline is specially to be avoided as crystals of sodium chloride can block the channel making it difficult later on to empty the balloon. The bag is then connected to the catheter, and the catheter loosely taped to the thigh, to prevent traction by the weight of the bag on the balloon.

### **Inability to Pass the Catheter**

If the initial catheter fails to pass, the situation should be reassessed. If an enlarged prostate is the cause, then a Tieman catheter should be used. The angle in the tip of this catheter allows it to negotiate the bend in the prostatic urethra caused by the overgrown middle lobe.

If a proximal stricture is suspected and the operator is skilled, a dilatation may be attempted.

Catheterisation with a catheter introduced over a metal guide is not recommended for the novice.

Perhaps the safest procedure in case of failure to pass the catheter is to perform a suprapubic drainage of the bladder using an ordinary i.v. cannula, or a specialised Ingram Trocar-Cath. The next morning, this can be easily replaced by a urethral catheter as the oedema associated with retention subsides.

### **If Folley Catheter is not Available**

An ordinary red rubber catheter can be used to empty the bladder, and if the need for continuous bladder drainage is felt, it can be strapped to the penis with 1" wide strips of sticking plaster stuck to the catheter penis, and up into the shaved groin; one strip on each side.

### **Repeated Catheterisation in Neurogenic Bladders**

The situation here is quite different. Intermittent catheterisation has been found to be the best answer. The patient has to be taught to boil his plain red rubber catheter, clean his hands and self catheterise. In the females, a mirror placed over the ankles at 45 degrees will bring the patient's vulva into and allow self catheterisation.

### **Complications of Catheterisation**

If one is gentle and avoids using a metal stilette, one is unlikely to traumatise the urethra. In patients

with heavily contaminated urethras, a transient bacteraemia and even septicemia may occur. The indwelling catheter does not allow egress of urethral secretions and these become nutrients for the normally transient bacterial flora which are no longer swept away with the normal flow of the urine. Infection occurs in a break in the mucosal lining and later leads to scarring. For this reason the size of the catheter chosen should always be the smallest compatible with adequate drainage, a size 16 F, is usually adequate. Infection of the bladder urine remains one of the most important complications. Phosphatic encrustations occur readily in an alkaline urine and can be prevented by the administration of large quantities of Vitamin C-500 mg 6 hourly. A high fluid intake is also very important.

#### **After care of the Catheter**

The junction between the catheter and bag need never ( and should never) be opened. This will preserve the system as a closed one and go a long way in preventing infection. In order to obtain a specimen, urine should be obtained by puncturing the catheter with a sterile needle attached to a syringe. The urine bag should be emptied 8 hourly in hospital wards, or 12 hourly at home, and never be elevated above the level of the bladder. The urethral meatus should be kept clean at all times. Once daily the area should be washed with soap and water. There should be no kinks in the catheter. The patient should not lie on the catheter. A high fluid intake should be assured. Routine prophylactic antibiotic therapy is NOT recommended.

#### **How Often Should the Catheter be Changed?**

Generally long term catheters should be changed once a month. The need for an earlier change can be gauged from poor flow, pericatheter leak, or a gritty feel when the catheter is rubbed between the finger and the thumb. Silicone, catheters require less frequent change.

#### **De-Catheterisation**

When the Foley catheter needs to be removed, the balloon will need to be deflated. In some cases the balloon fails to empty. In such cases the catheter is cut across proximally and if it still fails to empty, a ureteric catheter stilette is introduced into the balloon channel. If this fails then the bladder is filled with 200 ccs of water, and then 2 ccs of Ether are introduced through the balloon channel. The balloon will instantaneously rupture with an audible pop. The disadvantages of this method are that ether is an irritant, and that balloon fragments may be left behind, causing retention, infection and stone formation. The fragments could easily be removed cystoscopically.

#### **Summary**

Catheterisation has the potential for introducing hospital strains of antibiotic resistant bacteria into the bladder and starting an unmanageable odyssey. It is imperative that a sterile technique be developed. and that after care of the catheter be as carefully supervised.