**Catheter valves**

Catheter valves, which eliminate the need for drainage bags, are also available. The valve allows the bladder to be emptied intermittently and is particularly appropriate for patients who require long-term catheterization, as they do not require a drainage bag. Catheter valves are only suitable for patients who have good cognitive function, sufficient manual dexterity to manipulate the valve and an adequate bladder capacity. It is important that catheter valves are released at regular intervals to ensure that the bladder does not become overdistended. The catheter valve is contraindicated in a patient with:

- Severe cognitive impairment (the patient must be able to recognise the need to empty the bladder through sensation or on a timed schedule)
- Overactive bladder syndrome; might cause urinary leakage
- Urethral reflux or renal impairment
- Small or limited bladder capacity; the valve would have to be opened very often
- Urinary tract infection
- Poor manual dexterity

**Leg straps**

The use of thigh straps (e.g. Simpla G-Strap) and other fixation devices (e.g. Bard StatLock, Comfasure, Clinimed CliniFix) helps to immobilize the catheter and thus reduce the trauma potential to the bladder neck and urethra. It is particularly appropriate for men, due to the longer length and weight of the tube being used; however, some women may also find the extra support more comfortable. Guidance from the Royal College of Nurses and NHS Scotland reiterates the importance of catheter tetherage to promote patient comfort and to limit the potential complications of catheter migration and subsequent need for recatheterisation. The application of these devices is not without potential complications; for example, restriction of the circulation to the limb may give rise to deep vein thrombosis while tension and traction to the urethra can cause trauma and necrosis, especially in men.

**Anaesthetic lubricating gel**

The use of anaesthetic lubricating gels is well recognized for male catheterization, but there is some controversy over their use for female catheterization. In male patients the gel is instilled directly into the urethra and then external massage is used to move the gel down its length, unless a conforming gel such as Instillagel is used and then this is not necessary. In female patients the anaesthetic lubricating gel or plain lubricating gel is applied to the tip of the catheter only, if it is used at all. It has been suggested that most of the lubricant is wiped off the catheter at the urethral introitus so therefore it fails to reach the urethral tissue. These differences in practice imply that catheterization is a painful procedure for men but is not so for women. This assumption is not based on any
empirical or biological evidence. The absence of lubricating glands in the female urethra suggests that there is perhaps a greater need for the introduction of a lubricant.

If the gel is not instilled far enough in advance, more than 4 minutes, it will have only a lubricating effect and if the gel is not instilled up the urethra, it will not dilate or anaesthetize it. There is a need for caution with the use of lidocaine in the elderly, those with cardiac dysrhythmias and those with sensitivity to the drug, as there is a danger of injury to the urothelial lining of the urethra during the procedure, allowing systemic absorption of the drug.
Suprapubic catheters

Suprapubic catheterization is the insertion of a catheter through the anterior abdominal wall into the dome of the bladder. The procedure is performed under general or local anaesthesia, using a percutaneous system. The insertion of a suprapubic catheter should be undertaken by experienced urology staff using ultrasound imaging and that the first catheter change should also be performed by them. The suprapubic catheter should be changed every 8-10 weeks and within 60 minutes if accidentally removed.

Rationale

Suprapubic catheterization does offer some advantages over urethral catheterization, and may be the only viable option for patients with a urethra which is not viable. The risk of patients developing urinary tract infection is reduced, as the bacterial count on the abdominal skin is less than around the perineal and perianal areas, although bacteriuria and encrustation still occur in susceptible patients. Urethral integrity is retained and it allows for the resumption of normal voiding after surgery. Clamping the suprapubic catheter allows urethral voiding to occur, and the clamp can be released if voiding is incomplete. Pain and catheter-associated discomfort are reduced. Patient satisfaction is increased as, for some, their level of independence is increased and sexual intercourse can occur with fewer impediments.

There are a number of risks and disadvantages associated with suprapubic catheterization.

- Bowel perforation and haemorrhage at the time of insertion.
- Infection, swelling, encrustation and granulation at insertion site.
- Pain, discomfort or irritation for some patients.
- Stone formation and possible long-term risk of squamous cell carcinoma.
- Urethral leakage.

Equipment

A number of different suprapubic catheters are available. A trocar is used with all types of catheters in order to make the tract through which the catheter is threaded. Specifically designed catheters incorporate a fixing plate, which requires sutures to secure the catheter to the skin of the abdomen. For long-term use, a Foley catheter is adequate. Large charrière size (18–22 ch) hydrogel-coated or 100% silicone catheters are recommended.

Postprocedural considerations

Care of a suprapubic catheter is the same as for a urethral catheter. Immediately following insertion of a suprapubic catheter, aseptic technique should be employed to clean the insertion site. Dressings may be required if secretions soil clothing, but they are not essential. Once the insertion site has healed (7–10 days), the site and catheter can be cleaned during bathing using soap, water and a clean cloth.

There is some risk of squamous cell carcinoma in long term use - +20 years. There is also a risk of urethral leakage and cystostomy complications.