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Suprapubic catheters can improve some patients’ quality of life but health professionals must also understand the associated risks and limitations

The risks and benefits of suprapubic catheters

In this article...

- Indications for indwelling suprapubic catheterisation
- Situations when suprapubic catheters should not be used
- How to manage a patient with a suprapubic catheter

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Suprapubic catheterisation can improve some patients’ quality of life but the insertion procedure, as well as changing and managing the catheter, carry risks of infection and other negative patient outcomes. This article highlights the advantages and disadvantages, indications and contraindications, and the potential benefits, so health professionals can understand the relevant issues and assess and inform patients accordingly.

Indwelling suprapubic catheters are hollow, flexible tubes inserted into the bladder through a small cut in the abdomen (Fig 1). They are used to drain urine from the bladder and, in the management of bladder dysfunction, are often considered an alternative to a urethral catheter. Insertion of indwelling suprapubic catheter is becoming an increasingly common urological procedure, but is not without risks (Harrison et al, 2011). Health professionals need to be aware of the:

- Indications and contraindications for suprapubic catheters;
- Advantages and limitations;
- Insertion techniques;
- Subsequent catheter changes, management and complications.

Indications and contraindications

The decision to catheterise a patient should be taken after careful assessment by a competent health professional, and should be reviewed regularly (Loveday et al, 2014; Royal College of Nursing, 2012). Insertion of an indwelling catheter is indicated in any of the following clinical circumstances:

- Acute urinary retention;
- Chronic urinary retention – only if symptomatic and/or with renal compromise;
- Monitoring renal function during critical illness;
- During and after surgery for a variety of reasons, such as radical prostatectomy;
- Bypassing an obstruction such as an enlarged prostate, urethral strictures or urethral damage;
- Facilitating continence and maintaining skin integrity (when all conservative treatment methods have failed) (RCN, 2012).

However, when identifying whether a patient is suitable for a suprapubic catheter, certain indicators also apply, which are listed in Box 1.

Suprapubic catheters are not suitable
In addition to the indications for urethral catheterisation, the following apply for suprapubic catheter insertion:

- Acute and chronic urine retention that cannot be adequately drained with a urethral catheter or where urethral catheterisation is contraindicated
- Preferred by patient due to needs for comfort and access to catheter care, such as wheelchair user
- Acute prostatitis
- Obstruction, stricture, abnormal urethral anatomy
- Traumatic injury to lower urinary tract or pelvic trauma
- To minimise complications of long-term urethral catheterisation, such as urethral trauma
- When long-term catheterisation is used to manage incontinence
- Complex urethral, abdominal surgery or gynaecological surgery
- Faecally incontinent patients who are constantly soiling urethral catheters or experience moisture lesions
- Sexually active patients
- Neuropathic disorders causing frequent catheter expulsion
- Restricted hip mobility, spasticity

Source: Adapted from European Association of Urology Nurses (2012), Royal College of Nursing (2012); Rew and Smith (2011)

**Advantages of suprapubic catheters**

There is little evidence-based research on the use of suprapubic catheters but, according to the RCN (2012) and the European Association of Urology Nurses (2012), there may be several advantages to their use compared with urethral catheterisation:

- There is no risk of urethral trauma, necrosis or catheter-induced urethritis and urethral strictures;
- Greater comfort, particularly for patients who are chair bound as the catheter is not positioned between their legs and there is less risk of sitting on it;
- Reduced risk of catheter contamination with micro-organisms that are commonly found in the bowel;
- Easier access to the entry site for cleansing and catheter change;
- Makes it easier to engage in sexual intercourse than a urethral catheter;
- Can be blocked off and the ability to void via the urethra assessed before the catheter is removed (trial without catheter, or TWOC);
- Micturition is still possible if the urethra is not surgically closed or obstructed;
- Evidence of greater satisfaction and quality of life when compared with urethral catheterisation (Reitz et al, 2006).
- Other benefits have also been identified by Dingwall (2008), including:
  - Decrease in urinary tract infection rates through reduced contact with genitalia before the catheter is introduced into the bladder;
  - Reduced pain on catheter insertion;
  - Can be blocked off and the ability to void via the urethra assessed before the catheter is removed (trial without catheter, or TWOC);
  - Micturition is still possible if the urethra is not surgically closed or obstructed;
  - Evidence of greater satisfaction and quality of life when compared with urethral catheterisation (Reitz et al, 2006).

**Risks and limitations**

Although suprapubic catheters have many advantages, there are also several risks and limitations. These are outlined in Box 3.

One risk of suprapublic catheterisation is of bowel perforation. Sheriff et al (1998), reviewed 185 cases and identified a 2.7% incidence, with one fatal outcome, but the National Patient Safety Agency (2010) placed the figure at 0.15% (NPSA, 2010).

**Insertion techniques**

The initial insertion of a suprapubic catheter should be undertaken by a clinician with the appropriate skills (Harrison et al, 2011). It can be done under a local or general anaesthetic and different insertion kits are available for different clinical presentations. The procedure is usually carried out in theatres but some specialist clinicians can insert the initial catheter in home or community settings. Fig 2 shows an insertion kit for a suprapubic catheter.

Suprapubic catheters can be divided into different types:
Foley balloon catheter (the most commonly used);
» Catheter without a balloon, which requires a suture to secure;
» Foley balloon with open end.

The patient should have a palpable bladder that is filled to at least 300ml or full (Shah and Shah, 1998). Ultrasonography may be used to assist insertion. The catheter’s Charriere size is usually larger than that used for a urethral insertion and often starts at 14Ch or 16Ch. A standard length catheter is normally used as it has to pass through the width of the abdominal wall (Rew and Smith, 2011), but the shorter female length can be selected, provided the patient’s mobility, weight and selected drainage system are taken into account. For example, a female length may not be suitable for a wheelchair user as it may restrict drainage. Catheter length may also be influenced by whether the patient selects a short or long tube drainage bag. Patient assessment is important in making these decisions.

A sterile dressing is normally applied following insertion, which can be removed on healing within 7-10 days (RCN, 2012). The intervention should be documented according to local policy.

Catheter changes
The catheter should remain in situ for at least four weeks before the first change so the cystostomy tract can become established (RCN 2012; Robinson, 2008; Getliffe and Dolman, 2007). Subsequent catheter changes should be undertaken on an individual basis when clinically indicated, local policies dictate, or according to catheter material in line with the manufacturer’s licence, up to a maximum of 12 weeks. Patients may experience trauma on removal of the catheter due to cuffing of the balloon on deflation (RCN, 2012).

Insertion is an aseptic technique that should adhere to national and local guidelines. For indwelling catheters, this should include observing:
» The lie of the existing catheter;
» Angle of insertion;
» How much of the catheter length is visible outside the body.

On insertion of the new catheter, advance into the tract 3cm deeper than the removed catheter but no more - the tip can irritate the bladder wall and the catheter may pass into the urethra (EAUN, 2012).

The catheter should be attached to the preferred drainage bag or device and secured with the correct supporting and fixation devices. The procedure should be documented according to local policy.

FIG 3. BELLY BAG DRAINAGE BAG

Management
The management of suprapubic catheters is covered by the same national guidance as management of urethral catheters (Loveday et al, 2014; RCN, 2012). Local policies should also be followed. National guidance states that the catheter should be connected to a sterile closed urinary drainage system – this connection should not be broken unless clinically indicated or for changing urinary drainage bags when clinically indicated and in line with the manufacturer’s recommendations (Loveday et al, 2014).

Health professionals must:
» Decontaminate hands and put on a new pair of clean, non-sterile gloves before manipulating the catheter;
» Decontaminate hands immediately after removing the gloves;
» Take urine samples aseptically via the sampling port if required;
» Not allow the urinary drainage bag to become more than three-quarters full;
» Empty the drainage bag into a separate, clean container for each patient, avoiding contact between the urine drainage tap and the container;
» Position the drainage bag below the level of the bladder – this could be a leg bag or belly bag (Fig 3) or could be a catheter valve;
» Support the drainage bag on the leg using appropriate straps or on a stand that prevents contact with the floor (Loveday et al, 2014).

National guidance recommends that routine daily personal hygiene is all that is required for cleansing the entry site and there is no indication to add antiseptic or antimicrobial solutions into urinary drainage bags (Loveday et al, 2014).

Bladder irrigation, instillation or washouts are not recommended to prevent catheter-associated infection. It is also recommended that health professionals be trained and updated in the appropriate use, selection, insertion, maintenance and removal of urinary catheters including those that are suprapubic.

Complications
Although suprapubic catheters have many advantages, they are still associated with complications. Addison and Mould (2000) identified that suprapubic catheterisation can have a negative impact on patients’ body image and self-esteem. In addition, some patients experience physical complications such as swelling, infection, cellulitis or overgranulation of the cystostomy site.

Overgranulation
The catheter insertion cystostomy site is highly vascularised but lacks a protective epithelial layer and, therefore, remains moist and unable to withstand trauma, especially from rubbing (McGrath, 2011). Evidence suggests that overgranulation is precipitated by an inflammatory response (McGrath, 2011) and different catheter materials may affect this process. Hanlon and Heximer (1994) reported a higher incidence of overgranulation associated with latex catheters compared with silicon. Changing the position of the catheter against the abdomen and alternating the leg to which the drainage bag is attached may reduce the pressure on the site (Getliffe and Dolman, 2007).

Encrustation
Problems with urethral catheter encrustation and subsequent blocking may be improved by a suprapubic catheter. Encrustation is mainly caused by a Proteus mirabilis infection, which causes crystalline biofilms to form on the catheter surface (Stickler and Feneley, 2010). This, in turn, causes blockage. Suprapubic catheters are associated with a reduced risk of infection as compared with urethral catheters (Niel-Weise and van de Broek, 2005) which in turn reduces the opportunity for encrustation of the catheter to occur.

Bladder spasm
Bladder spasms identified by bypassing or pain should be treated the same way as for urethral catheters by the use of anti-muscarinic therapy if indicated and appropriate.

Bypassing
Many patients in the community who have problematic urethral catheters that bypass urine are referred for a suprapubic catheter to resolve these issues. However, patients with a suprapubic catheter may still experience leakage from the urethra if urethral closing pressure is inadequate or absent (Addison and Mould, 2000).
Nursing Practice

Review

Bladder stones
The formation of bladder stones is more common in patients with a suprapubic catheter than those catheterised via other routes (Shah and Shah, 1998).

Bladder cancer
Some evidence suggests patients with a suprapubic catheter have increased risk of bladder cancer and regular cystoscopy is recommended (Shah and Shah, 1998), especially if repeated blockages of the catheter occurs (Lekki and Lee, 2006).

Urinary tract infection
Urinary tract infections are a common complication associated with catheterisation but incidence in patients with suprapubic catheters is less than that for those with urethral catheters. This could be because the suprapubic catheter insertion site, unlike the urethra, is not in close proximity to the rectum where cross-contamination from the bowels can occur.

Conclusion
There is evidence that suprapubic catheterisation improves quality of life for many people. It is becoming an alternative option for those who require an indwelling catheter, and health professionals must ensure they understand the positive and negative elements associated with it. NT

References

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- Managing indwelling urinary catheters in adults
  - bit.ly/NTCatheterManag

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