Rapid Response Report NPSA/2009/RRR005: Minimising risks of suprapubic catheter insertion (adults only)

July 2009

Supporting Information

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**Introduction**

The National Patient Safety Agency (NPSA) has issued a Rapid Response Report (RRR): ‘Minimising Risks of suprapubic catheter insertion’ [NPSA/2009/RRR005]. This supporting information includes a sample briefing sheet for clinicians with key actions, based on advice from clinical experts in the field, to reduce risks to patients. Also included are incident data and litigation data.

It is anticipated that the RRR and the accompanying supporting information is for action by acute trusts and other clinical settings where these catheters may be inserted.

**Background**

A suprapubic catheter is one that is inserted directly into the bladder via the abdomen just superior to the pubic bone.

It is difficult to estimate from routine statistics the volume of suprapubic catheterisations performed in England and Wales, but anecdotal evidence suggests a typical District General Hospital (DGH) may perform around 100 a year.

Suprapubic catheterisation is indicated when urethral catheterisation is contraindicated or where it is technically not possible to relieve urinary retention in both acute and chronic conditions. It may be used as a short-term alternative to urethral catheterisation when this procedure is not possible or is contraindicated; for example, in cases of traumatic injury to the lower urinary tract or when the passage of a urethral catheter has not been possible, e.g. in prostate hyperplasia. Suprapubic catheterisation may also be indicated as a longer-term solution to bladder drainage in patients with neurological conditions that result in bladder insufficiency, decreased genital sensation or in people who require regular catheterisation but are unable to self-catheterise.

Suprapubic catheterisation is a common urological procedure that may be carried out by clinical staff other than urologists in a variety of clinical settings. It is acknowledged that urogynaecologists and certain other specialists will be skilled in this technique and the focus of this RRR is to ensure all clinical staff who may be required to carry out this procedure have the necessary skills and competence.

A suprapubic catheter passes through the tissues of the lower abdominal wall directly into the bladder and should not traverse the peritoneal cavity. Although the benefits are well recognised, complications include peritoneal perforation with or without bowel perforation, infection and haematuria.

*Note: This guidance applies to adults only. The procedure is much less common in children and is carried out in more specialised settings. None of the incidents received by the NPSA relating to complications of insertion involved children.*

www.npsa.nhs.uk/patientsafety/alerts-and-directives
In September 2008, an incident was identified in the RLS where the bowel had been perforated during the insertion of a suprapubic catheter. This prompted a formal search of the RLS for further incidents relating to the insertion of a suprapubic catheter. In total, 600 incidents relating to suprapubic catheters had been reported. Of these, 259 were related to the insertion and management of these catheters.

<table>
<thead>
<tr>
<th>Degree of harm</th>
<th>Number of incidents</th>
<th>Bowel perforation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Severe harm</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Moderate harm</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td>Low harm</td>
<td>104</td>
<td>-</td>
</tr>
<tr>
<td>No harm</td>
<td>127</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>259</td>
<td>9</td>
</tr>
</tbody>
</table>

The search revealed that between September 2005 and June 2009, three incidents causing death and seven causing severe harm resulting from the insertion of a suprapubic catheter had been reported. Nine of these incidents resulted in a bowel perforation. Incidents were reported from a range of settings, for example wards and operating theatres in both elective and emergency situations. Sample reports include:

“Patient required laparotomy, small bowel resection and formation of ileostomy and fistula due to bowel perforation. Original surgery for insertion of supra pubic catheter and cystoscopy. Patient died two days later following second surgery.”

“Patient underwent insertion of suprapubic catheter on 5/9/08 and was discharged back to nursing home the following day. Advised by Coroner officer that patient had subsequently died. Coroner post mortem has shown cause of death to be: 1a ) Peritonitis 1b ) Instrumental perforation of the small bowel “

“Cystoscopy and suprapubic catheter inserted on emergency theatre .Discovered small bowel injury two days later with subsequent laparotomy and bowel anastomosis and abdominal washout. Very gradual recovery due to severity of injury “

The NPSA’s Reporting and Learning System (RLS) was established to provide a national database of incidents relating to patient risks and harm. Interpretation of data from the RLS should be undertaken with caution. As with any voluntary reporting system, the data are subject to bias. Many incidents are not reported, and those which are reported may be incomplete having been reported immediately and before the patient outcome is known.
National Health Service Litigation Authority (NHSLA) data

A search of the NHSLA database revealed five cases pertaining to suprapubic catheter insertion, although only one relates to alleged negligent insertion, during a change of catheter, resulting in bowel perforation. Other claims, for example, refer to alleged traumatic/painful insertions and post-insertion infections.

Medicines and Healthcare products Regulatory Agency (MHRA) data

The MHRA have received around 50 incident reports over five years relating to suprapubic catheters. Reports commonly relate to balloon failure to inflate or deflate, and the cause of the problem is often not identified conclusively; there is no indication of whether user error or a manufacturing problem contributed to the problem. These reports usually require the patient to be re-catheterised, and again medical advice/assistance may be required to remove the catheter when the balloon will not deflate.

The reports also include incidents where the catheter snapped; in two of these evidence of damage to the catheter on insertion/removal was found which may have led to the fracture. No serious harm was reported. MHRA One Liners issue 64 – February 2009 refers to this topic.4

Further evidence on complications associated with suprapubic catheters

Very few complications have been reported to date (Pub Med Search date September 2008). One suprapubic urinary fistula occurred due to a lack of secure anchorage of catheter5. Other unusual complications include an incisional hernia around the site of the suprapubic catheter6. There are only 10 cases of bowel perforation reported in the literature7,8,9,10,11,12,13,14,15. One of these cases was actually small bowel obstruction13.

Of note, a case series of 219 patients who underwent long-term suprapubic catheter insertion revealed a 30-day mortality rate of 1.8 per cent16. A similar study revealed a 30-day mortality rate of 0.8 per cent17.

Another rare complication is knotting of the suprapubic catheter in the bladder16,19,20. There has been one case of autonomic dysreflexia as the balloon was inflated in the subcutaneous tissues of the abdominal wall,21.

A national survey was carried out some years ago by the British Association of Urological Surgeons (BAUS)22 to estimate the incidence of complications related to the insertion of suprapubic catheters; 149 urologists responded. The survey found that 32 per cent of respondents (45/149) could recall a total of 65 bowel perforations over the previous 10 years, and 14 per cent recalled deaths associated with the procedure. The survey found the estimated risk of an individual procedure resulting in bowel perforation to be 0.15 per cent with a 0.05 per cent risk of death.

The survey concluded that whilst BAUS consent forms regard bowel complications as ‘very rare’ the true incidence may be more.

The Female and Reconstructive Urology section of BAUS is currently carrying out a national audit on this topic [www.sarahfowler.org/bsfru.htm]
The NHS Technology Adoption Centre (NTAC) recently launched its first ‘How to, Why to Guide’ outlining how to implement specific technologies into NHS organisations. This first guide refers to the Seldinger technique for the insertion of supra pubic catheters.

The recent NCEPOD report on acute kidney injury identified failure to relieve post-renal urinary obstruction as a preventable cause of acute kidney injury. It is therefore imperative that clinical staff are able to relieve urinary obstruction urgently. This may well require suprapubic catheterisation. It is equally important to avoid the problem of repeated attempts at urethral catheterisation with the potential for resultant urethral injury.

BAUS is in the process of developing national guidelines on this procedure which should be available by Autumn 2009.

Evidence supporting particular actions, where applicable

Does this procedure need to be done?
Suprapubic catheterisation is indicated when urethral catheterisation is contraindicated or technically not possible to relieve urinary retention in both acute and chronic conditions.

Am I competent to do this?
Junior doctors should always be supervised when inserting suprapubic catheters, and middle-grade doctors and above should ask for help when necessary. High-risk cases should be performed in a controlled environment with a senior surgeon and senior anaesthetist present.

Does this procedure need to be done now?
In an emergency situation, with sometimes limited senior support/supervision and limited access to equipment, it may be appropriate to discuss the situation with a senior member of the on-call urology team and to consider, for example, bladder aspiration with a fine needle as an interim measure.

Is this the right procedure for this patient?
Suprapubic catheterisation is absolutely contraindicated in the absence of an easily palpable or ultrasonographically localised distended urinary bladder. Suprapubic catheterisation is relatively contraindicated in the following situations:

- coagulopathy (until the abnormality is corrected);
- prior abdominal or pelvic surgery (potential bowel adherence to the bladder or anterior abdominal wall; may recommend that a urologist perform an open cystostomy);
- pelvic cancer with or without pelvic radiation (increased risk of adhesions).

Have I got access to an ultrasound machine?
The use of ultrasound is a safer method for suprapubic catheterisation especially in complicated patients such as those with large body habitus, abdominal adhesions, and in uncooperative patients. It is essential that staff using ultrasound are trained in its use.

Do I know what to look for in case of bowel perforation?
Post-suprapubic catheterisation insertion, there should be a high index of suspicion for bowel perforation if the patient has abdominal pain or is otherwise unwell and presents features of localised peritonitis. Patients should be referred to the urology team who should carry out the first change of catheter.

*National Confidential Enquiry into Patient Outcome and Death
Summary and conclusion

Although the overall number of incidents causing harm are relatively low, the consequences as reported to the RLS are severe and include death, and it is likely (given BAUS survey figures) that many incidents are not reported. Furthermore, although individual trusts may have local guidance concerning the insertion of suprapubic catheters, there is no published national guidance available on this relatively common procedure carried out, often in urgent situations, by junior medical staff in a variety of clinical settings. BAUS is, however, in the process of developing national guidance on this topic and the actions outlined in the briefing sheet for clinicians (Appendix 2) provide immediate advice to improve patient safety.
References

## Appendix 1: Suggested compliance checklist

The table below gives suggested evidence that organisations may wish to use locally as assurance of compliance with this Rapid Response Report.

<table>
<thead>
<tr>
<th>Action</th>
<th>Suggested assurance of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information about the risk of this procedure and key checks for clinical staff should be immediately distributed to all staff who may insert or request the insertion of a suprapubic catheter (a sample briefing sheet for clinical staff is given in the supporting information). &lt;br&gt;&lt;br&gt;The information may also be of interest to staff who are involved in the management of these catheters, e.g. ward and operating department staff.</td>
<td>Dated record of electronic and/or hard copy distribution lists. &lt;br&gt;It may be useful to add to junior doctors’ handbooks.</td>
</tr>
<tr>
<td>2. A named lead for training is identified and a training plan developed.</td>
<td>The name of the clinician(s) who has been identified, a record of their agreed role and a copy of the training plan.</td>
</tr>
<tr>
<td>3. Local guidelines/policies are reviewed or developed in the light of this report and forthcoming BAUS standards. &lt;br&gt;&lt;br&gt;It is expected that these standards will be available by autumn 2009.</td>
<td>A record of the review of locally agreed guidelines/policy including the identified competencies and standards of supervision is made at the appropriate clinical governance forum. &lt;br&gt;A printout of a spreadsheet or database used to maintain an active list of staff who are competent to insert without supervision and/or to supervise others.</td>
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<tr>
<td>4. Ultrasound is used wherever possible to visualise the bladder and guide the insertion of the catheter. There should be ultrasound machines available in the relevant areas and staff trained in their use.</td>
<td>A review of the availability of ultrasound machines is carried out and the findings with any identified deficiencies and actions are recorded in the minutes of the appropriate trust forum. Local guidelines and training documents state the need to use ultrasound for this procedure.</td>
</tr>
<tr>
<td>5. Local incident data relating to suprapubic catheterisation is reviewed, appropriate action is taken and staff are encouraged to report further incidents and to take part in the BAUS national clinical audit.</td>
<td>Meeting notes or investigation records indicating reports of adverse events related to supra-pubic catheters have been reviewed and any corrective actions implemented.</td>
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</tbody>
</table>
Appendix 2: Briefing sheet for clinical staff ‘Minimising risks of suprapubic catheter insertion (adults only)’

SEE FOLLOWING PAGE
Minimising risks of suprapubic catheter insertion (adults only)

The National Patient Safety Agency (NPSA) has been notified of three incidents of death and seven causing severe harm from suprapubic catheter placement between September 2005 up to June 2009, nine of which involved bowel perforation. We know that many more incidents have not been reported, as a survey of clinicians suggested higher rates of harm. The NPSA has issued guidance for organisations to make the procedure safer, including training and access to equipment such as ultrasound. We have asked your organisation to take actions to minimise the risks associated with this procedure. As clinicians, there are six questions you can ask to keep your patients safe:

<table>
<thead>
<tr>
<th>Question</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does this procedure need to be done?</td>
<td>Insertion of suprapubic catheter carries a risk to the patient.</td>
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<tr>
<td></td>
<td>Indications for the procedure are: the relief of urinary retention where urethral route is contraindicated or not technically possible.</td>
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<tr>
<td></td>
<td>Record in patient notes why this procedure was done and any problems.</td>
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<td>2. Am I competent to do this?</td>
<td>You should not undertake this procedure if not competent.</td>
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<td></td>
<td>You need to be trained in the procedure.</td>
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<td></td>
<td>You need to be familiar with local equipment and guidelines.</td>
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<td></td>
<td>Senior supervision should be available, if needed.</td>
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<td>3. Does this need to be done now?</td>
<td>Emergency procedures and those performed out of hours present more risk.</td>
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<td></td>
<td>Seek advice from the on-call urology team and consider other options, e.g. fine needle aspiration, as an interim measure.</td>
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<tr>
<td>4. Is it the right procedure for this patient?</td>
<td><strong>Absolute</strong> contraindications:</td>
</tr>
<tr>
<td></td>
<td>non-palpable bladder;</td>
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<td></td>
<td>non-visualisable distended bladder by ultrasound.</td>
</tr>
<tr>
<td></td>
<td><strong>Relative</strong> contraindications:</td>
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<tr>
<td></td>
<td>coagulopathy (until the abnormality is corrected);</td>
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<td></td>
<td>prior abdominal or pelvic surgery (potential bowel adherence to the bladder of anterior abdominal wall. In such cases you should consider requesting a urological surgeon to perform an open cystostomy;</td>
</tr>
<tr>
<td></td>
<td>pelvic cancer with or without radiation (increased risk of adhesions).</td>
</tr>
<tr>
<td>5. Have I got access to an ultrasound?</td>
<td>Ultrasound should be used wherever possible to visualise the bladder and guide insertion of the catheter.</td>
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<tr>
<td></td>
<td>Urology team should carry out the first change of catheter.</td>
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<td></td>
<td>Have a high index of suspicion for signs of bowel perforation including:</td>
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<tr>
<td></td>
<td>o patient has abdominal pain;</td>
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<td></td>
<td>o patient has signs of localised peritonitis;</td>
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<td></td>
<td>o patient is systemically unwell.</td>
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