How to remove an indwelling urinary catheter in female patients

Rationale and key points
This article aims to assist nurses to undertake the removal of an indwelling urinary catheter in female patients in a safe, timely, effective and patient-centred manner, while maintaining the patient’s privacy and dignity. It is important for the nurse to be competent in undertaking this procedure, and to be aware of local and national policies on catheter removal.
» Indwelling urinary catheters should be changed only when clinically necessary, or according to the manufacturer’s guidelines.
» Urinary catheters should be removed using sterile equipment.
» The balloon of the indwelling catheter must be deflated before removal, and the catheter should be removed slowly to minimise trauma.

Reflective activity
‘How to’ articles can help you update your practice and ensure it remains evidence-based. Apply this article to your practice. Reflect on and write a short account of:
» How you think this article might change your practice when removing an indwelling urinary catheter.
» How you could use this article to educate your colleagues.

Keywords
catheter care, catheter removal, catheterisation, continence, indwelling catheter, urinary catheter, urology

Preparation and equipment
» The nurse should be aware of local policy for the use of personal protective equipment, such as gloves and an apron, when undertaking urinary catheter removal, as well as the procedures for handling potentially hazardous biological agents, such as urine (Department of Health 2006).
» The nurse should ensure the necessary equipment is available, including:
  – Two pairs of disposable gloves.
  – Apron.
  – Sheet or towel.
  – Protective sheet.
  – Container.
  – Swabs or washcloths.
  – Sterile 10mL syringe.
  – Water or saline solution, depending on local policy.
  – Alcohol hand gel.
  – Waste bag.
» If a new urinary catheter is to be inserted, the equipment for this procedure should be gathered before the indwelling catheter is removed.
» Check the patient’s records to determine the volume of water that was used to inflate the catheter balloon on its insertion, before undertaking the removal of an indwelling urinary catheter.

Procedure
1. Confirm the patient’s identity by asking their full name and date of birth. Check
with their family or carer if the patient is unable to provide this information.

2. Introduce yourself and explain the procedure to the patient and their family members or carers, if appropriate. Discuss any potential symptoms the patient might experience following the removal of the urinary catheter, such as urinary urgency, frequency or discomfort. Ask if they have any questions or concerns, and obtain informed consent for the procedure.

3. Screen the area and cover the patient with a sheet or towel to ensure privacy. Protect the patient’s bedlinen using a suitable protective sheet.

4. Wash your hands and put on disposable gloves and an apron.

5. Ask the patient to lie in a supine position. Ensure their dignity is preserved by keeping them covered as much as possible during the procedure.

6. Empty the catheter bag into a suitable container and record the urine output in the patient’s notes. Release any catheter support system in place, such as leg bag straps.

7. Remove your gloves and dispose of them in accordance with local policy. Wash your hands and put on a new pair of gloves.

8. Clean around the meatus and catheter using water or saline solution, and a swab or washcloth, according to local policy. Always swab away from the urethral meatus.

9. Attach the syringe to the catheter valve to deflate the balloon. Ensure you do not touch the end of the sterile syringe. Do not draw back the syringe, but allow the water to come back into the syringe naturally, following the manufacturer’s guidelines. The catheter balloon will usually have been inflated with 10mL of water; however, as a result of usual loss of water through osmosis, the full volume might not be removed. If water does not drain and the balloon does not deflate, follow the steps in Box 1.

10. Ask the patient to breathe in and out. As the patient breathes out, gently pull out the catheter.

11. Observe the condition of the catheter, recording any encrustation and whether the catheter is intact in the patient’s notes. The doctor should be informed if the catheter is not intact on removal.

12. Place the catheter in a suitable waste bag.

13. Clean the urethral meatus using fresh water and a clean swab or washcloth and make the patient comfortable.

14. Dispose of the equipment, apron and gloves appropriately, as per local policy.

15. Wash your hands with alcohol hand gel.

16. Document the date and time the catheter was removed in the patient’s notes, noting any complications on removing the catheter, such as pain or bleeding.

17. Monitor the patient’s urine output and record this in the patient’s notes until frequency and voided volumes

**Box 1. Steps to take if the catheter balloon does not deflate**

» Do not attempt to burst the catheter balloon by overinflating it.

» Do not cut the catheter or the inflation arm.

» Leave the syringe attached to the catheter valve and allow the water to seep out slowly. This can take up to 20 minutes.

» Check if the patient is constipated, because this can cause pressure on the urethra and the catheter, preventing it from draining.

» Try using another syringe, since the syringe might be faulty.

» Insert 1-2mL of sterile water into the inflation channel and draw back the syringe. This demonstrates the patency of the inflation channel and indicates if water has been lost from the balloon (Association for Continence Advice (ACA) 2007).

» Gently squeeze along the catheter tubing. This may move any blockage and enable the water to drain from the inflation channel (ACA 2007).

» Insert approximately 3mL of air and draw back using the syringe. This can create a vacuum, which may aid deflation.

» If all of the above fail, attach a 25 gauge (orange) needle to the syringe and pierce the catheter below the valve, inserting the needle into the inflation channel, and draw back using the syringe. This method bypasses the faulty catheter valve (ACA 2007).

» If the balloon still does not deflate and no water can be withdrawn, seek medical advice.
are satisfactory. Urine output should be recorded even if a new catheter is inserted, to ensure it has been inserted correctly.

18. Encourage the patient to drink plenty of fluids. Ask the patient and carers to observe for any signs of voiding difficulties, such as urinary urgency, frequency or discomfort. Inform the patient that they should seek medical advice if these symptoms do not resolve after a few days.

**Evidence base**

The removal of an indwelling urinary catheter should be a simple, uncomplicated procedure. When an indwelling urinary catheter has been inserted into a patient’s bladder, it is important that it is removed as soon as possible to minimise the risk of complications, such as urinary tract infection, encrustation or trauma to the bladder neck (National Institute for Health and Care Excellence (NICE) 2012, Loveday et al 2014). Catheters should be changed only when clinically necessary, or according to the manufacturer’s guidelines (Khan et al 2007, NICE 2012, Loveday et al 2014).

It is important that the nurse understands the reason for the removal of the catheter and whether this removal is permanent, a planned catheter change or an unplanned change as a result of complications, such as encrustation (Royal College of Nursing (RCN) 2012). Healthcare staff should also be able to explain the reason for removal to the patient or their carer.

Where the urinary catheter is inserted as a long-term option for bladder drainage, routine changing of the catheter should be a planned part of the patient’s care (Newman 2007). How often an indwelling catheter should be changed depends on the individual patient; however, it should be changed within the manufacturer’s recommended timeframe. This may be as frequently as every two weeks, but can be up to a maximum of 12 weeks, depending on the catheter material (Geng et al 2012).

The catheter bag should be emptied before removal of the catheter, and the urine output recorded in the patient’s notes (Newman 2007). Indwelling catheters require the catheter balloon to be deflated before removal, and the catheter must be pulled out slowly to prevent urethral and bladder neck trauma (Getliffe and Dolman 2007).

The water is removed from the catheter balloon using a sterile syringe fitted to the catheter valve – the ‘Y’ pigtail side port (Newman 2007, Yates 2008). The water from the balloon should be allowed to come back into the syringe naturally, rather than withdrawing it by drawing back the syringe (Newman 2007). Care should be taken not to withdraw the water forcibly because this might damage the inflation channel, which would make deflation more difficult and might cause discomfort to the patient (Fillingham and Douglas 2004).

The catheter balloon is usually inflated with 10mL water; however, as a result of usual loss of water from the catheter balloon through osmosis, the full volume might not be removed. For 100% silicone catheters, up to 2mL of water might be lost through osmosis (Newman 2007).

The surface area, appearance and diameter of a urinary catheter balloon changes following deflation (Figure 1). Removing the water causes the catheter balloon to collapse and deform, which can lead to the formation of creases where the balloon has collapsed (Figure 1), or the formation of three to four ridges where the

**Figure 1. Urinary catheter balloon shape before and after deflation**

(a) Inflated balloon

(b) Deflated balloon with creased membrane
balloon walls come together (Robinson 2003). Urinary catheters made of 100% silicone have a tendency to ‘cuff’ on deflation, whereby the balloon is forced towards the tip of the catheter (Newman 2007), making the catheter balloon uneven. Therefore, the balloon does not glide smoothly through the urethra on removal, causing discomfort for the patient (Geng et al 2012).

It is recommended that the catheter is gently squeezed along the length of tubing, which can help to displace any blockage and enable the water to drain away from the inflation channel and the balloon (Geng et al 2012).

After removal of the catheter, the patient’s urine output should be monitored until frequency and voided volumes are satisfactory (Gilbert 2006). The volume of urine voided by the bladder should be maintained at an output of 50-100mL/hour (Tenke et al 2008, Nazarko 2009). Patients should be encouraged to maintain hydration by drinking sufficient fluids to dilute the urine before and after catheter removal. This helps to prevent encrustation and blockage, maintains urinary flow and reduces the risk of infection. There are no standard recommendations for the volume or type of fluid required. However, the fluid intake volume should take into account: the patient’s weight (25-35mL/kg per day as recommended); the volume of fluid loss; the patient’s food intake, for example the fluid in fruit and vegetables; and their circulatory and renal status (Tenke et al 2008, Nazarko 2009).

A bladder ultrasound scan might be required in the first few hours following removal of a catheter to assess for post-v oid residual urine, because of the potential for urine retention (Geng et al 2012). Where retention occurs, the patient might require recatheterisation, but it is preferable to use an intermittent catheter in the first instance. It may be beneficial to schedule catheter removal in the morning or during the early part of the day, so that any potential complications such as urine retention can be identified and managed appropriately before it gets late and/or the patient goes to sleep.

The nurse should document the reason for catheter removal, date of removal and any problems encountered, such as pain or bleeding during removal. If the patient is to have a new catheter inserted, the existing catheter should be examined for signs of encrustation (Geng et al 2012). This enables a plan to be put in place to prevent and manage complications for subsequent catheter removals, for example providing appropriate pain relief, or using a bladder instillation before removal to reduce encrustation, thereby reducing pain and discomfort on removal.

References


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