

A Simple and Reliable Method of Indwelling Urinary Catheter Fixation

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Two thousand years ago, bronze tubes were used for bladder catheterisation, S shaped bronze tube was found with other medical devices in the ruins of Pompeii¹. However, use of indwelling catheter for urine drainage became widespread since 1936, after a U.S. manufacturer, Davol Rubber Company, introduced a soft rubber tube with an inflatable balloon that was based on a design by Frederick Foley². Millions of patients are now using Foley's catheter for various indications. In USA 25% of patients in acute care setup receive indwelling catheter³. Catheterisation is not a hazard free intervention; it can lead to several complications including inadvertent catheter removal with urethral trauma.

According to a study by Lorente and colleagues in 2004, it was found that the incidence of accidental removal of indwelling urinary catheters was 2% per 100 catheter days⁴.

Inadvertent catheter removal associated urethral trauma imposes undue morbidity, prolonged hospital stay and increased healthcare related cost. One of the most important but often neglected aspects of catheter care management is securing and fixing devices. Most of the concerned authorities including the Society of Urologic Nurses and Associates and the Centers for Disease Control and Prevention advocate the use of securing device to minimize the catheter related trauma and infections⁵⁻⁷.

Our usual practice of fixation in ward with adhesive tape is not a dependable means of catheter securement⁸. It is vulnerable to minor traction; accidental pulling can dislodge the catheter causing urethral trauma. Adhesive tape loosens quickly and frequently, even in many times failing to adhere to external catheter surface. Repeated use of adhesive tape causing sticky coating over catheter wall is a potential source of infection. Now a days direct adhesive tape fixation is not anymore advocated, more reliable fixation methods should be used instead⁸. Though improvised adhesive tape fixation is somewhat effective in reducing the transmitted force compared with an unsecured control, it is not as effective as newer techniques^{9,10}. Improvised devices are usually made with adhesive tape applied to the abdomen or upper thigh. For example, a piece of tape can be applied to the skin and the catheter placed over it and secured with a second piece of tape that is attached to the first⁶.

Several manufactured fixing devices are available. Hanchett (2002) classifies them in 3 main categories⁸ (Figure 1).

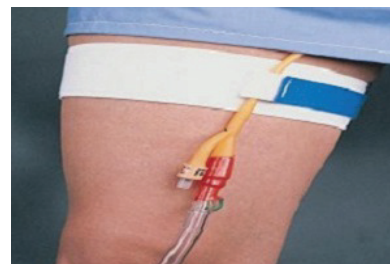
- a) modified tapes (e.g. CliniFix),
- b) adhesive anchors (e.g. StatLock stabilisation device)
- c) straps and holders (e.g. CATH- MATE II tube retaining strap).



a. CliniFix



b. StatLock



c. CATH- MATE II

Figure 1 Different types of manufactured fixing devices

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Although these devices are designed to prevent urethral trauma, they can also cause new complications. Adhesive devices are associated with skin irritation and contamination thus cannot be kept in place for more than 7 days. Strap-type devices can cause venous insufficiency,

thrombophlebitis, even may lead to deep venous thrombosis¹¹. Moreover, these devices are not available in our market. To secure the catheter in my practice, I use a simple personalised technique using gauze roll and micropore tape. Here catheter is fixed over abdomen by encircling loop of gauze roll (Figure 2).

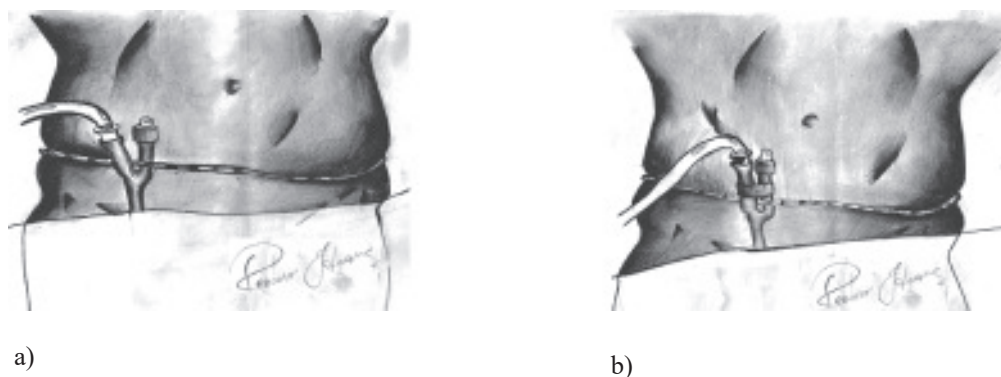


Figure 2 Graphics of catheter fixation (sketch by Rebonto Haque)

First a gauze roll is placed around waist to create a loop, then balloon inflation port of Foley’s catheter is placed

beneath the loop, lastly two external ports (balloon port and urine drainage port) are fixed with micropore tape (Figure3).

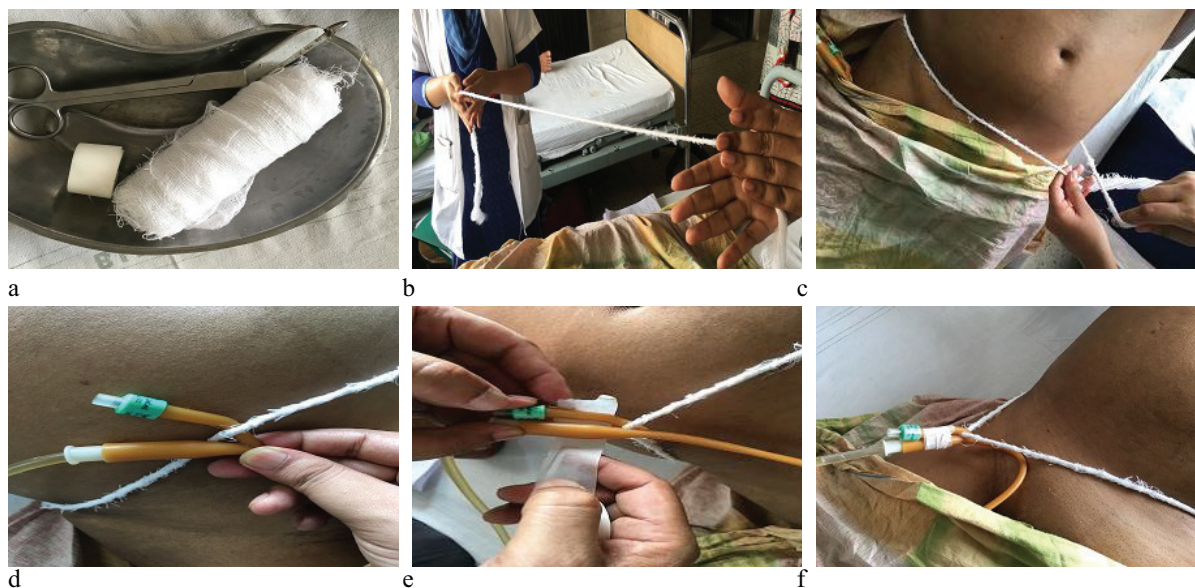


Figure 3 Step by step demonstration of catheter fixation procedure

We are using this over last 6 months in BIRDEM General Hospital successfully without any complications. Optimal management of an indwelling catheter includes securing the catheter to the thigh or

abdomen in a way that prevents the catheter or its retention balloon from exerting excessive force on the bladder neck or urethra⁵, our procedure is mechanically very much effective in doing this job. In this method,

accidental pulling of catheter is resisted by encircling loop. Abdominal fixation is also associated with less meatal trauma and is advised especially for male patients needing long term catheterisation^{6,7}.

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