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Original article

# Simplified percutaneous large bore suprapubic cystostomy for acute urinary retention—A cost saving procedure



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## KEYWORDS

Puncture suprapubic cystostomy;  
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Large bore;  
Foley catheter;  
Acute urinary retention

## Abstract

**Introduction and objectives:** Commercial cystostomy kits/trocars are not always readily available in regions with insufficient funding. Open suprapubic cystostomy procedures are yet prevalent. This paper presents a simplified percutaneous suprapubic cystostomy technique that utilizes specially selected surgical blades in the place of commercial trocars.

**Subjects and methods:** Eighty-nine male patients with acute urinary retention underwent puncturing of the visibly and palpably distended bladder with surgical blade size 20 (7 mm diameter), 21 or 22 (9 mm diameter) to allow resistance-free placement of Foley catheter size 18 Fr (maximum diameter of 6 mm) or size 20 (maximum diameter of 6.7 mm) respectively under local anesthesia along the mid abdominal line in a sagittal direction – two finger breadths above the pubic symphysis. The main outcome measures were to determine the success rate and the encountered complications.

**Results:** Successful bladder puncture and insertion of the Foley catheter of choice was possible in all cases. There was no mortality and no adjacent visceral injury. There were two cases of catheter blockage with clots that were easily flushed out.

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*Conclusions:* Emergency cystostomy can be safely achieved through direct puncture of the visibly and palpably distended bladder with appropriately selected surgical blades that will subsequently allow resistance-free placement of sizable Foley catheters.

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## Introduction

Acute urinary retention (AUR) is a frequent urologic emergency. In most cases of AUR, relief of the retention is readily achieved through urethral catheterization. However, when urethral catheterization fails or is contraindicated, it becomes necessary to deviate the urine through suprapubic catheterization. In many urologic centers – especially, in the high-resource economies – suprapubic catheterization can be readily achieved through a minimally invasive percutaneous technique using any of the suprapubic cystostomy kits or trocars that come in many varieties [1–7].

However, these commercial percutaneous suprapubic cystostomy kits and trocars are not always readily available in regions with insufficient funding. Hence, many suprapubic cystostomy procedures for AUR are still done through a formal or a modified open procedure with associated increased invasiveness, treatment time, and surgical cost.

In low-resource economies, lack of finance constitutes a major hindering factor for accessing early surgical intervention and as such the vast majority of these patients will end up carrying such inserted catheters for long before definitive surgery hence necessitating the placement of large bore catheters that have the added advantage of more reliable drainage.

This paper presents a simplified and out-patient large bore puncture suprapubic cystostomy technique that utilizes selected surgical blades in the place of commercial solid punch trocars/cystostomy kits. We hypothesize that these selected surgical blades will replicate the commercial solid punch trocars for entrance into the bladder.

## Subjects and methods

This was a prospective and descriptive study of 89 consecutive male patients with acute urinary retention that were treated between January 2006 and September 2013 – all using a simplified suprapubic cystostomy approach. For this technique, the diameter of various and readily available surgical blades was obtained initially with a measuring tape but later using a Vernier Caliper. The obtained measurements were intended to be slightly larger than the diameters of the desired Foley catheters of sizes 18 or 20. Surgical blades of size 20 (7 mm in diameter), 21 or 22 (9 mm in diameter) were then chosen as appropriately sized blades that should permit resistance-free insertion of Foley catheter sizes 18 Fr and 20 Fr, respectively and at the same time be small enough to avoid large puncture wound. Cases of acute urinary retention secondary to pelvic fracture, especially, where the bladder was not palpable, cases of bloody aspirate from the bladder and cases of previous laparotomy were excluded.

For the simplified puncture suprapubic cystostomy, the following steps were ensured:

1. The bladder should be visibly and palpably distended.
2. Local anesthesia with 1% Lidocaine and successful aspiration of urine is done at a point two finger breadths above the pubic symphysis along the mid abdominal line – in a sagittal direction.
3. Surgical blade size 20 (7 mm in diameter), 21 or 22 (9 mm in diameter) were the chosen sizes for bladder puncture in this series giving a maximum skin puncture wound length of 7–9 mm.
4. After an initial cutting movement limited to the tip of the chosen surgical blade to get through the skin, a steady and careful pushing pressure is maintained to puncture into the bladder lumen (with a sudden give and appearance of urine noted) after which the Foley catheter is immediately inserted.
5. To insert a size 18 Fr Foley catheter – puncture the bladder with a size 20 surgical blade; while for size 20 Fr (and also for size 18 Fr) Foley catheters – puncture the bladder with size 21 or 22 surgical blades.

In all our patients, we were able to aspirate urine using size 21 injection needles – showing the absence of obesity in the contingent of patients in this series. For overweight/obese patients, this technique may be more challenging to accomplish. Some tips and tricks that were helpful during the early learning period were the use of catheter introducers to give the catheters some rigidity and also the liberal use of water-soluble lubricants. For beginners, it is also advisable to use size 21 or 22 surgical blades to insert size 18 Fr catheter and as such have more room to maneuver.

## Results

The mean age of the patients was 61.2 years (range of 28–96 years). The main complaint of all the patients was inability to pass urine, for which attempted urethral catheterization failed. The causes of urinary retention were: urethral stricture – 44 patients, benign prostatic hyperplasia (BPH) – 21 patients, cancer of the prostate – 9 patients, urethral trauma – 8 patients, co-existing BPH and urethral stricture – 6 patients, and bladder neck stenosis – 1 patient.

Successful bladder puncture and placement of suprapubic catheter was possible in all cases utilizing minimal surgical supplies (Fig. 1). There were two cases of catheter blockage with clots that were easily flushed out in the immediate post-operative period. On a minimum of at least three catheter changes per patient at the urology clinic (usually at 3–4 weeks catheter change intervals), there was no case of mortality and no adjacent viscera puncture.

Some Foley catheters in our locality were noted to have smaller diameters as measured using a Vernier Caliper than documented by manufacturers. The significance of this observation is still being studied.

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