

Management of urethral catheter knot in a neonate

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To accommodate the small size of the infant urethra, finer, more flexible tubes are often used for urinary catheterization in the pediatric intensive care units. These tubes have the ability to knot in the bladder, occasionally requiring surgical removal. The mechanism of knotting appears to result from excessive

intravesical catheter coiling, and as the bladder decompresses the catheter tip can migrate through a coil thereby creating a knot.^{1,2} Review of the literature from 1975 to 2000 identified 19 cases of urethral catheter knotting in the pediatric bladder with two reports of prostatic urethral involvement. Herein, we describe the first reported instance of catheter knotting within the penile urethra and describe the surgical technique employed for its removal.

Key Words: catheter, knotting, urinary, urethra

Case report

A 2-month-old male was admitted to the pediatric intensive care unit due to respiratory insufficiency secondary to respiratory syncytial virus. The child was intubated and urethral catheterization was performed with a 5-French feeding tube to monitor urine output. After placement of the catheter, no urine

output was obtained and a palpable catheter coil was appreciated within the penile urethra. Gentle traction was applied, however the tubing fractured within the urethra.

Urology was consulted and the child was taken to the operating room for catheter removal. Endoscopic removal was unsuccessful because the 3-French grasping forceps were not strong enough to remove the catheter. Open catheter removal became necessary and the penis was de-gloved, exposing the penile urethra. The urethra was incised longitudinally over the coiled catheter and the catheter removed. An 8-French urinary catheter was placed into the bladder via the urethral meatus and the urethrotomy closed

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in two layers using running 7-0 Vicryl suture. The de-gloving incision was then closed with running 7-0 chromic sutures achieving an excellent cosmetic result. The catheter was removed on post-operative day 10 and the child voided without difficulty.

Discussion

It has been suggested that only urinary catheters be used for bladder catheterization since these tubes are stiffer and less prone to knotting than feeding tubes, nasogastric tubes, or umbilical artery catheters. Interestingly, catheter knots involving dedicated urinary catheters have not been reported. Other methods for reducing the risk of catheter knotting entail using an appropriately sized catheter and avoiding excess catheter insertion into the bladder.¹ Described techniques for catheter knot removal include the application of gentle traction on the catheter, the insertion of a guide-wire through the lumen of the catheter to uncoil the knot,^{2,3} urethral dilation, and endoscopic retrieval.^{2,3} If these maneuvers fail, open cystotomy has been employed most commonly to remove intravesical and prostatic urethral catheter knots.

As the catheter in our case was entrapped within the penile urethra and refractory to removal via endoscopic techniques, a simple urethrotomy was performed. Different surgical approaches can be used including direct cut-down onto the catheter, raising a flap of penile skin prior to urethrotomy, or penile de-gloving followed by urethrotomy. We employed

a de-gloving incision followed by urethrotomy as this technique avoids over-lapping suture lines to minimize fistula formation, provides excellent exposure to the anterior urethra, and is cosmetically satisfactory.

As balloon catheters smaller than 6F size are not widely available, feeding tubes will continue to be used for drainage of urinary bladder in the intensive care setting. To prevent knot formation it is recommended that only a short distance of tubing should be advanced into the bladder after urine drainage and secured with a tape.⁴ Catheter extraction could be accomplished in the majority of cases by non-operative methods and open operation may be necessary to retrieve the catheter in difficult situations. □

References

1. Foster H, Ritchey M, Bloom D. Adventitious knots in urethral catheters. *J Urol* 1992;148:1496.
2. Ball RA, Horton Jr., CE, Mandell JA. Transurethral removal of knotted bladder drainage catheter in a male following bladder neck reconstruction. *Urology* 1993;41:234.
3. Gonzalez CM, Palmer LS. Double knotted feeding tube in a child's bladder. *Urology* 1997;49:772.
4. Pearson-Shaver AL, Anderson MH. Urethral Catheter Knots. *Pediatrics* 1990;85:No.5:852-854.

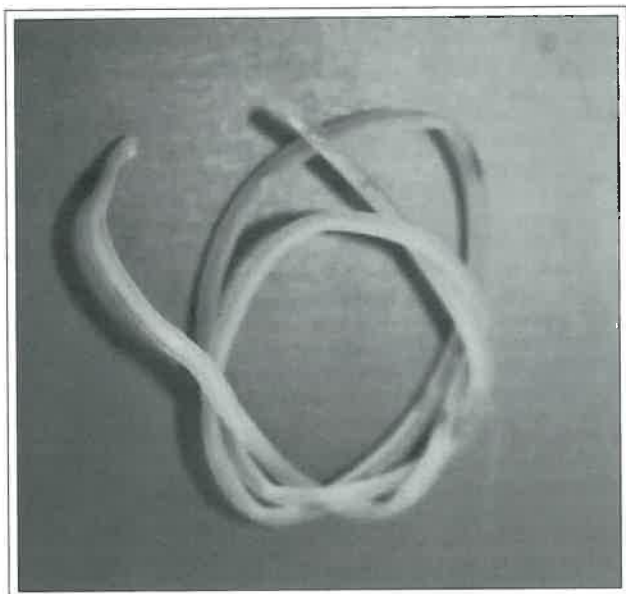


Figure 1. Photograph showing the catheter knot.