

## Case Report

# Intravesical Knotting of a Feeding Tube Used as a Urinary Catheter

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*Urethral catheterization is a common procedure among pediatric patients. Intravesical knotting of a polyethylene feeding tube used as a urethral catheter is rare. This report described such a complication in an infant who had urethral catheterization with 5 Fr feeding tube. Removal of the catheter necessitated cystostomy. This complication is preventable if the feeding tube is inserted only as short as possible to retrieve urine.*

**Keywords:** Urethra, Urethral catheterization, Catheter, Pediatrics

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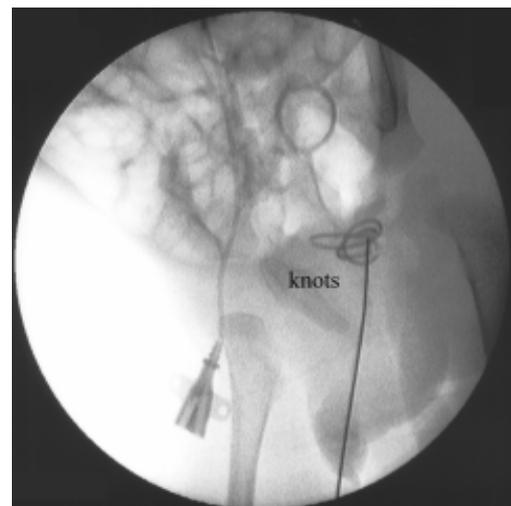
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Urethral catheterization is common practice in patients, both adults and children, undergoing investigative and surgical procedures. It is also used as the first step for patients with azotemia secondary to obstructive uropathy. In newborn and small infants, a 5 or 8 Fr pediatric feeding tube is generally employed for these purposes. Complications of urethral catheterization include urinary tract infection, urethral trauma and subsequent stricture, encrustation and stone formation. Adventitious urethral catheter knotting is a rare complication. It was described in few reports. Herein, a case with intravesical catheter knotting is reported.

### Case Report

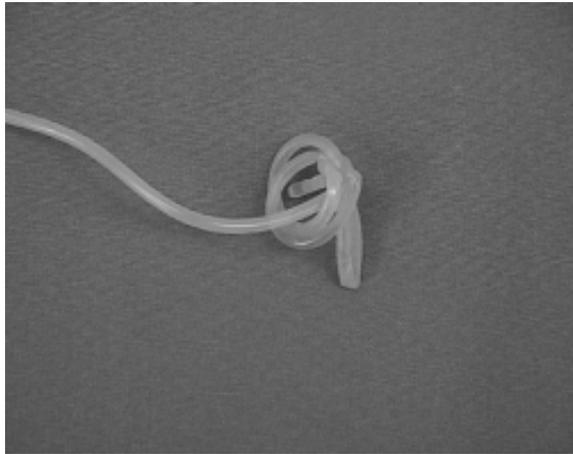
A 2700 grams male infant, aged 2 months was referred from Bangladesh because of poor feeding and poor weight gain. Pertinent investigations including chest film, electrocardiogram, and cardiac catheterization revealed total anomalous pulmonary venous connection (TAPVC) and patent ductus arteriosus (PDA). The infant underwent total repair successfully. During the surgery, a 5 Fr feeding tube was used as a urethral catheter to monitor urine output intraoperatively. He made an uneventful postoperative recovery. However, 1 week after the surgery, the feeding tube catheter could not be removed. Spontaneous knotting of the tip of feeding tube was suspected and confirmed by radio-

graph after administration of contrast medium into the feeding tube lumen (Fig. 1). It was clearly visualized that there were three loops of knots of the catheter tip. Because the infant's urethra was quite small compared to the dimension of the three loops of knots, manual removal through the urethra by traction was not considered possible. Under fluoroscopy, a stiff angiographic wire was threaded into the feeding tube lumen



**Fig. 1** After administration of contrast medium through feeding tube lumen, radiograph showed knotted feeding tube with stiff angiographic wire threaded into the lumen in an attempt to untie the knots

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**Fig. 2** Photograph of knotted feeding tube after removal

in an attempt to untie the knots, but to no avail. Finally, cystostomy was done with the knotted part of the catheter removed through suprapubic cystostomy (Fig. 2). The distal portion of the catheter was pulled through the urethra. A 10 Fr Foley catheter was placed as suprapubic cystostomy tube for one week. After removal of the Foley catheter, the patient could void without difficulty.

### Discussion

Urethral catheterization is a common procedure performed by all levels of personnel involved in providing health care. It is accepted that the complication rate associated with urethral catheterization is low. Most of the complications are minor such as dysuria, meatitis, and urethral bleeding that require no specific treatment. Other complications include urinary tract infection, urethral stricture, encrustation, and stone formation. As neonate and small infant's urethra are small compared to the available smallest Foley catheter (8Fr), a 5 Fr and 8 Fr feeding tubes are practical alternatives to drain urine from the bladder.

Intravesical catheter knotting of small feeding tubes placed as urinary diversion from the bladder is rare. The first case of catheter knotting in a pediatric patient was reported in 1976<sup>(1)</sup>. There are several reports of this complication afterwards<sup>(2-6)</sup>. The majority of catheter knotting occurred in males 2 years old or younger. The explainable mechanism of catheter knotting is excessive long segment of feeding tube in the bladder. The unnecessary long segment becomes coiled as it abuts the bladder wall of the children, resulting the distal tip's passing through the open loop.

Upon removal, the coil can tighten into a knot. The incidence of knotting of the feeding tube is about 0.2 per 100,000 catheterizations<sup>(7)</sup>. Intravesical knotting of feeding tube can be prevented by insertion of the catheter into the bladder only as far as necessary. Practically, the feeding tube should be inserted until urine is observed in the feeding tube lumen, and a few centimeters further advancement is only necessary.

There are several options for managing intravesical catheter knotting. The first report of this complication in a child was successfully removed by using a guide wire to untie a knot under fluoroscopy<sup>(1)</sup>. Gentle steady traction under sedation or general anesthesia has been successful in many reports<sup>(2,8,9)</sup>. This option is generally helpful in cases of a single knot and girls with more pliable urethra. Facilitation of manual extraction by urethral dilatation was also mentioned<sup>(10,11)</sup>. Surgical removal through suprapubic cystostomy is the last resort if the non-invasive procedures mentioned above fail<sup>(7,12)</sup>.

The present report details a case with a triple knot of the distal end of the feeding tube. After failing attempt to untie the knots, the catheter had to be removed by suprapubic cystostomy. It is clearly seen that this rare complication occurs because excessive length of the feeding tube is inserted into the bladder. Occasionally, this loop segment of the feeding tube becomes coiled and forms a knot within the bladder. To prevent this complication, the feeding tube should be inserted until urine is observed in the feeding tube lumen, and no more than a few centimeters further advancement is indicated. This proper technique should be followed by all health personnel who perform urethral catheterization so that this adverse event can be avoided.

### References

1. Harris VJ, Ramilo J. Guide wire manipulation of knot in a catheter used for cystourethrography. *J Urol* 1976; 116: 529.
2. Gaisie G, Bender TM. Knotting of urethral catheter within bladder: an unusual complication in cystourethrography. *Urol Radiol* 1983; 5: 271-2.
3. Kanengiser S, Juster F, Kogan S, Ruddy R. Knotting of a bladder catheter. *Pediatr Emerg Care* 1989; 5: 37-9.
4. Konen O, Pomeranz A, Aronheim M, Rathaus V. A urethral catheter knot: a rare complication of cystourethrography. *Pediatr Radiol* 1996; 26: 757-8.
5. Turner TW. Intravesical catheter knotting: an uncommon complication of urinary catheterization.

- Pediatr Emerg Care 2004; 20: 115-7.
6. Al Najadah I, Alexander G, Ghoneim I. Double trouble: knotted urethral catheter in a child with trigonocephaly. J Craniofac Surg 2005; 16: 497-8.
  7. Foster H, Ritchey M, Bloom D. Adventitious knots in urethral catheters: report of 5 cases. J Urol 1992; 148: 1496-8.
  8. Gonzalez CM, Palmer LS. Double-knotted feeding tube in a child's bladder. Urology 1997; 49: 772.
  9. Arena B, McGillivray D, Dougherty G. Urethral catheter knotting: be aware and minimize the risk. CJEM 2002; 4: 108-10.
  10. Klein EA, Wood DP, Kay R. Retained straight catheter: complication of clean intermittent catheterization. J Urol 1986; 135: 780-1.
  11. Sugar EC, Firlit CF. Knot in urethral catheter due to improper catheterization technique. Urology 1983; 22: 673-4.
  12. Pearson-Shaver AL, Anderson MH. Urethral catheter knots. Pediatrics 1990; 85: 852-4.

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## การขมวดปมของสายยางให้อาหารที่ใช่เป็นสายสวนปัสสาวะ

พิชัย ศุภจินทรรัตน์

การใส่สายสวนปัสสาวะเป็นหัตถการที่ทำบ่อยในผู้ป่วยเด็ก ในเด็กเล็กหลอดปัสสาวะมีขนาดเล็ก ทำให้ไม่สามารถใช้ Foley catheter ได้ จึงนิยมใช้สายยางให้อาหารซึ่งมีขนาดเล็กกว่ามาเป็นสายสวนปัสสาวะ การขมวดปมของสายยางให้อาหารเป็นโรคแทรกซ้อนที่พบได้ไม่บ่อย รายงานนี้กล่าวถึงการขมวดปมของสายสวนปัสสาวะในเด็กเล็ก 1 ราย ที่ได้รับการผ่าตัดโรคหัวใจ หลังการผ่าตัดหัวใจไม่สามารถถอดสายสวนปัสสาวะออกได้ ต้องผ่าตัดออกทางหน้าท้อง รายงานนี้ชี้ให้เห็นว่าโรคแทรกซ้อนดังกล่าวสามารถป้องกันได้โดยการใส่สายยางให้อาหารไม่ให้ยาวลึกเกินไปเมื่อเห็นน้ำปัสสาวะในสายยางแล้วก็ควรหยุด