

oxidative stress in the lens from G-6-PD deficiency.

There have been three previous reports of early-onset childhood cataract and G-6-PD deficiency(3-5). It, however, remains unclear as to why certain G-6-PD variants predispose to cataract formation. In view of the epidemiological studies suggesting the association of G-6-PD deficiency and role of oxidative stress in causation of adult human cataract, and some sporadic reports of childhood cataract with G-6-PD deficiency without any other obvious cause, it is reasonable to consider excluding G-6-PD deficiency in children with cataract.

**Sameer Bakhshi,**

**Madhulika Kabra,**

*Department of Pediatrics,*

*All India Institute of Medical Sciences,*

*New Delhi 110 029, India.*

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## Urethral Catheter Knotting in Preterm Neonates

Feeding tubes have been universally used as urethral catheters in children for several decades. Though a safe procedure, it presents special risks in infants and children. Here we report a 28 weeks preterm baby who developed a urethral catheter knot and look into measures to avoid this unpleasant complication.

A 28-week preterm baby was admitted to our neonatal intensive care unit (NICU). Due to surfactant deficiency lung disease, he was given surfactant and ventilated. He developed urinary retention and hence was catheterized with a size 4F feeding tube. When his clinical condition improved, it was decided to remove

the catheter. While it was being removed, resistance was felt halfway through the procedure. When the catheter tip was out, we were shocked to see a knot in the catheter (*Fig. 1*). Fresh bleeding was noticed at the urethral meatus, which stopped with gentle pressure. His urine output has been adequate since then.

Urethral catheterization is a frequently performed pediatric procedure. In children, Foley's catheter and feeding / nasogastric tubes are used. Urethral trauma and infections are well known complications. Catheter knotting, a rare complication is seen in children 2 years of age or younger following the use of feeding tubes as urethral catheters. The incidence of knotting is reported to be 0.2 per 100,000 catheterizations(1).

The widely accepted hypothesis for



Fig. 1. A knot in size 4 feeding tube which was used as an urethral catheter.

knotted is the insertion of the catheter far into the bladder. When excessive length of the highly flexible small caliber catheter is inserted into the bladder, it forms a loop and coils on itself. As the bladder decompresses the catheter tip loops through the coil(2). When the catheter is pulled out, the coil tightens clinching down into a knot. Although different methods have been described to remove a knotted catheter(2), attention should be directed towards prevention of this complication by careful selection of the catheters and gaining better understanding of urethral anatomy and safe insertion lengths. A newborn male urethra measures 5 cm. This increases to 8 cm and 17 cm by 3 yrs and adulthood respectively(3). In females urethral length is comparatively smaller and grows at a slower rate. Female urethra measures 2.18 cm at birth and increases to 2.54 cm by 5 yrs and 3.78 cm in adulthood(3). It is also equally important to secure the catheter well in order to prevent inadvertent advancement of the catheter into the bladder. In our child, though

the catheter was very well secured, it had actually been inserted far into the bladder (20 cm).

The authors from Washington, Carlson and Mowery recommended the insertion length of 6 cm in a male newborn and 5 cm in a female newborn(2). In low birth weight (LBW) babies they recommend the use of size 4 Fr catheters (like umbilical artery catheter). In extremely premature babies with birth weight of <750 grams the insertion length of <2.5 cm in girls and <5 cm in boys is recommended(2).

Neonatologists, pediatric trainees and nursing staff are increasingly involved with urethral catheterization due to more numbers of preterm and LBW babies in the NICU. We would like to raise the awareness among pediatricians of this rare but serious complication. With skill and the use of appropriate catheters, the risk of knots will be greatly reduced.

**A.T. Anbu,  
K. Palmer,**

*Manchester Childrens Hospital,  
Pendleburn, Manchester, U.K.  
E-mail: theoanbu@hotmail.com*

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