

Intraoperative anuria: An unusual cause

Sir,

Adequate intraoperative urine output is considered to be a reliable indicator of intravascular fluid volume status and is always ensured by all the anesthesiologists.^[1] However, total absence of urine in the drainage bag might not always be an indicator of volume status or renal hypoperfusion. We report two cases of intraoperative anuria due to defective Foley's catheter.

A 12-year-old male (30 kg, 160 cm) with history of being operated for anterior subluxation of L5 over L4 two years back was posted for implant removal and hernia repair in prone position. His preoperative blood urea was 26 mg% and serum creatinine was 0.5 mg%. Prior to surgery he was catheterized by a first-year resident with Foley's catheter (Foley's balloon catheter; Medicath, Malaysia). Surgery lasted for 3 h during which the patient was anuric despite 3 liters of crystalloids and intravenous furosemide. Catheter tubing was checked for any visible kinks or disconnection of tubing from drainage bag. Both irrigation of Foley's and suprapubic compression failed to demonstrate any urine output. On turning the patient supine, suprapubic

distension was noticed; hence the decision to change the catheter was taken. Examination of Foley's catheter revealed a manufacturing defect—absence of the distal lumen of the catheter [Figure 1]. Patient was recatheterized with another Foley's catheter after which he had 300 ml of urine output.



Figure 1: Figure showing absence of the distal lumen of the Foley's catheter

A 13-year-old female operated for kyphoscoliosis correction was catheterized with 12-Fr Foley's catheter prior to turning her in prone position. There was no urine output throughout the surgery which lasted for 8 h despite adequate fluid administration and furosemide. Blood loss during the surgery was 100 ml. Irrigation was attempted without success. On turning the patient supine, there was a suprapubic distention which indicated full urinary bladder. The urinary catheter was removed and replaced with a new 12-Fr Foley's catheter which was followed by brisk return of 600 ml urine. Postoperative examination of the original Foley's catheter revealed manufacturing defect, in which there was approximation of both the walls of the urinary catheter in the proximal part [Figure 2].

It was not possible to irrigate the bladder in both the cases because of lack of communication between the catheter lumen and the patient's bladder. Patients who have voided urine prior to shifting to the operation theatre may not immediately show any urine in the tubing on catheterization which hindered the confirmation of proper placement of Foley's in both the patients. Unusual positions like prone position prevent the checking of proper positioning of the catheter intraoperatively. Inspection of the Foley's catheter prior to insertion can eliminate the possibility of missing such manufacturing defects. Mechanical causes of Foley's malfunction reported in the literature are occlusion of distal lumen (external, internal),^[2] absence of distal lumen,^[3] manufacturing defect in balloon material, rupture or auto deflation of balloon, faulty valve mechanism, catheter knotting, kinking of inflation channel and detachment of catheter tubing from the drainage bag. Hence, inspection of the Foley's catheter from the tip



Figure 2: Urinary catheter showing a kink caused by approximation of both the walls of the catheter

to the drainage bag should be done. Pretesting catheter balloons is commonly recommended as a way to prevent insertion of a defective catheter. However, some catheter manufacturers no longer recommend pretesting because their balloons are pretested during the manufacturing process.^[4,5]

Intraoperative oliguria may be an indicator of renal hypoperfusion but anuria should be first checked for mechanical causes like integrity of Foley's catheter, catheter occlusion (both internal and external) and detachment of tubing from the catheter bag. Our case suggests that anesthesiologists should confirm proper positioning and functioning of Foley's prior to beginning the surgery. We also suggest that once the catheter is inserted, at least few ml of urine should be visible to ensure that there is no mechanical obstruction.

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