

Iatrogenic neonatal bladder perforation

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Abstract Neonatal bladder rupture is rare as a complication of bladder obstruction due to abnormal anatomy or iatrogenic causes. The present study describes the case of a 3-day-old infant with ascites due to bladder perforation secondary probably to manual decompression of the bladder. The infant underwent successful surgical repair of the perforation.

Key Words: Bladder rupture, surgery, urinary ascites

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INTRODUCTION

Neonatal bladder rupture is rare as a complication of bladder obstruction due to abnormal anatomy or iatrogenic causes. The present study describes the case of 3-day old with ascites due to bladder perforation secondary probably to manual decompression of the bladder

CASE REPORT

A 2150 g female was born to a gravida 3, para 3, mother at 32 weeks' gestation with a low APGAR score. Respiratory distress syndrome developed requiring ventilatory assistance. Umbilical artery and vein catheterization was performed without any difficulties. On day 3, the child became oliguric with an increased abdominal girth and azotemia (blood urea 15 $\mu\text{mol/l}$ and creatinine 129 $\mu\text{mol/l}$). Renal sonography demonstrated normal kidneys and bladder and ascites. Urethral bladder catheterization initially yielded a small volume of urine. Paracentesis was done and the ascitic fluid was yellow. The

biochemistry of the ascitic fluid confirmed the urinary origin. A cystogram revealed intraperitoneal extravasation. Exploration with a CT scan with bladder opacification was done to better specify the seat of the urinary leakage, and demonstrated a posterior perforation of the bladder [Figure 1]. Laparotomy was performed through a small transverse incision centered on the midline midway between the umbilicus and the pubic symphysis. Surgical exploration showed no uracheal injury with



Figure 1: CT scan with images of opacification of the bladder demonstrating extra-peritoneal extravasations of the infused contrast from the posterior aspect of the bladder

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a posterior rugged perforation of the bladder (10×5 mm). The bladder was closed in two layers with an absorbable suture. Azotemia was corrected rapidly, and renal function returned to normal with a good urine output from the Foley catheter. Infant's condition improved, and the Foley catheter was removed on day 7, after performing a cystogram control.

Retrospectively, when we reviewed the medical record of the baby, an episode of urinary retention was observed at day 2 after birth. It was treated by manual decompression. This maneuver can explain the bladder perforation.

DISCUSSION

Rupture of the bladder is extremely rare in the newborns. It often develops as a complication of bladder obstruction, due to abnormal anatomy, or secondary to procedures such as umbilical catheterization. Urinary ascites can also result from the perforation of the bladder during urethral catheterization^[1,2] or from manual decompression of the bladder,^[3] particularly in premature newborns.

Several cases have been described in children who are believed to be predisposed to such an event. These predisposing factors include bladder diverticula as congenital,^[4] from a connective tissue disease such as Ehlers-Danlos syndrome,^[5] from a neurogenic bladder dysfunction,^[6] from a hypoxic event that was felt to lead to localized bladder wall ischemia, or from prematurity.^[7] The rarity of bladder perforation in infants dictates the need for a high index of suspicion for a urological

source in infants presenting with acute renal failure and a distended abdomen. Once bladder perforation is diagnosed, several authors advocate for aggressive management with an open repair.^[8] However, conservative management with catheter drainage and broad-spectrum antibiotics has been proposed by some authors.^[4,7] In our case, since the etiologic cause of the bladder perforation was not possible on radiographic findings, surgical exploration was needed. We believe that surgery has two aims: on one hand, injury assessment and on the other minimizing the duration of urethral catheter drainage.

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