



PATENT URACHUS: A RARE ANOMALY IN NEWBORNS – CASE REPORT & REVIEW OF LITERATURE

Pediatric Surgery

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ABSTRACT

Introduction: Patent urachus comprise among the spectrum of congenital urachal anomalies. Literature reports just over 100 cases in the neonatal period as documented in the literature so far.

Materials & methods: We report a case of a 7 day old baby, presenting with urine discharge through umbilicus. Ultrasound of the abdomen showed absent right kidney with normal left kidney. MCUG finding showed fistulous track between umbilicus and urinary bladder with features suggestive of patent urachus.

Result: Open surgical excision of the urachus was done in our case with no complication. Histopathological findings were consistent with urachal epithelium.

Conclusion: Urachal anomalies may present in various forms. Symptomatic urachal anomalies should be surgically excised. Treatment is complete excision of the urachal tract along with a cuff of bladder, which can be done either by open surgery or laparoscopic-endoscopic approach.

KEYWORDS

Patent urachus, Allantois, Renal agenesis, Urogenital abnormality

INTRODUCTION

In 1550, the first case of patent urachus was reported by Calabriolus. There after many more cases were reported across the literature with varied presentations. Patent urachus comes in the spectrum of congenital urachal anomalies. Patent urachus, also called urachal fistula, normally it gets obliterated around 12th week of gestation. Looking at the reported cases in newborn period, just over 100 cases have been reported so far.

CASE REPORT

A newborn male presented to pediatric surgery out patient with excoriation of skin and urinary discharge through umbilicus since birth. Physical examination revealed the presence of umbilical urine discharge. There was erythema and excoriation of skin around umbilicus. Abdominal ultrasonography showed absent right kidney with left normal kidney. Micturating Cystourethrography findings showed fistulous track between the antero-superior wall of urinary bladder and the umbilicus with free flow of contrast s/o patent urachus. There was no Vesico Ureteric reflux. No features of bladder outlet obstruction were seen. After analysis and proper evaluation an operative decision of excision of the patent urachus was taken. After catheterization, sub umbilical curvilinear incision was given. Urachus was identified and dissected from the bladder. Excision of urachal stump done. Bladder was closed in double layer. The total procedure lasted around 60 minutes. A urethral catheter was placed for 7 days duration. The patient passed urine per urethra. There were no postoperative complications. Histopathological report showed remnants of fragmented tubules separated by fibrous cords, composed of three layers - epithelium, connective tissue and outer smooth muscle layer. No goblet cells or atypia in the epithelium was visible. The features were suggestive of presence of urachal epithelium.



Fig 1. Showing wet umbilicus



Fig 2. Urethral and urachal openings catheterized



Fig 3. Patent urachus and bladder



Fig 4. Showing urachal tract



Fig. 5a: Fistulous track between the antero-superior wall of urinary bladder and the umbilicus



Fig. 5b: Spillage noted in the abdominal cavity

DISCUSSION

DEFINITION AND SURGICAL ANATOMY

A patent urachus is a communication between the umbilicus and the bladder which results from the failure of obliteration by desquamation of its epithelial mucosa. The urachus lies between the transversalis fascia and the peritoneum, adjacent to umbilical ligaments, the remnants of the umbilical arteries. The urachus is 3-10 cm long and 8-10 mm in diameter. It is surrounded by the umbilicovesical fascial sheath, which extends laterally to each umbilical artery and inferiorly over the bladder dome to the hypogastric arteries posteriorly and the pelvic diaphragm anteriorly, forming a self-contained space that is capable of limiting the spread of infection or neoplasm.¹

EMBRYOLOGY

The majority of the urachus is derived from the bladder and the proximal portion is from the allantoic duct. As the bladder descends into the pelvis, it retains its attachment to the umbilicus by the urachus. As the urachus develops, it loses its attachment to the umbilicus.

ANATOMICAL VARIANTS

Four distinct types of urachal anomalies are defined. In order of frequency, they are a patent urachus (50%), an urachal cyst (30%), an umbilical urachal sinus (15%), and a vesicourachal diverticulum (3%-5%).

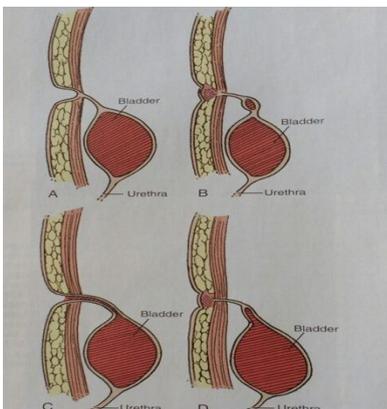


Fig. 6: Four types of urachal anomalies: A - Urachal sinus; B - Urachal cyst; C - Patent urachus; D - vesicourachal diverticulum.

INCIDENCE

Congenital patent urachus is a rare anomaly with an expected incidence of 0.25:10,000 deliveries. Males are affected twice as often as females. A patent urachus may be seen in patient with prune-belly syndrome but is uncommon in those with posterior urethral valve.²

PRESENTATION

Patent urachus may manifest as an incidental finding on newborn ultrasonography. Presentation can also be in the form of a wet umbilicus with surrounding granulation tissue; as intermittent or continuous urinary drainage that is accentuated in the prone position or with crying, straining, or voiding; or as a late presentation Para umbilical swelling or mass secondary to an associated umbilical hernia or engorgement of the urachal vasculature. Two rare presentations have been noted like omphalitis with erosion of umbilical artery with hemorrhagic shock and acute abdomen.³⁻⁴

INVESTIGATION

Diagnosis of the persistent urachus, presenting in the perinatal period, can often be made based on a thorough history and physical examination. The patent urachus should be differentiated from that of omphalitis, granulation of a healing umbilical stump, patent vitelline or omphalomesenteric duct, infected umbilical vessels, and external urachal sinus. Analysis of periumbilical fluid for creatinine or urea is useful in differentiating a patent urachus from these other conditions, and fistulogram with radio-opaque material is often diagnostic. A voiding cystourethrogram should be obtained to identify the fistula tract and, more importantly, to rule out the concomitant presence of bladder outlet obstruction or Vesicoureteral reflux.⁵

MANAGEMENT

This consists of a transverse infraumbilical incision, extraperitoneal dissection of the urachal tract, and excision of the tract from the base of the umbilicus to the dome of the bladder with a small bladder cuff, followed by two-layer closure of bladder wall with absorbable sutures.

COMPLICATIONS

The complications of patent urachus are recurrent omphalitis, cystitis, ascending pyelonephritis, calcifications and very rarely asymptomatic urachal anomaly can go on to develop carcinoma. Symptomatic urachal remnants should be treated with surgical excision. This should include complete excision of the urachus from the umbilicus to the dome of the bladder. In infants and small children complete resection of the urachus can easily be accomplished through a small 1-1.5 cm incision. In this era of minimally invasive surgery, multiple reports of laparoscopic, and more recently, robotic-assisted laparoscopic resection of urachal remnants in children have emerged.⁶

CONCLUSION

Urachal anomalies may present in various forms. Symptomatic urachal anomalies should be surgically excised. Treatment is complete excision of the urachal tract along with a cuff of bladder, which can be done either by open surgery or laparoscopic-endoscopic approach. Simple excision prevents risk of developing infection or malignant degeneration.

Consent & approval

Appropriate consents and approval for the case study was obtained by the authors.

Funding & Conflict of Interest

There are no sources of financial supports.

The authors declare to have no conflict of interest.

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