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An Isolated Congenital Paraureteral Fibrous Band Causing Intermittent Hydronephrosis in a Toddler

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Description

Intermittent hydronephrosis in early childhood presents a diagnostic dilemma, particularly when conventional imaging does not reveal a fixed or intrinsic cause of obstruction. A three-year-old boy was referred to the pediatric urology clinic with a history of recurrent, poorly localized abdominal discomfort occurring over six months. These episodes were self-limited and not associated with fever, vomiting, hematuria, or changes in urinary frequency. The child had been born at term following an uncomplicated pregnancy, and antenatal ultrasonography had demonstrated normal renal anatomy. There was no history of urinary tract infection, trauma, or prior abdominal surgery. Developmental milestones were appropriate for age, and physical examination was unremarkable.

Initial renal ultrasonography performed during a symptomatic episode revealed moderate dilation of the left renal pelvis and proximal ureter, while the renal parenchyma remained preserved. Repeat ultrasonography obtained several weeks later, when the child was asymptomatic, showed near-complete resolution of the hydronephrosis. This fluctuating pattern prompted further investigation. Laboratory evaluation, including serum creatinine and urinalysis, was normal. A voiding cystourethrogram was performed to exclude vesicoureteral reflux and posterior urethral valves and demonstrated normal bladder and urethral anatomy with no reflux.

Given the intermittent nature of the findings, a diuretic renogram was obtained. This study demonstrated preserved differential renal function, with the left kidney contributing 48 percent of total function. However, delayed drainage was observed during the symptomatic phase of the study, raising suspicion for a functional or intermittent obstruction. Magnetic resonance urography was subsequently performed to better delineate the anatomy. While the study suggested a subtle narrowing of the distal left ureter, no intrinsic abnormality such as a stricture, ureterocele, or crossing vessel could be definitively identified.

Despite conservative observation, the child continued to experience episodic pain, and follow-up imaging continued to show fluctuating hydronephrosis. After multidisciplinary discussion and counseling with the family, diagnostic laparoscopy was elected to further evaluate a possible extrinsic cause of ureteral obstruction. Intraoperative findings revealed a dense fibrous band crossing anterior to the distal left ureter and tethering it

to the pelvic sidewall. The band appeared well-formed and avascular, with no surrounding inflammation or scarring, suggesting a congenital origin rather than an acquired process.

During gentle bladder filling intraoperatively, visible kinking of the ureter occurred at the point where it was constricted by the fibrous band, confirming its functional significance. Proximal ureteral peristalsis appeared impaired during this maneuver and normalized once the bladder was decompressed. The fibrous band was carefully divided, releasing the ureter and restoring its mobility. Inspection of the ureter revealed no intrinsic abnormality, and ureteral reimplantation was deemed unnecessary. A temporary ureteral stent was placed to facilitate postoperative drainage and removed four weeks later without complication.

Histopathological examination of the excised tissue demonstrated mature fibrous connective tissue without evidence of inflammation, malignancy, or neural elements. The postoperative course was uneventful, and the child was discharged home on the second postoperative day. At follow-up visits, the parents reported complete resolution of abdominal discomfort. Serial ultrasonography performed at three, six, and twelve months demonstrated sustained resolution of hydronephrosis with stable renal parenchymal thickness. Renal function remained normal throughout follow-up.

Congenital paraureteral fibrous bands are an exceedingly rare cause of ureteral obstruction in children. Unlike intrinsic ureteral anomalies, these extrinsic lesions may produce intermittent symptoms and imaging findings, particularly when their obstructive effect is influenced by bladder filling or body position. As demonstrated in this case, standard imaging modalities may fail to identify such lesions preoperatively, leading to diagnostic uncertainty and delayed intervention. Minimally invasive exploration can therefore play a valuable role in selected cases where symptoms persist despite inconclusive non-invasive evaluation.

The intermittent nature of the hydronephrosis observed in this patient highlights an important limitation of snapshot imaging modalities in pediatric urology. Ultrasound and magnetic resonance studies may underestimate or entirely miss extrinsic compressive lesions when performed during asymptomatic intervals. Functional studies such as diuretic renography may raise suspicion but often lack sufficient anatomical detail to guide definitive diagnosis. As demonstrated in this case, symptom correlation with imaging findings was a key factor in escalating diagnostic evaluation.

Minimally invasive surgical exploration provided both diagnostic clarity and definitive treatment with minimal morbidity. Laparoscopy allowed direct visualization of the ureter throughout its pelvic course and facilitated safe division of the constricting band without the need for extensive dissection or reconstruction. Early intervention prevented progression to permanent renal damage, which may occur if intermittent obstruction evolves into chronic high-pressure dilation. The excellent postoperative outcome further supports the role of targeted surgical management in selected cases. From a clinical perspective, this case reinforces the importance of long-term follow-up in children with unexplained hydronephrosis, even when renal function appears preserved. Recurrent symptoms, fluctuating imaging findings, and parental concern should prompt reconsideration of conservative strategies. Multidisciplinary discussion and shared decision-making with caregivers are essential when weighing the risks and benefits of surgical exploration in young children.

Conclusion

In conclusion, congenital paraureteral fibrous bands should be considered a rare but important cause of

intermittent hydronephrosis in pediatric patients. Awareness of this entity may help clinicians avoid delays in diagnosis and treatment. When noninvasive studies are inconclusive and symptoms persist, minimally invasive exploration can provide definitive diagnosis and resolution while preserving renal function and improving quality of life.