

Case report

Bilateral Vesicoureteral Junction Obstruction: A Case Report

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Bilateral Vesicoureteral Junction obstruction (VUJO) is a rare urological condition characterized by the narrowing or blockage at the junction where the ureters meet the bladder, affecting both sides. This obstruction impedes the normal flow of urine from the kidneys to the bladder, leading to a buildup of hydronephrosis. The condition can be congenital, often detected prenatally through ultrasound, or acquired due to factors such as scar tissue, infection, or kidney stones. Symptoms may include flank pain, urinary tract infections, hematuria, and in severe cases, impaired renal function. Diagnosis typically involves imaging studies such as renal bladder ultrasound, and mismanagement of bilateral VUJ obstruction aims to preserve renal function and alleviate symptoms. Treatment options range from conservative management with regular monitoring to surgical interventions like ureteral reimplantation, depending on the severity of the obstruction and the degree of renal impairment. We report a case of 3 years 3-year-old female who complains of recurrent pyelonephritis. Imaging studies revealed bilateral VUJO with bilateral megaureter and hydronephrosis. ureteroneocystostomy done. The patient tolerated the procedure well, with no intraoperative complications. Postoperative recovery was uneventful, and follow-up imaging confirmed the successful removal of the affected ureteral segment. Ureteroneocystostomy surgery is a viable surgical option for managing symptomatic VUJO.

Introduction

Vesicoureteral junction obstruction (VUJO) is characterized by a total or partial obstruction of urine flow in the distal portion of the ureters. VUJO is one of the conditions included in the heterogeneous group of congenital anomalies of the kidney and urinary tract (CAKUT) (1). After ureteropelvic junction obstruction (UPJO), VUJO is the second most common cause of hydro-nephrosis in newborns, accounting for approximately 20% of cases, with an estimated incidence of 36 per 100000 live births (2). Although still uncertain, its pathogenesis is associated with an abnormality or delay in the development of the muscles of the distal ureteral portion during the 20th week of pregnancy (3). It is considered the second leading cause of prenatal hydronephrosis [1]. Ureteroneocystostomy is the gold standard in the treatment of primary obstructive megaureter (POM) (4). Ureteroneocystostomy is a surgical procedure performed to correct abnormalities at the junction where the ureter meets the bladder, known as the vesicoureteric junction (VUJ). This surgery is typically indicated for patients with conditions such as VUJ obstruction, which can lead to severe hydronephrosis, recurrent urinary tract infections (UTIs), and impaired kidney function (5). The success of the surgery largely depends on the underlying cause of the obstruction and the overall health of the patient. Postoperative care includes monitoring for complications such as infection or leakage at the surgical site, and follow-up imaging studies to ensure the patency of the reimplanted ureter. This procedure plays a crucial role in preserving renal function and improving the quality of life for patients with obstructive uropathies (6).

Case Presentation

3-Year-Old Girl with Bilateral Flank Pain and Recurrent UTIs: Complaints of Bilateral flank pain and recurrent urinary tract infections (UTIs) over a prolonged period. The patient has no family history of congenital malformations or other related conditions. No previous surgeries or chronic diseases except for the current condition CT scan. Figure 1 revealed severe hydronephrosis grade IV bilaterally with tortuous dilated megaureters. MCU (Micturating Cystourethrogram). Figure 2 shows obstruction at the VUJ with no evidence of vesicoureteral reflux. Laboratory investigations revealed that all results were within the normal range. Systemic Examination was Normal, with no abnormalities detected. The patient was diagnosed with Bilateral severe hydronephrosis due to VUJ obstruction, Tortuous, dilated megaureters contributing to the

condition. The patient is planned for Surgical Intervention. The patient is scheduled for ureteroneocystostomy to relieve the obstruction and preserve kidney function.

Under general anesthesia using Pfannenstiel incision Inserted a Foley catheter was inserted per urethra into the bladder. Filled the bladder by gravity with sterile irrigate Approached Bladder Extraperitoneally Isolated the Left Ureter Identified the obliterated umbilical artery Ligated and divided Located the left ureter just below this landmark Passed a vessel loop posterior to the left ureter for atraumatic traction Dissected caudally toward the bladder Incised Detrusor Muscle using electrocautery along the intended path of the submucosal tunnel Dissected Left Ureter Continued dissection of the left ureter outside of Waldeyer's sheath down to the urothelium Identified the urothelium as a translucent bluish layer with the bladder full Dissected detrusor flaps from the urothelium perpendicular to the submucosal tunnel using blunt and electrocautery dissection Repaired any small violation of the urothelium with 5-0 vicryl Laid Left Ureter into Tunnel Placed the left ureter into the submucosal tunnel closed the detrusor muscle over the left ureter with 4-0 polyglactin simple interrupted sutures and the same steps repeated for the other side the patient notably tolerated the surgery well and follow up lab investigations was within normal ranges , indicating a favorable recovery.

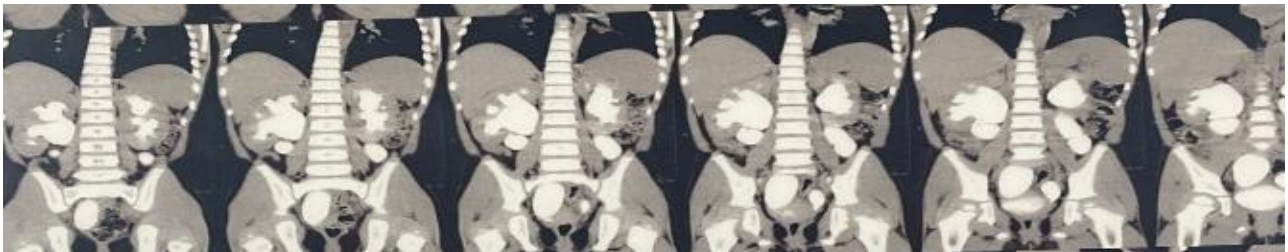


Figure 1. CT scans show marked bilateral hydronephrosis grade IV bilaterally with tortuous dilated megaureters



Figure 2. Obstruction at the vesicoureteric junction with no evidence of vesicoureteral reflux

Discussion

The vesicoureteric junction is the most distal part of the ureter, connecting to the urinary bladder. It plays a critical role in allowing the antegrade passage of urine from the ureter into the bladder while preventing the reflux of urine back into the ureter (7). The VUJ's function is facilitated by its anatomical configuration, which includes a one-way valve mechanism formed by the oblique insertion of the ureter into the bladder wall (8) Stenosis at this junction can result from congenital anomalies, such as a ureterocele or a Chwalla membrane that fails to rupture during embryonic development (9). Acquired causes include inflammation,

fibrosis, or surgical trauma. The resultant obstruction can lead to increased pressure in the upper urinary tract, causing hydronephrosis and potential renal damage (10). Patients with VUJ stenosis often present with symptoms related to urinary obstruction. These may include flank pain, recurrent UTIs, hematuria, and symptoms of bladder dysfunction. In severe cases, patients may develop significant hydronephrosis, which can be detected on imaging studies (11) Ultrasound is often the first-line imaging modality, revealing hydronephrosis and hydroureter. It is non-invasive and provides real-time imaging, making it a valuable tool for initial assessment (12) VCUUG is used to assess for vesicoureteral reflux and the degree of obstruction. It involves the insertion of a catheter into the bladder, filling it with contrast material, and taking X-rays during voiding 9 MRU provides detailed anatomical information and is particularly useful in complex cases. It offers high-resolution images without the use of ionizing radiation (10). Ureteroneocystostomy is a surgical procedure used to reimplant the ureter into the bladder. This surgery is often performed to address conditions such as ureteral obstruction, vesicoureteral reflux, or injury to the distal ureter. The procedure can be performed using open, laparoscopic, or robotic-assisted techniques, each with its advantages and considerations. Traditionally, this has been the standard approach. It involves a lower abdominal incision to access the bladder and ureter. The ureter is then reimplanted into the bladder using techniques such as the Leadbetter-Politano or Cohen method (13). The Lich-Gregoir technique is a well-established surgical method used primarily for the treatment of vesico-ureteral reflux (VUR), a condition where urine flows backward from the bladder into the ureters or kidneys. This technique, initially described by Lich in 1962 and Gregoir in 1964, has evolved significantly, particularly with the advent of laparoscopic approaches (14) The Lich-Gregoir procedure involves extravesical ureteral reimplantation. This means the ureter is reimplanted into the bladder without opening the bladder itself. The laparoscopic adaptation of this technique has made it less invasive, reducing postoperative pain and shortening hospital stays (14). One of the most critical reasons for early diagnosis of VUJ stenosis is the prevention of kidney damage. The obstruction caused by the stenosis can lead to a buildup of urine in the ureter and kidney, a condition known as hydronephrosis (15). Over time, this can cause increased pressure in the kidney, leading to damage and potentially permanent loss of kidney function. Early diagnosis allows for timely intervention, which can prevent or minimize this damage, preserving kidney function and preventing long-term complications (16). Early diagnosis and treatment of VUJ stenosis can help reduce the frequency and severity of these infections, protecting the child's health and well-being (17).

Conflicting Interests

There are no conflicts of interest.

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انسداد الوصلة المثانية الحالبية الثنائية هو حالة بولية نادرة تتميز بتضييق أو انسداد عند نقطة التقاء الحالبين بالمثانة، مما يؤثر على كلا الجانبين. يعيق هذا الانسداد التدفق الطبيعي للبول من الكلى إلى المثانة، مما يؤدي إلى تراكم السوائل الحالبية والكلى. قد تكون هذه الحالة خلقية، وغالبًا ما تكتشف قبل الولادة بالموجات فوق الصوتية، أو مكتسبة بسبب عوامل مثل النزوح الندي أو العدوى أو حصى الكلى. قد تشمل الأعراض ألمًا في الخصر، والتهابات المسالك البولية، وبييلة دموية، وفي الحالات الشديدة، ضعف وظائف الكلى. يتضمن التشخيص عادة فحوصات تصويرية مثل الموجات فوق الصوتية للمثانة الكلوية، ويهدف سوء إدارة انسداد الوصلة المثانية الحالبية الثنائية إلى الحفاظ على وظائف الكلى وتخفيف الأعراض. تتراوح خيارات العلاج بين العلاج المحافظ مع المراقبة المنتظمة والتدخلات الجراحية مثل إعادة زرع الحالب. وذلك حسب شدة الانسداد ودرجة ضعف وظائف الكلى. نبلغ عن حالة طفلة تبلغ من العمر 3 سنوات تشكو من التهاب الحويضة والكلى المتكرر. أظهرت دراسات التصوير وجود تضخم حالي ثنائي مع تضخم حالي ثنائي واستسقاء كلوي. أجريت عملية استئصال كيس الحالب والبول. تحمل المريض الإجراء جيدًا، دون أي مضاعفات أثناء الجراحة. كان التعافي بعد الجراحة سلسًا، وأكدت صور المتابعة نجاح إزالة الجزء الحالي المصاب. تُعد جراحة استئصال كيس الحالب والبول خيارًا جراحيًا فعالًا لإدارة حالات تضخم الحالب والبول المصحوبة بأعراض انسداد الوصلة المثانية الحالبية الثنائية.