RETROCAVAL URETER - A RARE CAUSE OF HYDRONEPHROSIS (A Case Report)

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Introduction

Retrocaval ureter is an uncommon cause of ureteric obstruction and serves to remind the surgeon that not every hydronephrosis is due to a congenital pelviureteric junction obstruction. The diagnosis is by intravenous urogram (IVU) and is usually unexpected. Most urologists encounter very few cases in their life time.

Case Report

A 49-year-old man underwent an abdominal ultrasound while being evaluated for a constant dull epigastric pain and nonspecific dyspepsia. The ultrasound showed evidence of obstructive uropathy and an IVU was performed. This showed the classical reversed-J sign of a retrocaval ureter with significant contrast hold up (Fig 1). A renal scan and renogram were corroborative (Figs 2 & 3). A combined retrograde pyelogram and inferior vena cavogram confirmed diagnosis of Type I retrocaval ureter (Fig 4).

The patient underwent surgical exploration. The ureter was dismembered medial to the inferior vena cava. Ureteric division however, did not lead to pelvic emptying and hence the pelvi-ureteric junction (PUJ) was excised and a ureteropyelostomy fashioned. Six week later the ureter was normal, hydronephrosis was regressing and the patient was asymptomatic. A post-operative retrograde pyelogram (RGP) (Fig 5) confirmed the successful outcome.

Discussion

First reported in 1893, the retrocaval ureter is a congenital anomaly in which the right ureter passes behind the vena cava, leading to varying degrees of ureteral compression. The etiology relates to the embryological development of the ureter and vena cava. The metanephros or fetal kidney, during its craniad migration ascends through a ring of venous channels comprising of the posterior cardinal and supracardinal veins dorsally and

the subcardinal vein ventrally. Normally the inferior vena cava forms from the right supracardinal vein. However, if the ventrally placed subcardinal vein fails to regress and becomes the vena cava instead, the ureter is trapped dorsal to it [1].

The onset of symptoms is usually in the 4th

Fig. 1 : Retrograde pyelogram showing the classical reversed-J sign with contrast hold up on the right side.

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Fig. 2: Renal scan of the same patient confirming contrast hold up.

Fig. 3: Renogram confirming the findings of the retrograde pyelogram.

decade and males predominate by a ratio of 3:1. The manifestation is usually with right flank pain, though haematuria, calculus, urinary infection or recurrent pyelonephritis may also be the presenting evidence[2]. The diagnosis is by IVU and it is typically reached during imaging studies carried out to establish the cause of pain. Renal scintigraphy [3] and computerised tomography [4] are other diagnostic modalities.

Fig. 4: A combined retrograde pyelogram and inferior vena cavogram shows the Type-I retrocaval ureter.

Two types have been described [5]. In the more common Type I, the dilated ureter assumes the classical reversed-J or "fish hook" appearance. The obstruction is at the edge of the iliopsoas at the point where the ureter turns cephalad before passing behind the vena cava. A ureteral kink, adynamic segment or pressure from the psoas have been postulated to be the cause of the obstruction [6]. The present case was of this type and mere ureteric division did not lead to pelvic decompression till the PUJ was excised. In Type II, hydronephrosis is less severe and the ureter passes horizontally behind the vena cava without an upward kink. The obstruction is at the lateral wall of the vena cava where the ureter is compressed behind the perivertebral muscles.

Treatment options include observation for those who are asymptomatic, reconstructive surgery for those with hydronephrosis or nephrectomy if there is cortical atrophy. Reconstruction is essentially a

Fig. 5: Postoperative retrograde pyelogram showing free flow of contrast in ureter.

dismembered pyeloureterostomy - the Harril procedure [7]. As the retrocaval segment can be aperistaltic its excision or bypass is necessary [8]. A stented transabdominal transperitoneal operative approach has been advised. However the conventional flank approach was employed in this case with success. It was found remarkably easy and is recommended.

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