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Case Report
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Duplex Inferior Vena Cava and Left Double Kidney with Severe Hydronephrosis: A Case Report

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Abstract

Background: With the development of radiological techniques, it is easier and more accurate for us to evaluate preoperative variants of renal vasculature. Herein, we present a case for duplex inferior vena cava and left double kidney with severe Hydronephrosis. In combination with CT images and laparoscopic surgery, laparoscopic left nephrectomy was performed successfully.

Methods: A 51-year-old woman complained of left waist pain for 3 years and aggravation for 2 months. Preoperative CT showed left duplex kidney with severe Hydronephrosis. Furthermore, we have noticed a duplex inferior vena cava. A transperitoneal laparoscopic left nephrectomy was performed successfully.

Results: The patient recovered uneventfully and was discharged at 3 days postoperatively.

Conclusion: Our patient represents a case of a rare venous anomaly, which has an incidence rate of 0.2% to 3%. As far as we know, no such cases have been reported previously in terms of duplex inferior vena cava and left double kidney with severe hydronephrosis. Abdominal enhanced CT is an effective tool for evaluating vascular abnormalities in patients. Laparoscopic left nephrectomy can be performed effectively and safely with the help of modern imaging techniques, even in patients with vascular anomalies.

Keywords: Double inferior vena cava; Duplex kidney; CT

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Introduction

With the development of radiological techniques, it is easier and more accurate for us to evaluate preoperative variants of renal vasculature. Herein, we present a case for duplex inferior vena cava and left double kidney with severe Hydronephrosis. As far as we know, no such cases have been reported previously.

Case Presentation

A 51-year-old woman complained of left waist pain for 3 years and aggravation for 2 months. Preoperative CT (Figure 1) showed left duplex kidney with severe hydronephrosis. Furthermore, we have noticed a duplex inferior vena cava. Initially, we tried a repeated nephrectomy on the left side. However, there was uncertain arterial rupture and bleeding during the separation of renal artery, the repetitive kidney and the ureter. In order to prevent renal artery rupture and damage to the abdominal aorta, we changed the surgical procedure after communicating with patients and their families. After completely dissociating left kidney, the repeated kidney and exposing the kidney pedicle, we ligated and disconnected the renal artery, renal vein and ureter. Finally, laparoscopic left nephrectomy was performed successfully.

Discussion

The retroperitoneal venous system, including the inferior vena cava and renal vein, are mainly developed from three pairs of embryonic venous systems: the vena postcardinalis, the sub cardinal veins and the supracardinal veins. The vena postcardinalis develops at about the 6th week of the embryonic stage, the sub cardinal veins develops at the 7th week, and the supracardinal vein develops at the 8th week. The upper pair of veins gradually begins to selectively degenerate when the next pair of veins develop. Finally, the supracardinal vein also begins to degenerate. At the same time, the three groups of veins merge with each other to form a complete inferior vena cava and its main branches below the liver [1-4]. Inferior vena cava developmental malformation is a rare group of congenital vascular variations due to embryonic developmental or degenerative abnormalities. The current

Figure 1: The black arrow refers to the double inferior vena cava, and the white arrow refers to the left duplex kidney with severe Hydronephrosis about 8.5 cm × 7.6 cm.

widely used classification was proposed by Chuang et al., [3] in 1974 according to the deformity of the distal part of the inferior vena cava. Double inferior vena cava deformity is caused by the persistence of the bilateral paraureteric veins without degeneration, whose incidence rate is about 0.2% to 3% [4]. In general, the right branch of the double inferior vena cava is the main branch, and the left branch is the sub-branch, but there are cases of double-balanced conditions. The left branch joins the right branch at the level of the renal vein before or after the aorta. The malformation can be accompanied by renal vein malformation or congenital renal deficiency, horseshoe kidney and cloacae valgus deformity and so on. As far as we know, no such cases have been reported previously in terms of duplex inferior vena cava and left double kidney with severe.

Hydronephrosis

Except for a few patients, most of the deformities do not provoke clinical symptoms, so no surgical treatments are needed. In the meantime, they are easily overlooked due to the absence of symptoms. However, special attention should be paid to the existence of such abnormalities in surgical operations, especially those involving retroperitoneal organs such as renal surgery, aortic and inferior vena cava surgery. Therefore, the authors believe that the definition of deformity before surgery can reduce the risks of accidental injury during operation. Enhanced CT is an effective tool for evaluating vascular abnormalities in patients. In addition to vascular abnormalities, the difficulties of surgery also include massive Hydronephrosis and severe tissue adhesions caused by repeated inflammatory irritations and infections. Laparoscopic left nephrectomy can be performed carefully and safely with the help of modern imaging techniques, even in patients with vascular anomalies.

References

1. Truty MJ, Bower TC. Congenital anomalies of the inferior vena cava and left renal vein implications during open abdominal aortic eurysm reconstruction. Ann Vase Surg. 2007;21(2):186-97.
2. Tacy TA, Silverman NH. Systemic venous abnormalities embryologic and echocardiography considerations. Echocardiography. 200l;18(5):401-13.
3. Chuang VP, Mena CE, Hoskins PA. Congenital anomalies 0f the inferior vena cava. Review of embryogenesis and presentation of a simplified classification. Br Radiol. 1974;47(556):206-13.
4. Ferris FJ, Hipona FA, Kalm PC. Venography of the inferior vena eava and its branches. Postgrad Med J. 1971;47(547):326.