A rare presentation of duplicated inferior vena cava in a donor nephrectomy

Oğuzhan Şal¹, Emre Arpalı², Başak Akyollu³, Burak Koçak⁴

CASE REPORT

A sixty-year-old male patient was a candidate for hand assisted laparoscopic donor nephrectomy, after clinical evaluation he was found appropriate for a donor nephrectomy. Furthermore in this paper, management and possible embryological background of this unique variation will also be discussed.

Key Words: Inferior vena cava; Donor nephrectomy; Duplicated inferior vena cava; Laparoscopic surgery; Variations; Radiology; Retroperitoneum

INTRODUCTION

In human anatomy, Inferior Vena Cava (IVC) is located retroperitoneally and composes of two common iliac veins, renal veins, right gonadal vein and three hepatic veins. It traverses the abdomen retroperitoneally draining entire abdomen except alimentary canal and crosses the diaphragm at T8 level. When retroperitoneum is the surgical field, it is vital to know IVC and its possible anatomical relationships with other structures to perform safe surgeries. Here in this paper, we represent a patient who underwent laparoscopic, hand assisted donor nephrectomy and presented with duplicated IVC (DIVC) which was detected in routine preoperative radiological workup and resulted in discussions during the procedure. Furthermore in this paper the embryological background of this variation will also be discussed.

CASE REPORT

The patient was positioned in right lateral decubitus position allowing surgical team to place laparoscopic trocars through right epigastric region and pre-operative workup was started. In his abdominal CT, left and right IVC were observed. One is main IVC and the other is small IVC which is divided with a vertical septum. The patient had a vertical septum in the retroperitoneum which divided the IVC in two parts. The main IVC was draining the venous blood from all the abdominal and pelvic organs and the small IVC was draining the venous blood from the lower extremities. The main IVC was draining the venous blood from all the abdominal and pelvic organs and the small IVC was draining the venous blood from the lower extremities. The main IVC was draining the venous blood from all the abdominal and pelvic organs and the small IVC was draining the venous blood from the lower extremities. The main IVC was draining the venous blood from all the abdominal and pelvic organs and the small IVC was draining the venous blood from the lower extremities.

As a result of this caval variation, the graft had a shorter left renal vein, the usual anatomical advantage of choosing left kidney for transplantation due length of the left renal vein became obsolete. However, after discussion of where to anastomose the left renal vein, the final decision was not different from the routine site which was external iliac veins. Both patients had uneventful post-operative period and were discharged with full health.

DISCUSSION

Kidney transplantation is a complex surgical operation requiring utmost anatomical knowledge of retroperitoneum and vasculature. IVC and aorta are the main structures traversing through the retroperitoneum while draining and supplying all the intra-abdominal and pelvic organs. It is vital to know anatomy and embryology of IVC and its tributaries. In the literature there are cases of DIVC reported, however most of them are incidental or discovered during cadaveric dissections. Unlike other reports, our case was

1 Department of Medicine, Koç University School of Medicine, Istanbul, Turkey; 2 Urologist, Organ Transplantation Center, Koç University Hospital, Istanbul, Turkey; 3 General Surgeon, Organ Transplantation Center, Koç University Hospital, Istanbul, Turkey; 4 Urologist-Chief of Kidney and Pancreas Transplantation Unit, Organ Transplantation Center, Koç University Hospital, Istanbul, Turkey

Correspondence: Dr. Oğuzhan Şal, Department of Medicine, Koç University School of Medicine, Koç University, Sarıyer, Istanbul, Turkey, Tel: +9053999453739, email: osal13@ku.edu.tr

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DIVC has a prevalence of %0.2-3 [3] and slightly more frequent in males. Although the exact etiology behind is largely unclear, it is believed that this variation is a result of persistence of veins forming the IVC on both sides including the proximal portion of vitelline vein and sub- and supracardinal veins [4,5]. DIVC is usually asymptomatic, however due to variation in venous drainage there can be risk of embolism which could be prevented by using caval filter [6]. Furthermore, DIVC has increased importance in retroperitoneal surgeries and cardiopulmonary surgeries, the surgeon should be aware of this variation to prevent life-threatening hemorrhages and complications [7-10].

CONCLUSION

Careful study of routine radiological work-up such as CT or MRI usually suffices in defining these kind of variations. However CT is usually preferred over MRI due to cost-effectiveness, speed and lesser contraindications. Although usage of the Doppler ultrasonography is reported, which has higher inter-user variations and has less validity in overweight patients. Despite of all these advanced preoperative radiological work-up the surgeon should always stay vigilant during the operation.

ACKNOWLEDGEMENT

The following article is about a patient who was a renal transplantation donor, who had a rare presentation of Inferior Vena Cava anatomy. Clinical presentation, radiological work-up, management and possible embryological background of Duplicated Inferior Vena Cava and brief history of the kidney transplantation are discussed.

REFERENCES