

Double Inferior Vena Cava

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ABSTRACT

Venous anomalies involving the inferior vena cava are very rare. The case of a 74-year-old man with coronary artery disease is presented. Interestingly, a double inferior vena cava was incidentally discovered during coronary artery bypass grafting. Persistence of the left hepatic segment vein appeared as a left inferior vena cava—a very rare condition.

INTRODUCTION

Systemic venous anomalies are well known, but most of them involve anomalies of the superior vena cava [Olsen 1980]. The present report describes the unusual case of a double inferior vena cava incidentally discovered during cardiac surgery.

CASE REPORT

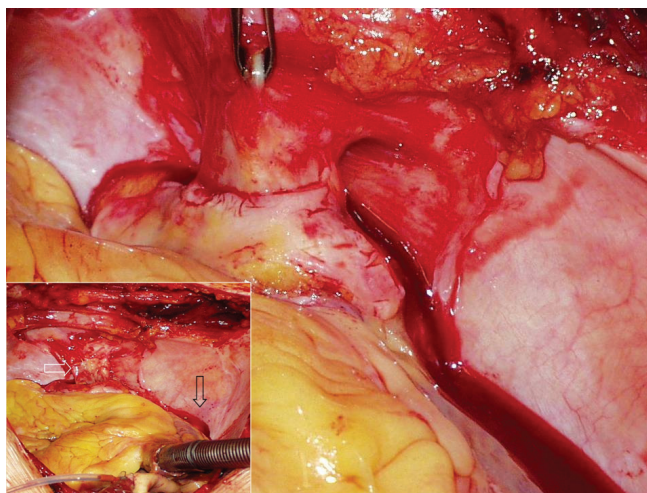
A 74-year-old man was admitted for elective coronary artery bypass grafting because of severe 3-vessel ischemic heart disease. He had a history of pacemaker implantation 10 years earlier, chronic obstructive lung disease, hypertension, and hyperlipoproteinemia. At surgery, a double-stage venous cannula was used for cardiopulmonary bypass. During mobilization of the heart for presentation of the peripheral branches of the right coronary artery and the circumflex branch, a second (left-sided) inferior vena cava was discovered (Figure). There were no other congenital anomalies. The intraoperative and postoperative course was uneventful.

DISCUSSION

Persistence of left systemic veins is mostly observed in the pediatric population with congenital heart diseases [Buirski

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Intraoperative view of the second (left) inferior vena cava. Inset shows the inferior vena cava (black arrow) and the second inferior vena cava (white arrow).

1986]. The most common abnormality is the presence of a persistent left superior vena cava. In cases with an absence of associated cardiac abnormalities, the discovery of a persistent left superior vena cava is sometimes an incidental finding during central venous catheterization [Higgs 1998; Danielpour 2005].

The occurrence of a persistent inferior vena cava is an extremely rare finding. This second inferior vena cava seems to be a left hepatic vein. The presence of a persistent left hepatic vein connecting with the right atrium has been reported as an autopsy finding [Bunger 1982; Yoshinaga 1997; Azuma 2002].

The embryonic development of systemic veins is complex and variable. Most of the left-sided system of cardinal veins (which drains the head, neck, and arms) disappears, leaving only the coronary sinus and a remnant known as the ligament of Marshall [Bhatti 2007]. The presence of the left hepatic vein drainage into the right atrium may be explained by retention of the left vitelline connection with the left sinus horn [Bunger 1982; Yoshinaga 1997; Azuma 2002].

A double inferior vena cava is a very rare abnormality and is due to the persistence of the left hepatic vein. Cardiovascular

surgeons should to be aware of this condition to avoid laceration and bleeding during surgery. Additionally, an air block of the venous line of the cardiopulmonary bypass system may occur, at least theoretically, in cases of double-staged venous cannulation. In cases of right heart surgery, the vein may be surrounded with a tourniquet to avoid bleeding during the procedure.

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