Case Report

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Incidental Ventricular Septal Defect (VSD) in the Donor of a Live Donor Liver Transplant: Tackle and Proceed

Surgery Section

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ABSTRACT

Live Donor Liver Transplantation (LDLT) is an act of selflessness on the part of the donor who is subjected to a major hepatectomy. Ensuring safety and long-term well being of the donor is of utmost priority. We describe a 21-year-old otherwise healthy donor with perimembranous Ventricular Septal Defect (VSD) who successfully underwent donor hepatectomy after closure of the VSD. There is no literature available to guide regarding course of action in such a condition neither any study to substantiate the risk involved. Optimum anticoagulation, endocarditis prophylaxis and optimum interval between the two procedures are areas to be defined as our experience with similar cases increases. Our case emphasizes the importance of multidisciplinary approach and management of such patient at high volume centers.

Keywords: Donor hepatectomy, Echocardiography, Perimembranous ventricular septal defect

CASE REPORT

A 21-year-old male, non-alcoholic, non-smoker with no known co-morbidities or adverse medical or surgical history was evaluated for living donor liver transplant. Family history was not significant. His general and systemic examination was unremarkable except for a systolic murmur. Haematological and biochemical parameters including liver function tests were normal. Chest X-ray showed no significant abnormality but Electrocardiogram (ECG) was suggestive of sinus arrhythmia with left axis deviation. Echocardiogram showed subaortic aneurysm with a small perimembranous Ventricular Septal Defect (VSD) and left to right shunt with normal ventricular size. A cardiology opinion was sought and the issue was discussed in a multidisciplinary team consisting of transplant surgeons, cardiologist, pulmonologist, hepatologist and anaesthesiologist. It was decided that though the risk of a perioperative complication was small, it was safer to offer VSD closure before proceeding with donor hepatectomy.

Transcatheter VSD closure with amplatzer duct occlude II was performed under transoesophageal echocardiography guidance with appropriate antibiotic and anticoagulant prophylaxis. He withstood the procedure well. Post intervention, echocardiography showed device in position and no residual VSD. He was discharged in a haemodynamically stable condition on day 2 of procedure on oral antiplatelet drugs (clopidogrel + aspirin). It was continued for four weeks.

He underwent donor right hepatectomy after one week of withholding the antiplatelet drugs. Operative time was 600 minutes and blood loss was 300 ml. He did not require intraoperative blood transfusion. Postoperation ECG and echocardiography were normal with no evidence of VSD. He was started on low molecular weight heparin on Postoperative Day (POD) 2 and was continued till the discharge. Postoperatively, he recovered well and was discharged in a stable condition on POD 6. He was not given any antiplatelet medication post hepatectomy. There was no complication reported at a follow up period of 6 months.

DISCUSSION

Perimembranous VSD in a donor undergoing evaluation for living donor liver transplant is very rare finding and never been reported before. Perimembranous VSD are located in the membranous septum, a relatively small portion of the septum located near the heart valves, may also be described as outlet VSD. Membranous VSD can close at any time if a ventricular septal aneurysm is present. VSD occurs when there is a fault in the formation of any portion of the ventricular septum or components forming the septum do not appropriately grow together [1]. Perimembranous VSD is caused by failure of the fusion of endocardial cushions, the conotruncal ridges, and the muscular septum.

Most patients with small perimembranous VSD are asymptomatic but come to medical attention when a systolic murmur is discovered. Echocardiography is the most reliable noninvasive modality to identify the presence, size, number and location of the VSD. Small VSD do not cause symptoms in infancy or childhood and rarely require surgical or medical treatment. Option for intervention in VSD is either by surgery or by cardiac catheterization [2]. Recent studies comparing outcomes of surgical and percutaneous closure of isolated VSD reported early and delayed atrioventricular block in less than 1% in surgical and 3-20% in percutaneous closure group [3,4]. Transcatheter closure of perimembranous VSD is emerging as an accepted, viable alternative with low post procedure morbidity and mortality and hence was chosen as method for closure in our case [5].

There is no literature available to guide regarding course of action in such a condition. Patient with VSD have higher pressure than normal in the pulmonary capillaries and may predispose to parenchymal lung disease. Risks for surgical patients in this scenario include serious and frequent arrhythmia which may require regular medical follow-up. The risk of arrhythmia is greater if surgery is done in adulthood. There is also pertinent risk for Infective Endocarditis (IE) and even small VSDs may occasionally be a source of IE. Most adults with small VSDs are usually asymptomatic with normal physical examination except a loud murmur but few may develop heart failure and may need diuretics to control fluid accumulation along with inotropic agents.

CONCLUSION

The risk involved in major hepatectomy with small perimembranous VSD may be low and there are no previous studies to substantiate the risk. However, it should not be considered as an absolute contraindication for donor hepatectomy. Our case emphasizes the importance of multidisciplinary approach and management of such patient at high volume centers. Optimum anticoagulation,

endocarditis prophylaxis and optimum interval between the two procedures are areas to be defined as our experience with similar cases increases.

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