

**Case Report:**

**Intracardiac migration of expandable metallic stent from IVC in a case of Budd-Chiari Syndrome – A rare case report**

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**Abstract:**

Endovascular stenting is regarded as an effective treatment modality for patients with Budd-Chiari syndrome (BCS). A 52-year-old man, underwent endovascular stenting of the IVC with balloon dilatation for palliation of BCS. He complained of palpitation day after the procedure. Investigation was done accordingly which revealed that the IVC stent migrated into the Right atrium. Endovascular retrieval was unsuccessful. Here we are going to present the case of Budd-Chiari syndrome with intracardiac migration of metallic stent which was operated successfully.

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**Introduction**

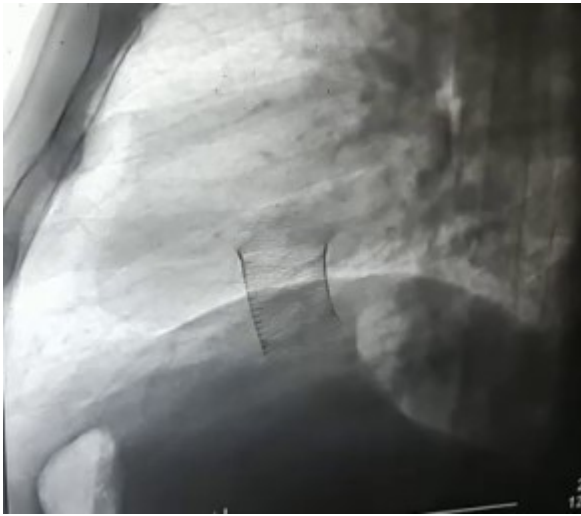
Budd-chiari syndrome is a hepatic venous outflow obstruction at any level from small hepatic vein to the junction of IVC and RA. Endovascular treatment is the main intervention of choice (1,2) and TIPS is currently most common intervention for patients with BCS. The reported overall incidence of complication is <3% and morbidity rate is about 1% (3) including stent migration. Right ventricular stent migration is a rare complication of systemic venous stenting(4,5). Endovascular retrieval of foreign body is treatment of choice with few reported complications include cardiac arrhythmias, ventricular perforation, artery spasm, thrombosis and injury to vessel at the puncture site or other vessel perforation. Operative removal of intravascular migrating stents is a major procedure with relatively high morbidity.

**Case**

A 52 year old male patient with h/o chronic liver disease CLD for 3 years with hepatic venous thrombosis due to budd-chiari syndrome was undergone IVC balloon angioplasty with stenting( self-expanding metallic) outside. Next day it was found that the stent was embolised to the heart. Endovascular retrieval of stent was attempted but not successful. The patient was referred to our institute for management. On clinical examination his heart rate was 84/min with irregular rhythm and BP of 110/78 mmHg without any murmur on auscultation. There was normal vesicular breath sound bilaterally over chest. There was enlarged liver soft nontender 2 cm below the costal cartilage. He underwent urgent Chest X ray, Fluoroscopic(fig-1) and Echocardiography evaluation. Chest X ray was suggestive of enlarged RA with dilated SVC/azygous vein. Echocardiography and Fluoroscopy were both suggestive of embolization of stent into the RA.

**Fig-1**

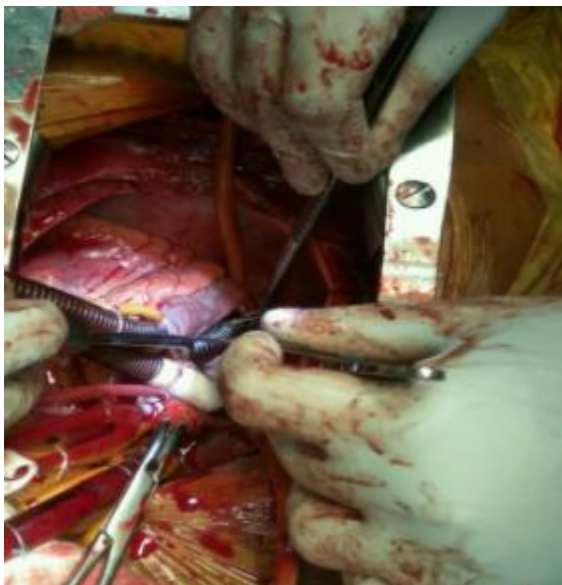
Fluoroscopic image showing intracardiac stent



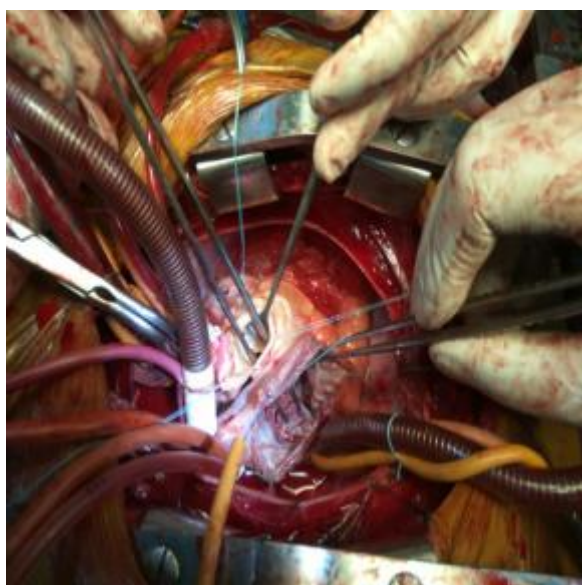
Patient was taken up for surgery after due consent. Midline sternotomy was done. There was dilated RA with palpable metallic stent inside. Decision for exploration of RA under cardiopulmonary bypass was taken. While cannulating the RA through the appendage bright red coloured blood was identified suggestive of mixing of arterial and venous blood. After CPB and hypothermia was initiated cross clamp was applied. Transverse aortotomy was done and antegrade root cardioplegia was started. Heart was arrested in diastole. After that all the chambers were examined properly. The stent was found in the right atrium(fig-2). It was found that there were single large ASD with rough margin(fig-3), injury in the septal and anterior leaflets of the tricuspid valve(fig-4), non-coronary sinus without any injury in the aortic valve leaflets.

**Intraoperative images showing stent, ASD, injury to tricuspid leaflets**

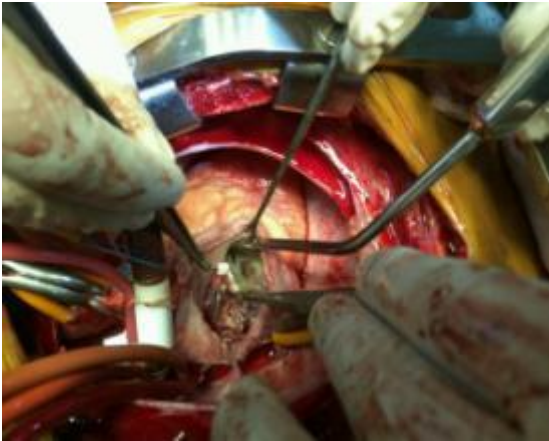
**Fig-2**



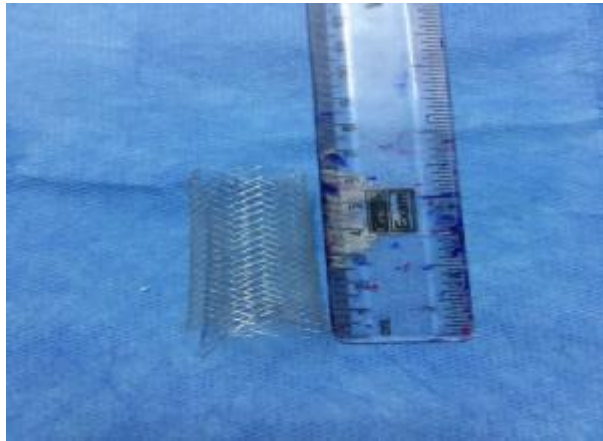
**Fig-3**



**Fig-4**



**Fig-5**



Pericardial patch closure of ASD was done. Suture repair of the tricuspid valve leaflets and non-coronary sinus was done later on after stent was retrieved successfully(fig-5). Patient was gradually weaned off cardiopulmonary bypass and shifted to ICU and discharged with uneventful icu stay.

#### **Discussion**

Budd-Chiari syndrome is a hepatic venous outflow at any level from small hepatic veins to the junction of inferior vena cava and right atrium. Hepatic and venous lesions include membranous or stenotic obstruction or thrombosis. Thrombosis of the hepatic vein is most common in western countries whereas in Asian countries membranous obstruction of the IVC or Hepatic veins.(6,7) Restoring of hepatic venous outflow is primary objective when treating BCS. Endovascular treatment (TIPS most common) is main therapeutic of choice in BCS.(1,2). Endovascular treatment is safe and effective way to treat BCS.(8) The common complications of endovascular treatment for BCS include hepatic encephalopathy, bleeding into abdominal cavity or biliary tract bleeding, hepatic artery injury. The reported overall incidence of complications is <3% and mortality rate is about 1%. (3)

High rate of serious complications due to presence of intravascular foreign bodies are described in literature. There are 71% incident rate of significant complication or death directly attributable to retained foreign body. 29% of patients in whom the foreign body not removed survived without serious complications, 33% had significant nonfatal complications and 38% died of causes directly related to foreign body.(9)

Intravenous foreign body should be removed as earliest as possible to prevent serious complications as thrombus formation with high risk of distal embolization, pulmonary embolism, endocarditis and to prevent myocardial damage and cardiac tamponade.

Right ventricular migration of stent is a rare complication of systemic venous stenting.(4,5) Endovascular retrieval of foreign body is treatment of choice with few reported complications including cardiac arrhythmias, ventricular perforation, artery spasm, thrombosis and injury to vessel at the puncture site or other vessel perforation.(10)

Operative removal of intravenous migrating stents is major procedure with relatively high morbidity rates.(11)

Endovascular retrieval is considered better as it minimizes the risk of open heart surgery. But in our case endovascular retrieval was not successful and patient developed sudden onset dyspnoea with arrhythmias and echo findings suggestive of stent in RA along with that patient also developed iatrogenic ASD and Severe TR. Because of this we decided to perform open heart surgery and stent retrieval, ASD repair and Tricuspid repair was done without any complications.

Post op stay in hospital was uneventful and patient was discharged and now under routine follow-up.

### **Conclusion**

Migration of foreign body is most dreadful condition and retrieval should be done as earliest possible. Endovascular retrieval is considered treatment of choice with few known complications but in cases where endovascular retrieval is difficult or failed we should have backup of open operative methods.

Although open technique has more morbidity but it is life saving procedure when other minimal invasive methods fail.

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