

## Baffle Leak after Senning Procedure: Role of Transesophageal Echocardiographic Imaging

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### Abstract

Senning procedure involves creating a network of baffles from the flaps raised from right atrium and native atrial septum so that inferior vena cava and superior vena cava flow is redirected to the mitral valve and pulmonary venous blood flow is redirected to the tricuspid valve. We describe a case of leak across the Senning baffle and the associated characterization on intraoperative transesophageal echocardiography.

**Keywords:** Senning operation; Baffle leak; transesophageal echocardiography

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### Introduction

Advancements in transesophageal echocardiography (TEE) has revolutionized the perioperative management of congenital heart disease (CHD). A comprehensive understanding of the complex CHD aids a cardiac anaesthesiologist in characterizing peculiar echocardiographic diagnosis. The index case bears testimony to the aforementioned fact.

### Case History

We present a case of a 20-year-old male who had undergone Senning procedure for d-transposition of great arteries (d-TGA) at the age of 1 year and currently complained of cyanosis and dyspnea on exertion for 2 years. Examination revealed a heart rate of 87 beats/min and room air oxygen saturation of 78%. A Grade 3/6 ejection systolic murmur was appreciated in the left second intercostal space. A leak across the Senning baffle was documented on transthoracic echocardiography and consequently, the patient was scheduled for a revision surgery.

Intraoperative transesophageal echocardiography (TEE) examination demonstrated a 'baffling' defect in the Senning baffle, characterizing the location, flow across the baffle on Doppler echocardiography and guiding the surgical repair of the leak (**Fig. 1**). TEE also revealed left

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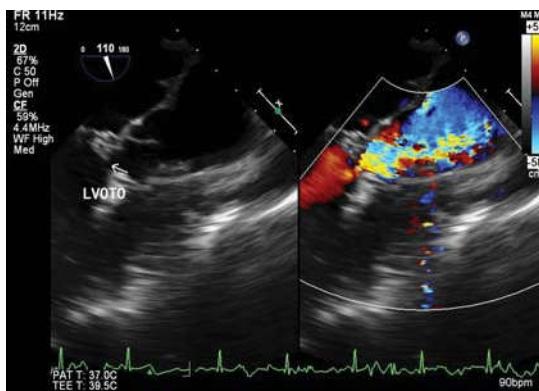
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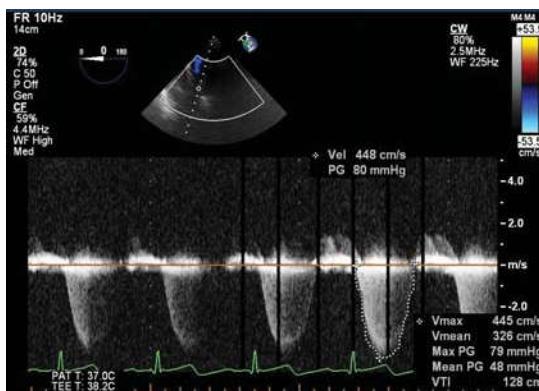
ventricle outflow tract obstruction (LVOTO) (Fig. 2, 3) which was relieved intraoperatively. Fig. 4 shows adequacy of the surgical correction of the leak.



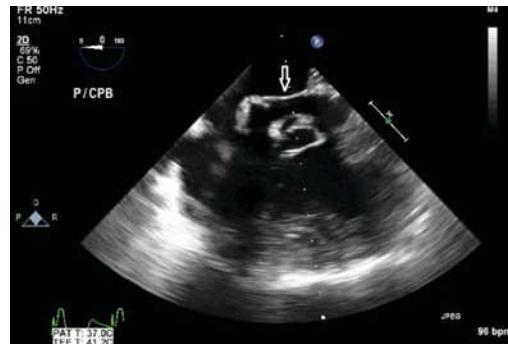
**Fig. 1:** Transesophageal echocardiographic modified midesophageal four chamber view at 0 degrees showing discontinuity in the Senning baffle, as shown by arrow.



**Fig. 2:** Transesophageal Echocardiographic midesophageal color compare aortic valve long axis view at 110° showing left ventricular outflow tract obstruction (LVOTO).



**Fig. 3:** Transesophageal Echocardiographic image wherein continuous wave Doppler is applied in the Deep Transgastric long axis view at 0 degree, showing peak gradient of 80 mm Hg across left ventricular outflow tract.



**Fig. 4:** Transesophageal Echocardiographic midesophageal modified midesophageal four chamber view at 0 degree showing a satisfactory surgical repair of the baffle leak as shown by arrow.

## Discussion

Senning operation, an atrial switch operation was first performed by Senning in 1957 allowing the TGA infants to survive.<sup>1</sup> It involves creating a network of baffles from the flaps raised from right atrium and native atrial septum so that inferior vena cava and superior vena cava flow is redirected to the mitral valve and pulmonary venous blood flow is redirected to the tricuspid valve.<sup>2</sup> These children can potentially present with abnormal flow pattern across the baffle.<sup>3</sup> The present case elucidates the role of intraoperative echocardiography in assisting a smooth conduct of an adequate surgical correction in complex congenital heart disease.

## Conclusion

Transesophageal echocardiography has a vital role during intraoperative management of congenital heart disease surgical patients.

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*Conflicts of interest:* None

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