

Atrial Septal Defect Closure via a Partial Lower Mini Sternotomy

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Introduction

Patients with secundum atrial septal defects (ASD) preferentially undergo device closure, however this is not always feasible and instead patients can safely undergo surgical closure. In a time when minimally invasive surgery can now be utilised with improved cosmetic results and the same excellent outcomes as conventional sternotomy for ASD closure, we propose the partial lower mini sternotomy as the new standard for surgical ASD closure^(1,2,3,4,5,6,7). We present a surgical case demonstrating this technique.

Patient Presentation

Diagnosis:

- Secundum atrial septal defect (ASD)

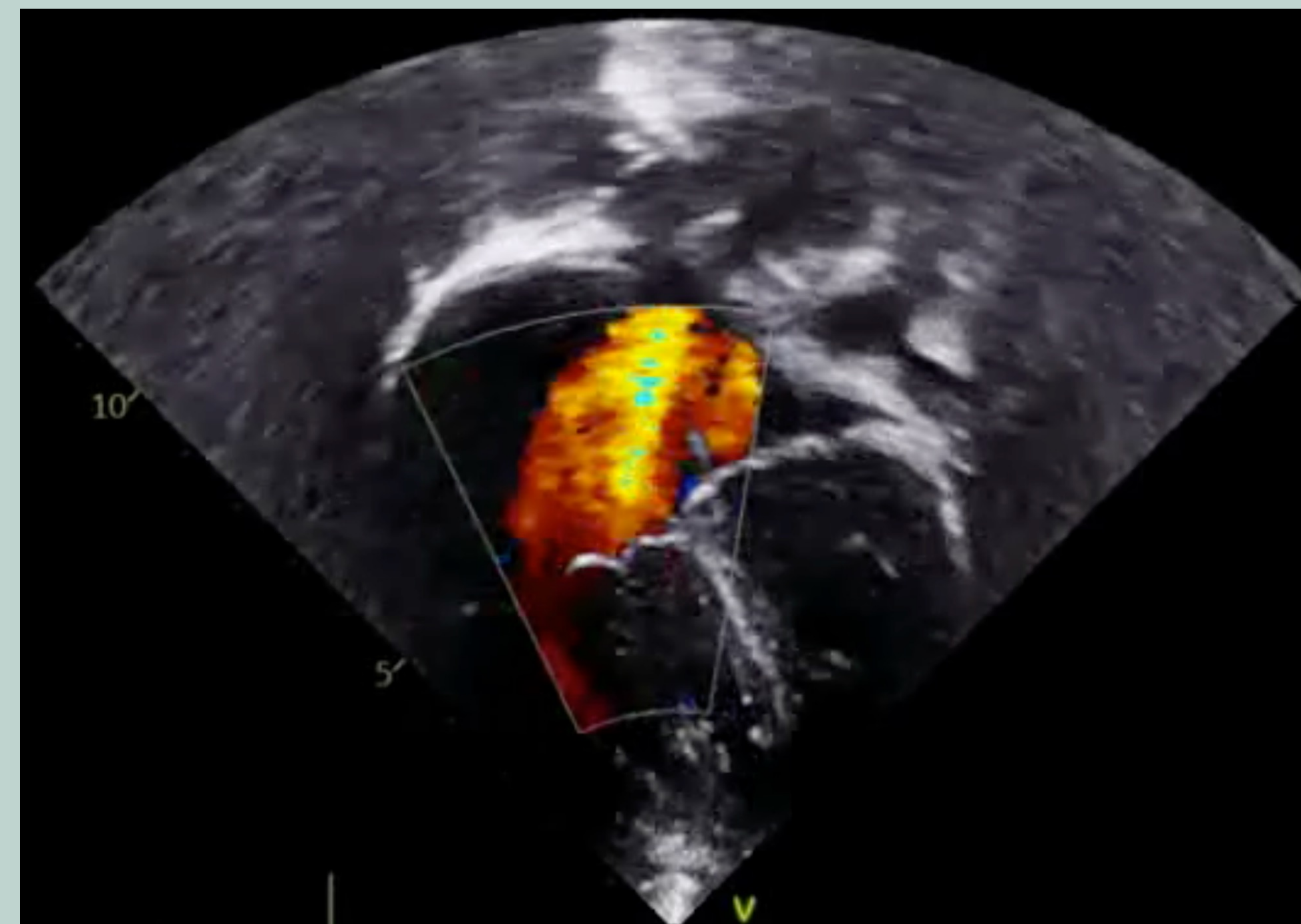
Background:

- 3-year-old boy presented for elective ASD closure
- Weight 14.8kg (25th percentile) and height on 75th percentile.
- Normal development

Decision making:

- Not suitable for percutaneous device closure
- Surgical ASD closure via a partial lower mini sternotomy
- A safe surgical approach which provides excellent cosmetic results

Pre-operative Imaging



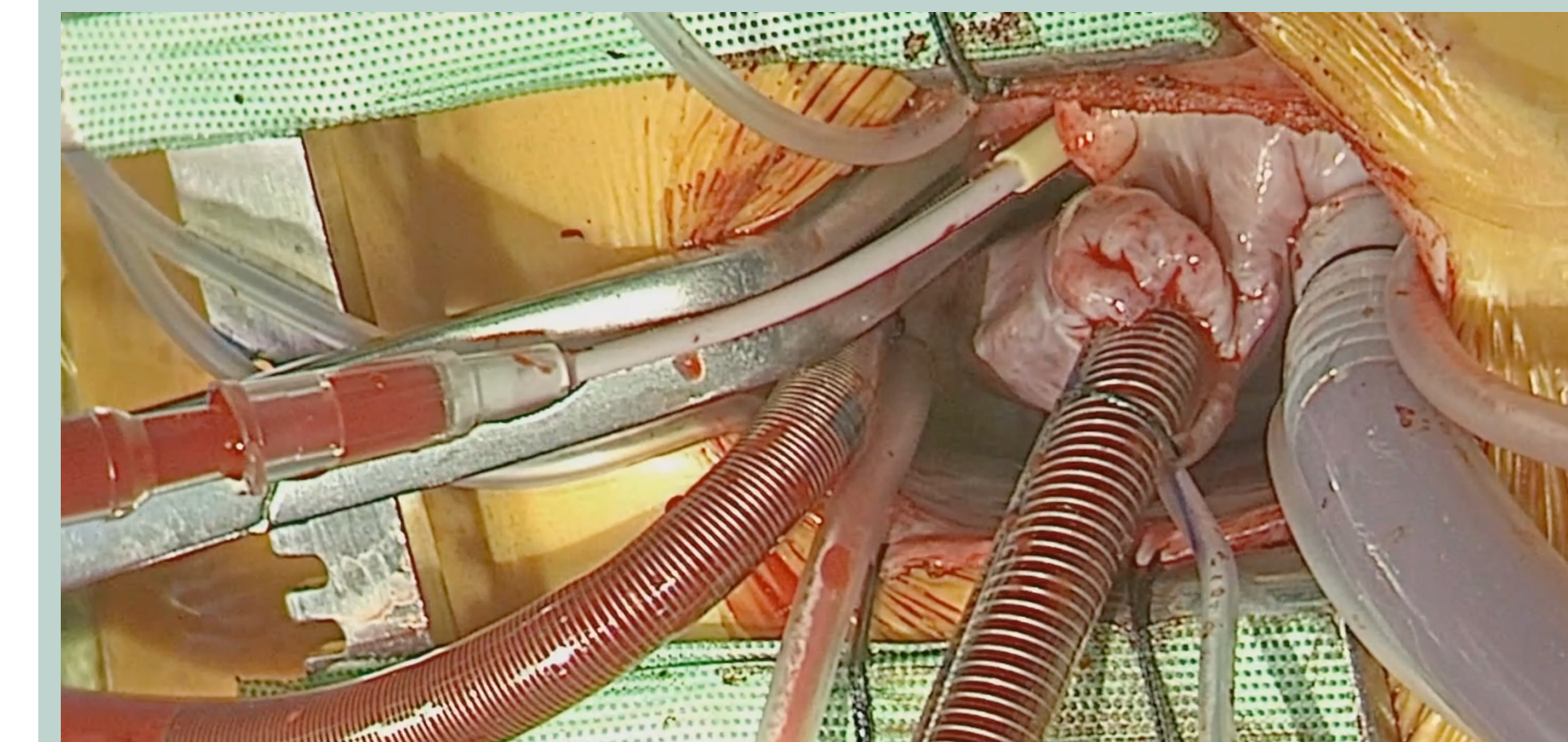
Preoperative echocardiography in the four chamber view demonstrates a large secundum ASD, with a maximal diameter of 1.8cm and large left to right shunt.

Incision



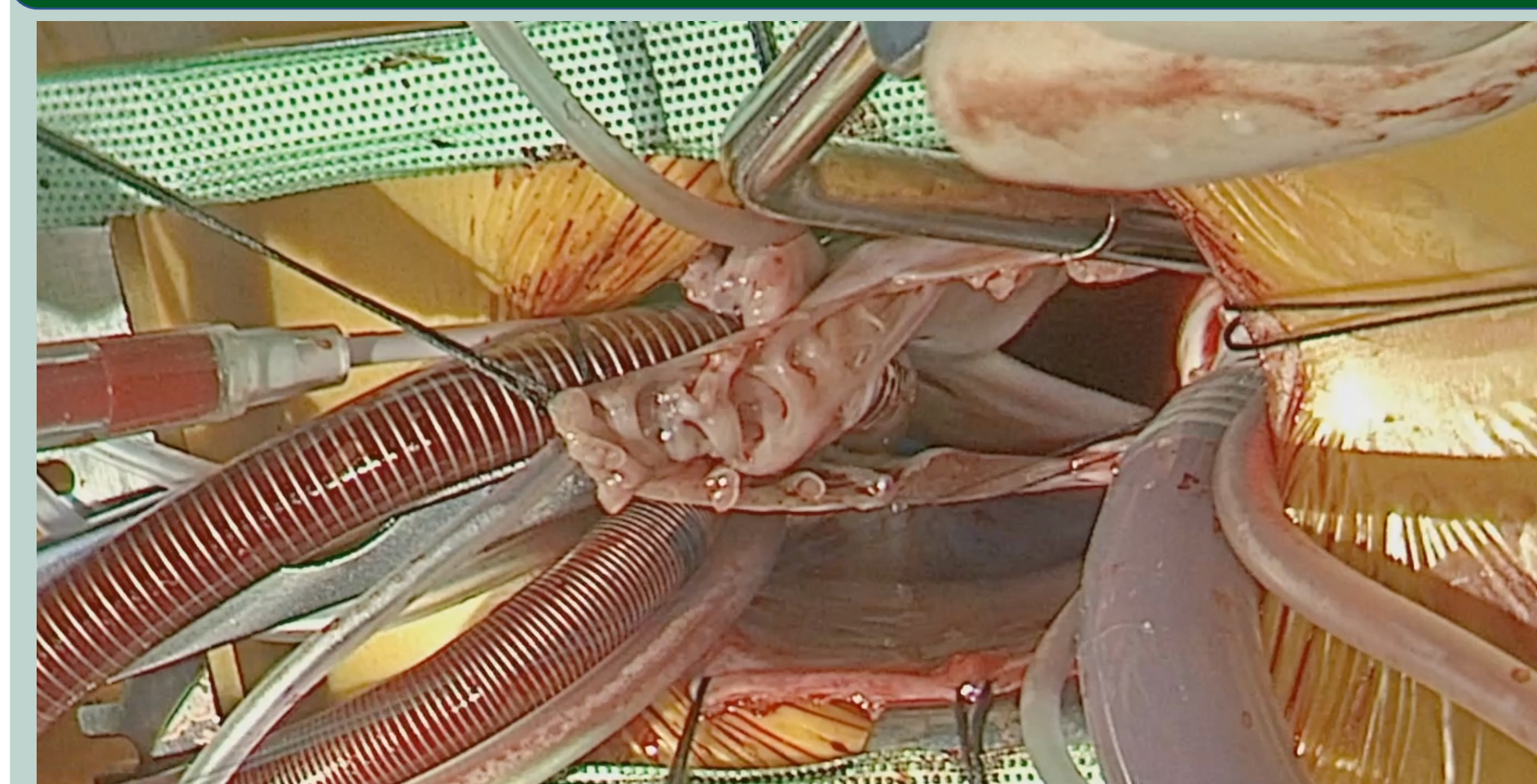
A partial inferior mini sternotomy was performed⁽¹⁾. This small incision is performed below the nipple line to the tip of the xiphisternum at the inferior end of the sternum. The sternum was divided in a standard fashion. This technique allows clear exposure of the right atrium.

Cannulation



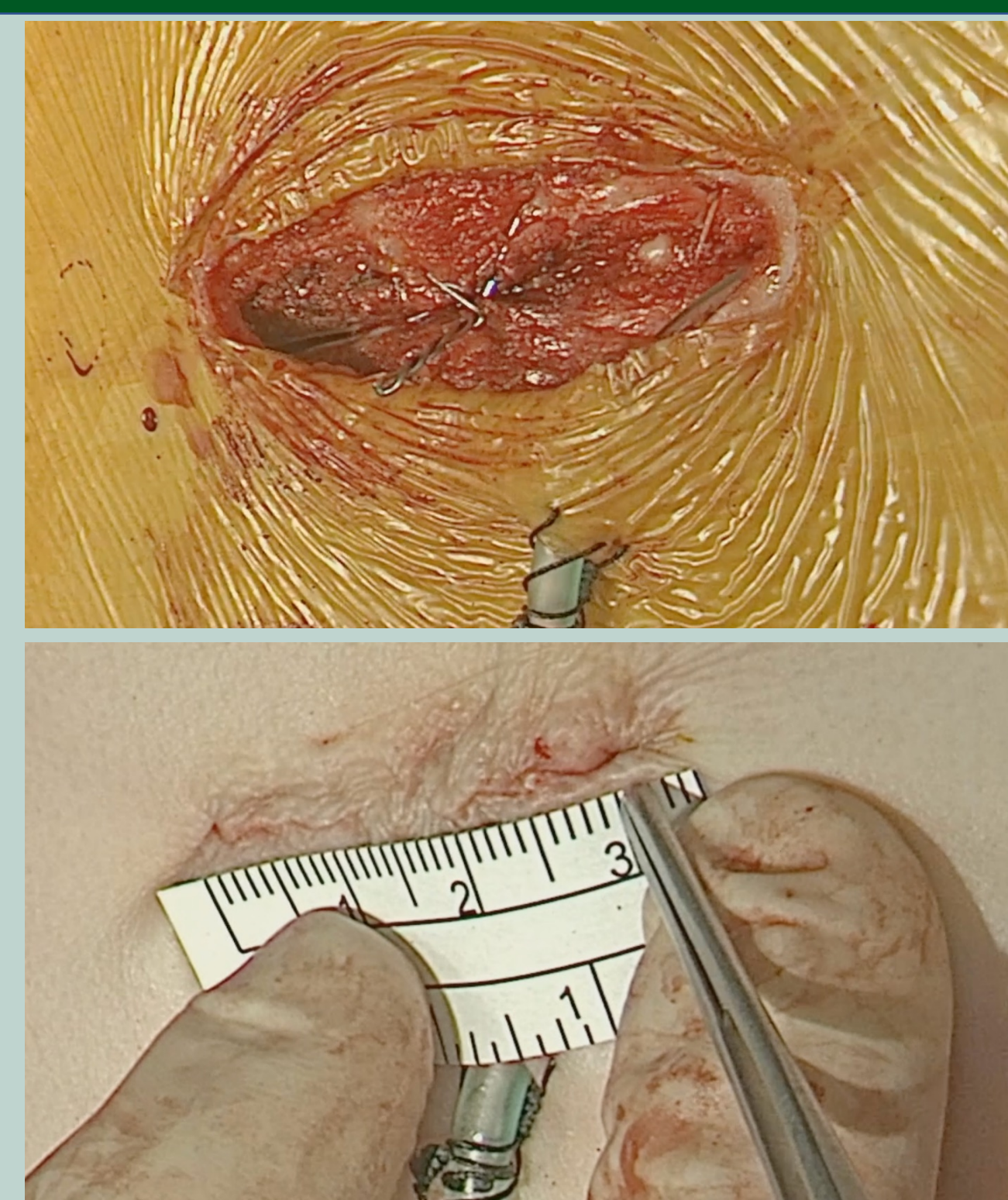
To commence cardiopulmonary bypass the aorta was cannulated, then the inferior vena cava and superior vena cava through the right atrium with a wire reinforced cannula. The aorta was cross clamped and antegrade blood cardioplegia given to arrest the heart.

ASD Repair



The right atrium was incised, the ASD inspected and closed with a double layer 5/0 Prolene running suture. The heart was then deaired and the right atrium was closed. The aortic cross clamp was removed, and the patient was weaned off CPB and the decannulation was performed.

Closure



A chest tube was placed in the pericardium and the mini sternotomy was closed with one sternal wire. The incision measured 3cm.

Clinical Decisions and Outcomes



Post operative echocardiography showed no residual VSD and the patient is doing well.

As demonstrated by this case and the literature, the partial lower mini sternotomy is a **safe technique** with **optimal cosmetic results** compared to a conventional sternotomy^[1,2]. There are other minimally invasive approaches that can be adopted such as the right axillary thoracotomy which also yield beneficial results^[1,3,4,5,6,7]. With congenital cardiac surgery continuously progressing, minimally invasive surgery is the next step to achieving better outcomes for patients. Therefore, we believe this approach should become the new standard approach for secundum ASDs.

References

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