

## INTRODUCTION

In congenital heart diseases such as tetralogy of Fallot, complex transposition of great arteries, truncus arteriosus, there is not always possible to preserve the native pulmonary valve in the right ventricular outflow tract. Failure to do so results in pulmonary regurgitation which is not favourable in the long run to the patient due to eventual right ventricular dysfunction and failure. There are several approaches outlined to provide a competent pulmonary valve.

### CASE DETAILS

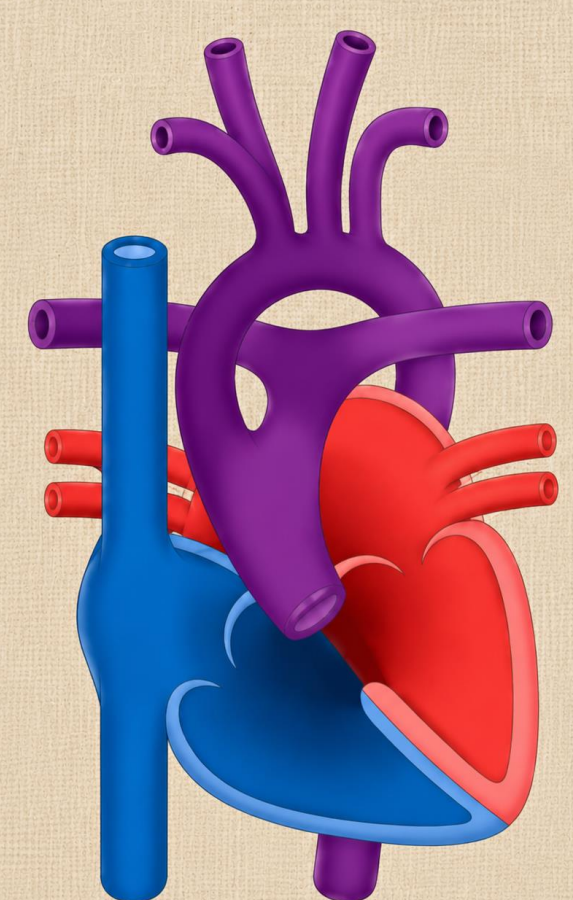
- ❖ 10 month old girl child with complaint of cyanosis and recurrent respiratory tract infections

### 2D ECHOCARDIOGRAPHY:

- ❖ Situs solitus, levocardia, truncus arteriosus type a1, large sub truncal vsd, tricuspid truncal valve, mild truncal regurgitation, normal biventricular function

### CARDIAC CT:

- ❖ TRUNCUS ARTERISUS VAN PRAGH TYPE A1, TRICUSPID TRUNCAL VALVE WITH SUB TRUNCAL VSD,
- ❖ CONFLUENT PULMONARY ARTERIES
- ❖ MPA ARISING POSTERIORLY 1.5CM ABOVE ANNULUS
- ❖ RPA=9.4MM, LPA=9.6MM
- ❖ NO SIGNIFICANT AORTO PULMONARY COLLATERALS.



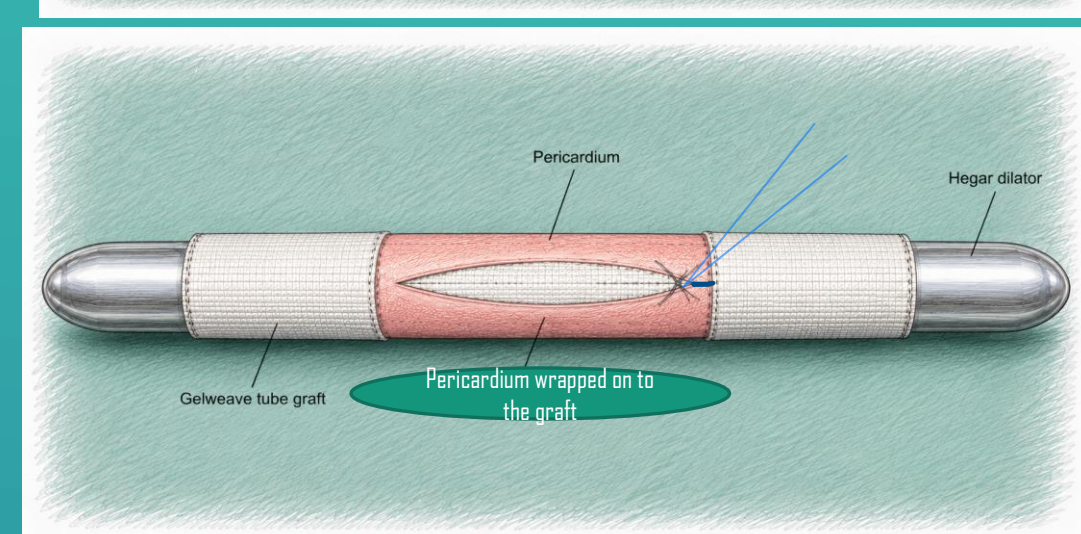
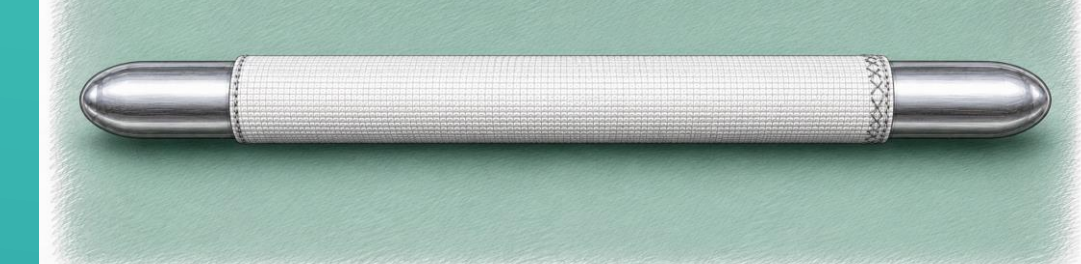
## CONSTRUCTION OF RVOT CONDUIT USING AUTOLOGOUS PERICARDIUM IN GELWEAVE GRAFT

### STEP 1: HARVESTING THE AUTOLOGOUS PERICARDIUM WITH SUITABLE DIMENSIONS.

- ❖ Dimensions of autologous pericardium -horizontal  $2\pi r(8mm)=50.2mm$  and vertical 2cm (valve height)

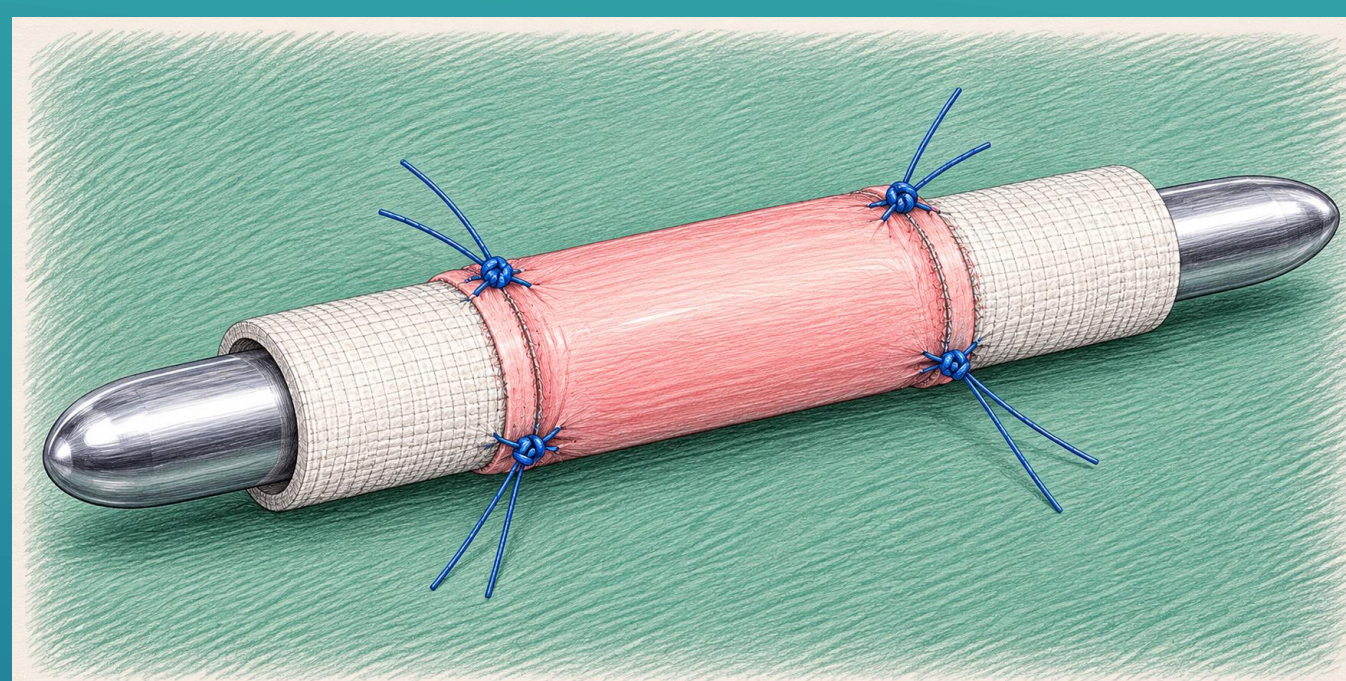


16mm Gel weave graft inverted onto the hegar dilator



### STEP 2: PREPARING THE PERICARDIAL PATCH INTO A TUBE

- ❖ Preparing the pericardial patch into a tube using Hegar dilator (15/16)
- ❖ 16mm Gelweave graft is inverted onto the hegar dilator
- ❖ The autologous pericardium is used untreated to avoid future complications of calcification.

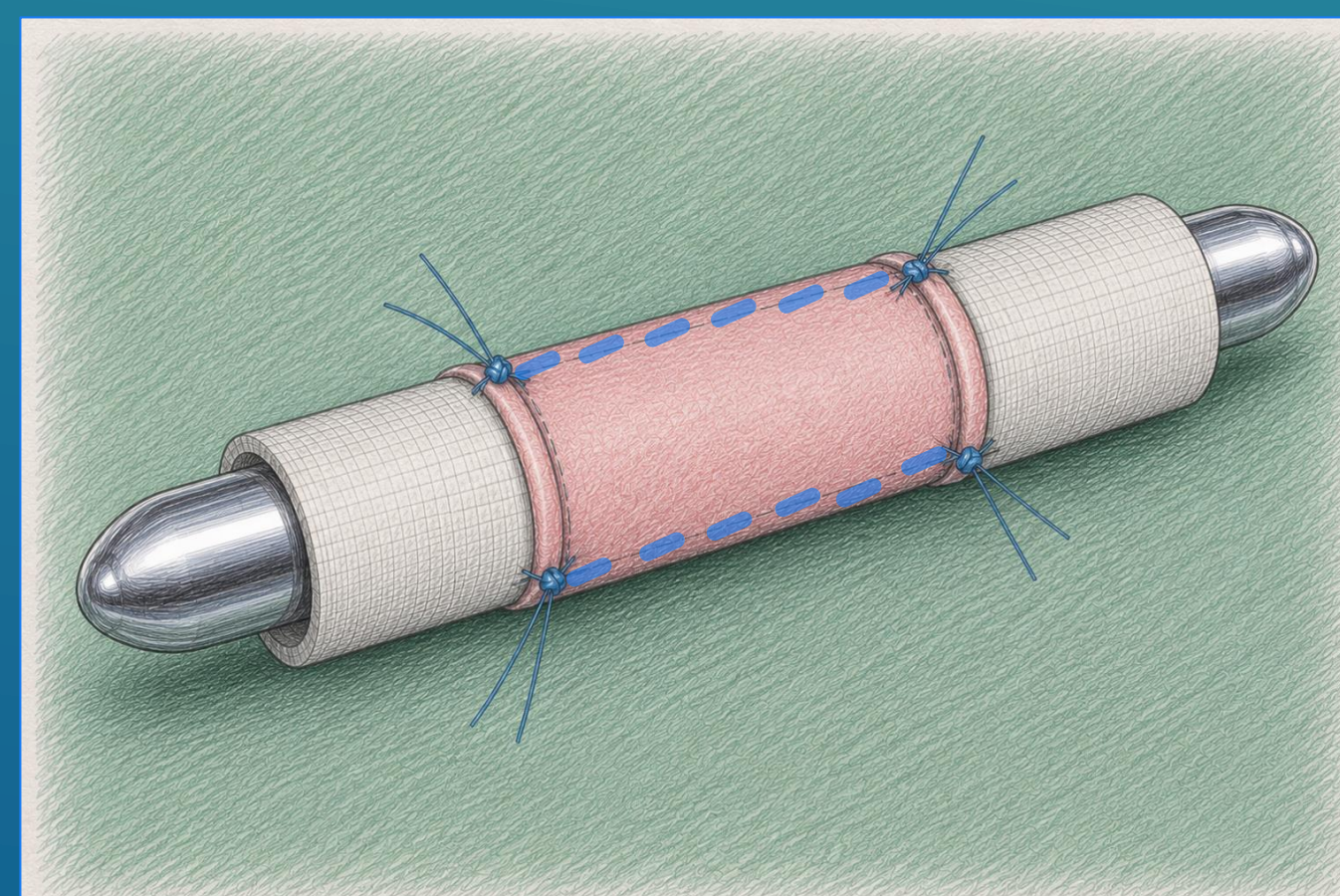


### STEP 3: POSITIONING THE PREPARED FRESH AUTOLOGOUS PERICARDIAL TUBE IN THE GELWEAVE GRAFT.

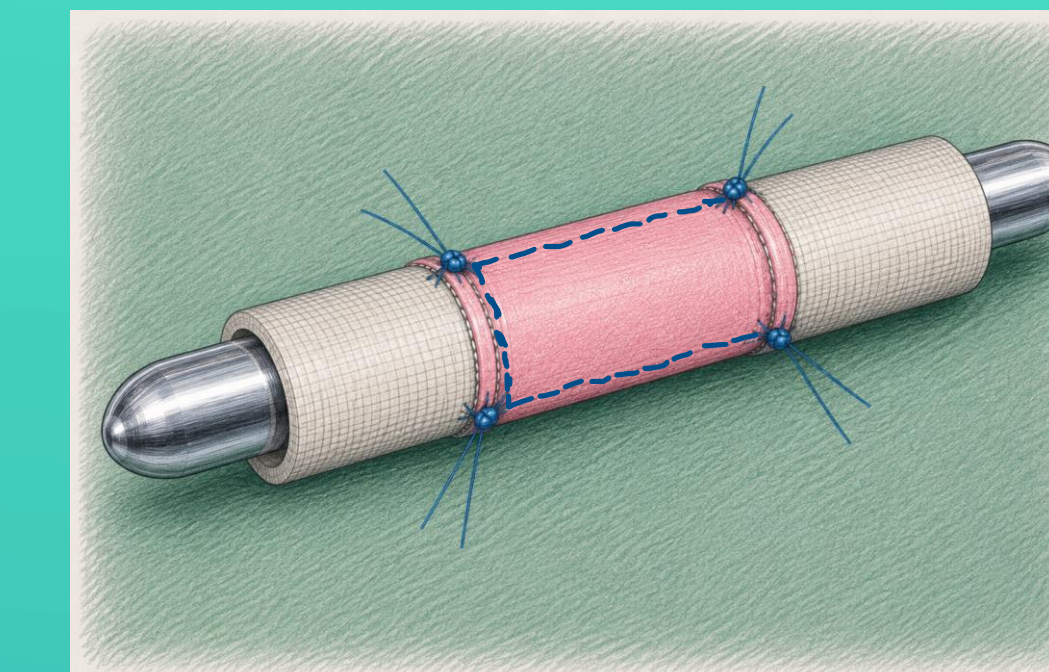
- ❖ The pericardial patch is sutured over the graft
- ❖ Interlocking the suture at every entry to avoid purse string effect at the end
- ❖ Four marking sutures on opposite sides

### STEP 4: CREATING A BILEAFLET VALVE FROM PERICARDIAL TUBE

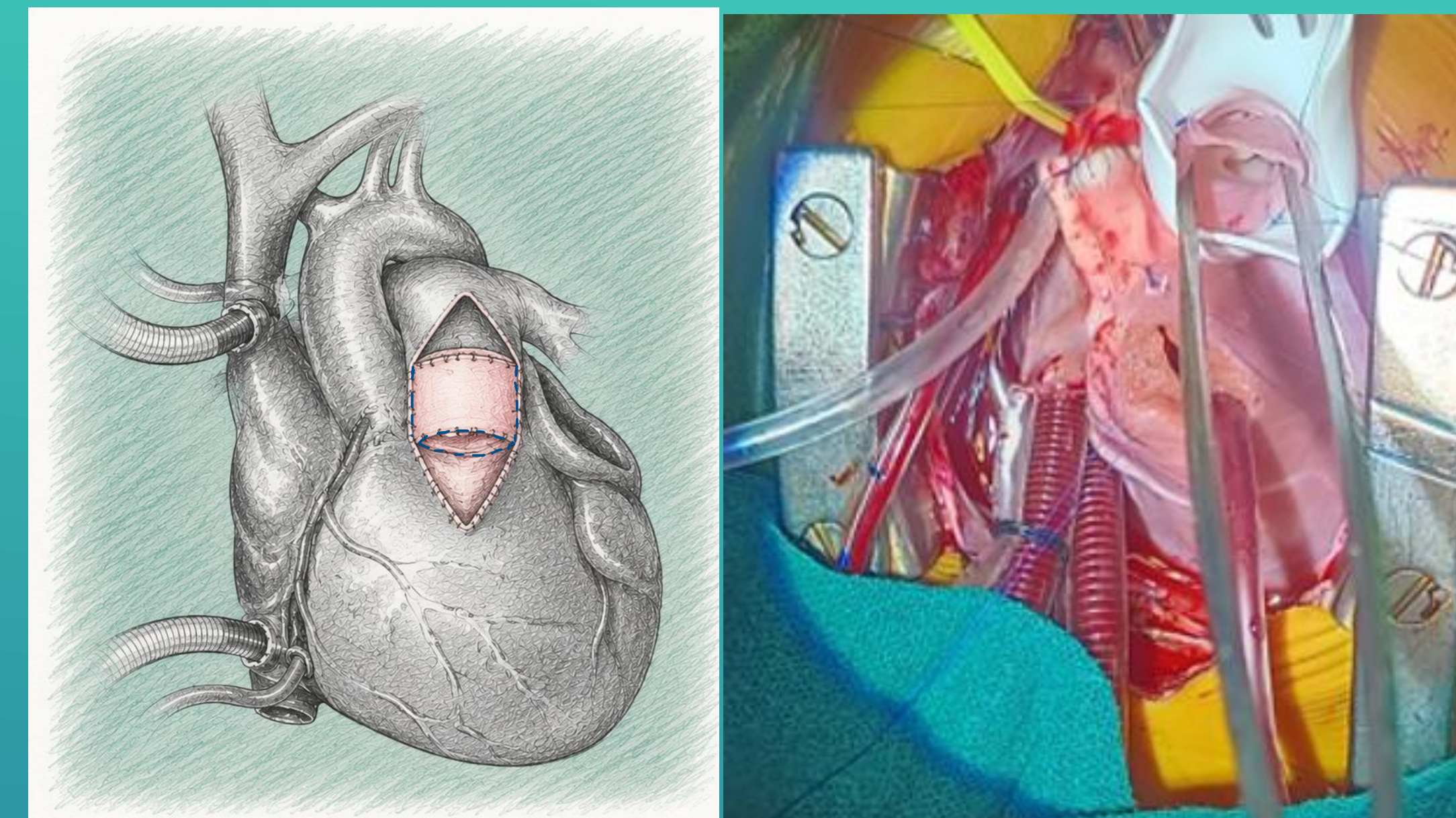
- ❖ The four marking sutures fixed at four corners and joined vertically on either side-commisures.



- ❖ One end of the pericardial tube is sutured to the graft circumferentially-annulus.
- ❖ Entire graft is inverted again with the pericardium in-situ.

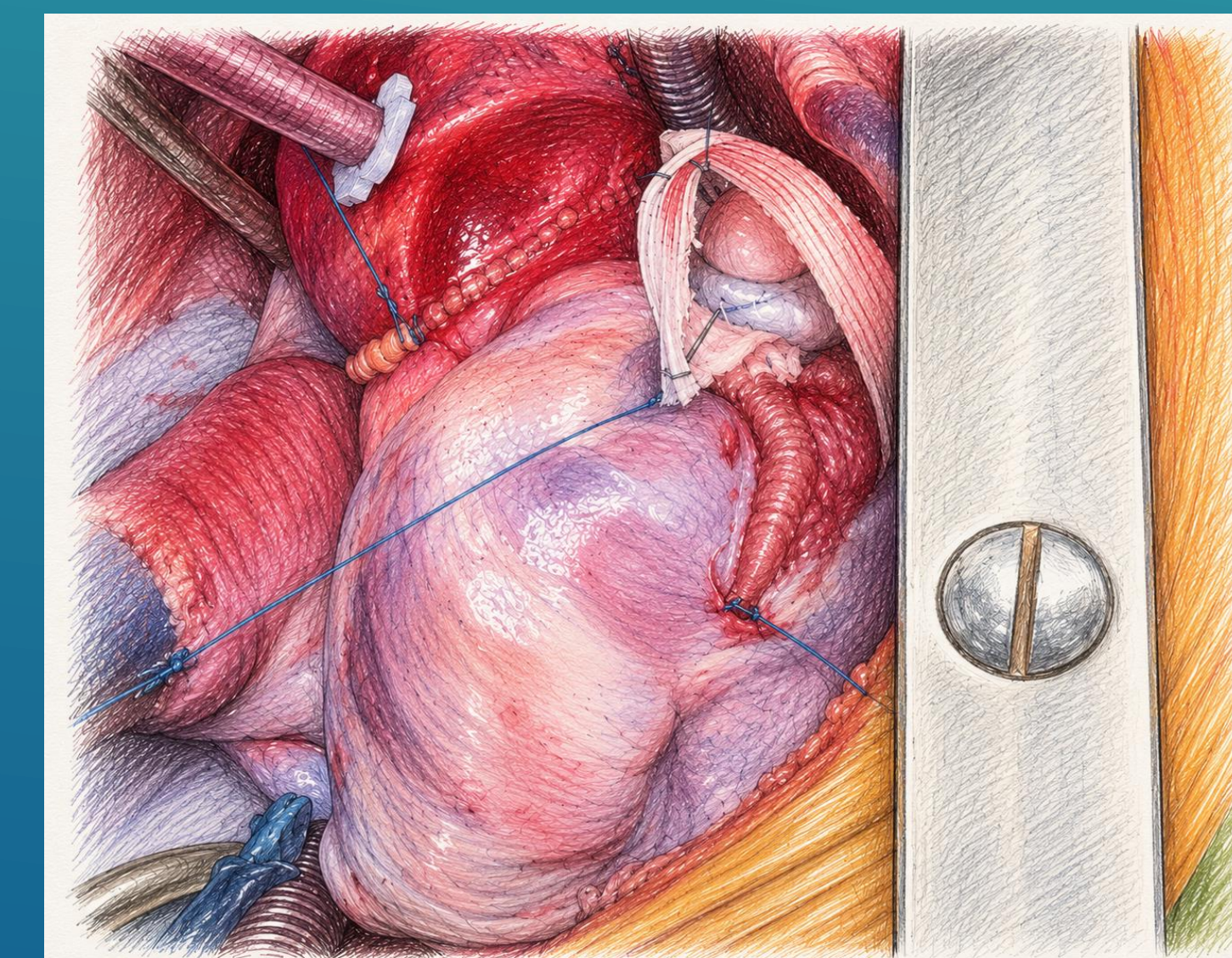


### INTRAOP IMAGE AFTER DISTAL ANASTOMOSIS OF THE CONDUIT

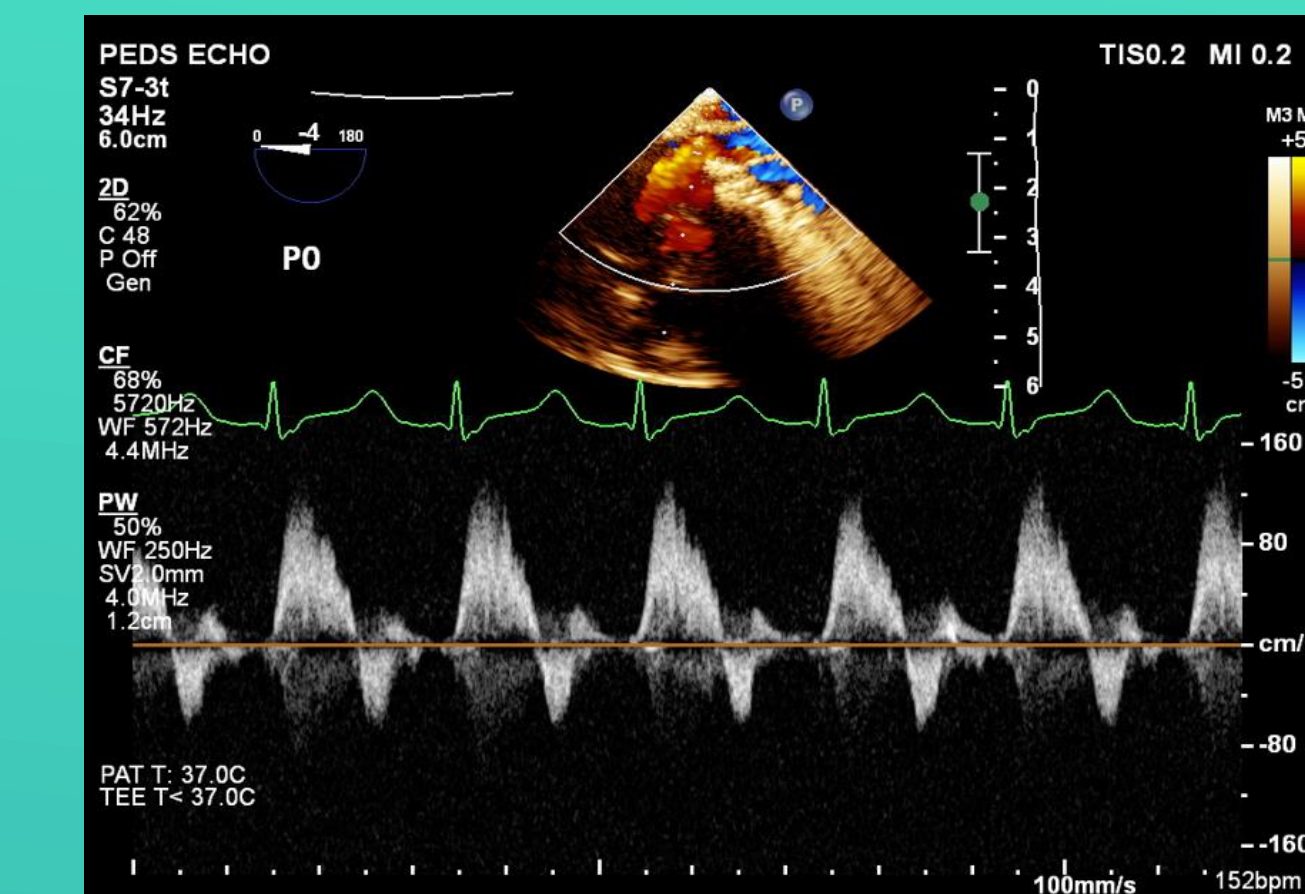


### STEP 5: CHECK OF COMPETENCY OF VALVE

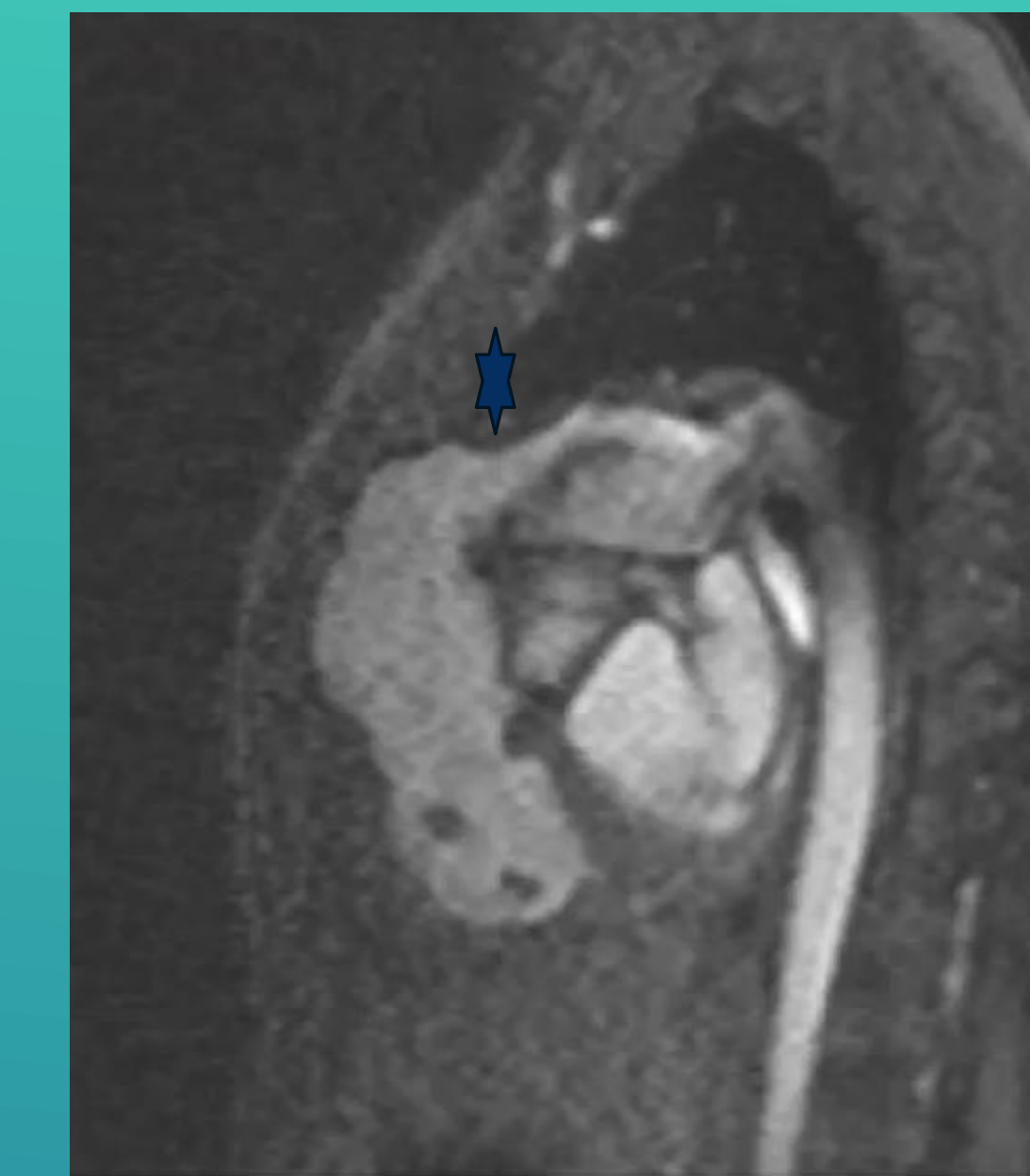
After completion of the reconstruction of valve, the competence of the new valve is verified for any leak using saline test. We found a decent, competent bi-leaflet valve.



Post operative TEE images across the reconstructed pulmonary valve showing no significant stenosis or regurgitation.



Follow up MRI at six months also demonstrates the functioning bi-leaflet pulmonary valve in the conduit.



### CONCLUSION

- ❖ In cases of congenital cardiac diseases where pulmonary valve sparing is not achievable always, use of autologous pericardial patch to reconstruct a bi-leaflet pulmonary valve in a straight-forward, reproducible fashion is efficient enough when compared to other alternative modalities of reconstruction.
- ❖ cost effective, longevity, growth potential, resistant to infection or calcification being untreated, easy to reproduce