



Thoracoscopic Mitral Valve Replacement Using the Chimney Technique: A Case Report

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Background

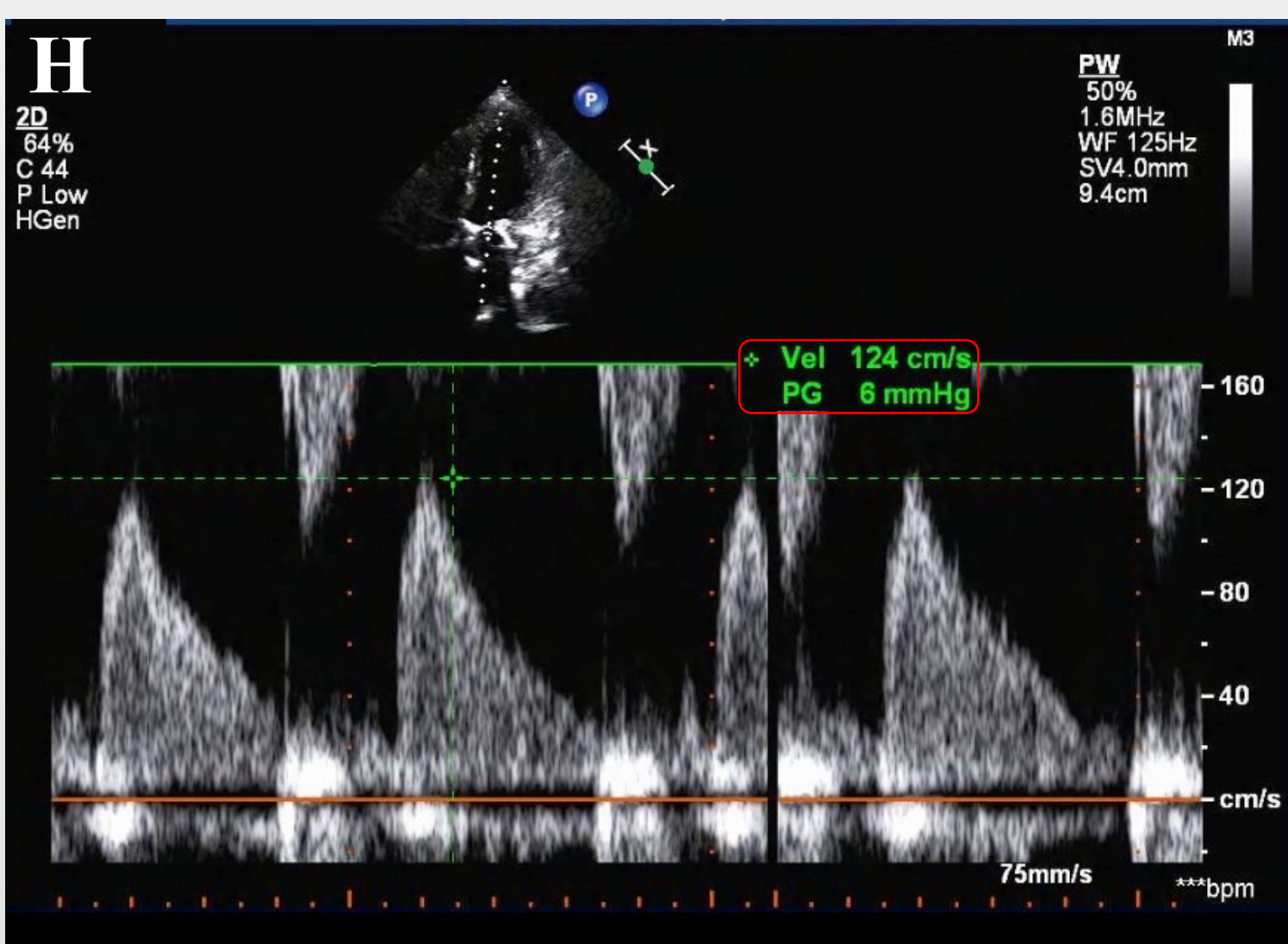
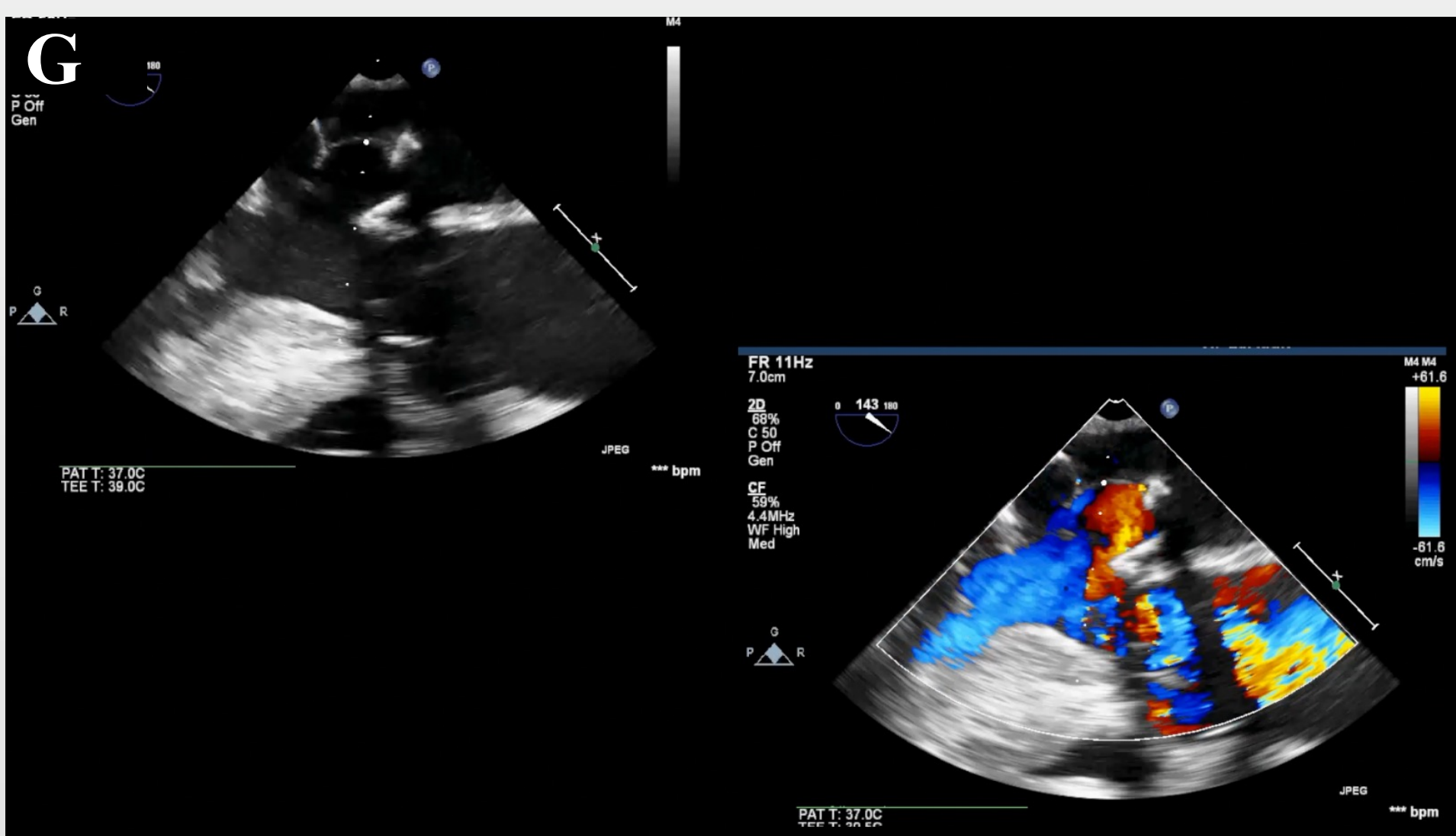
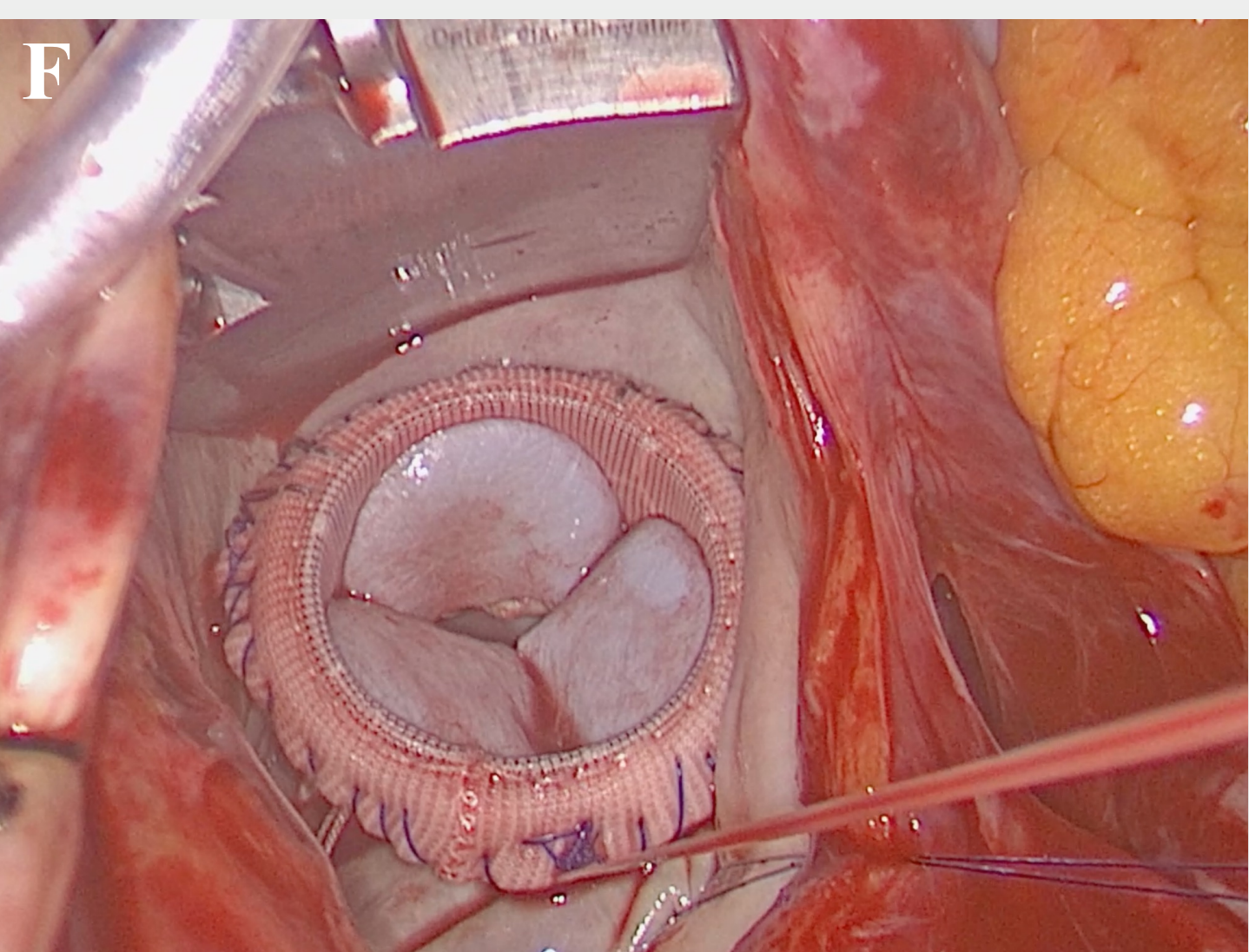
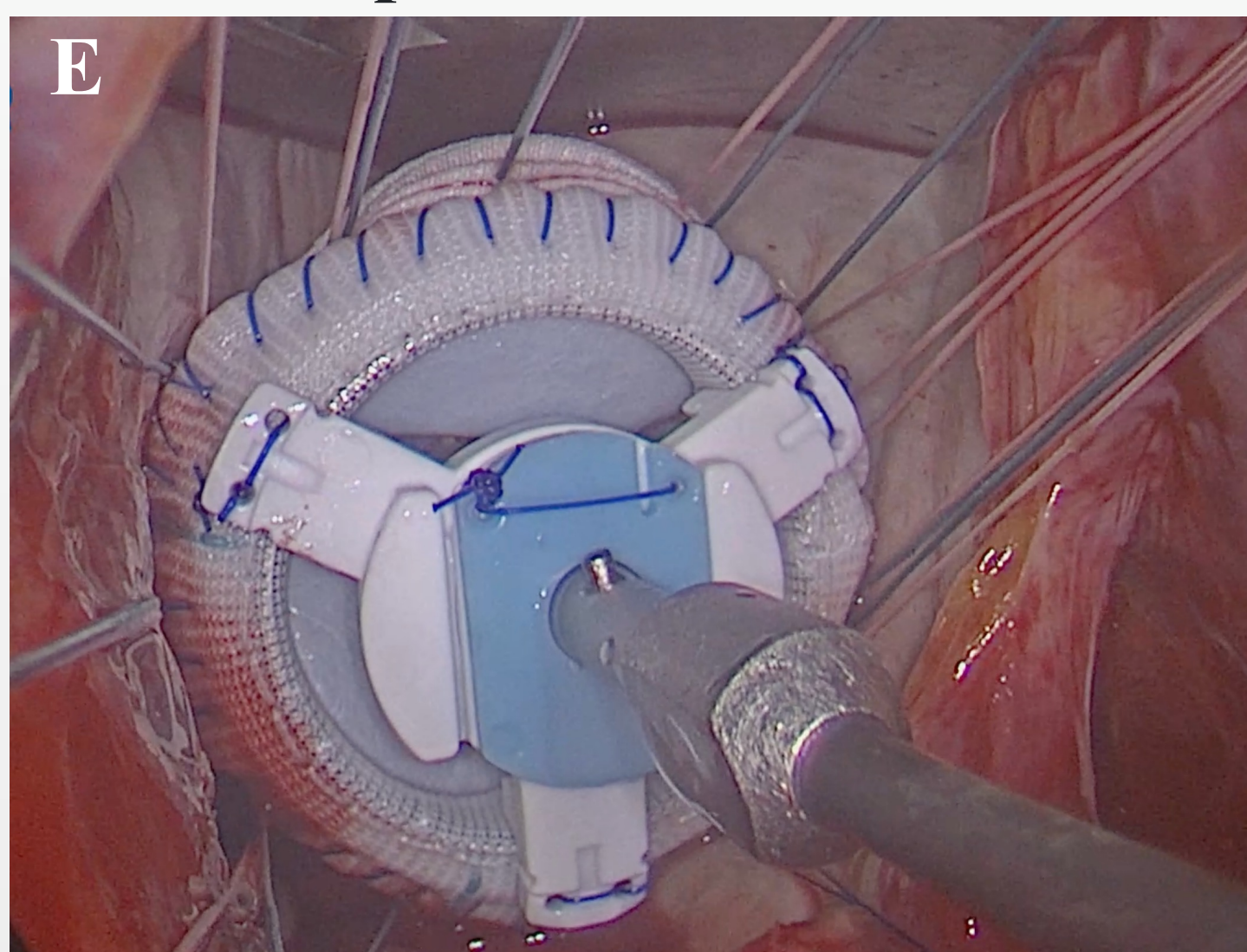
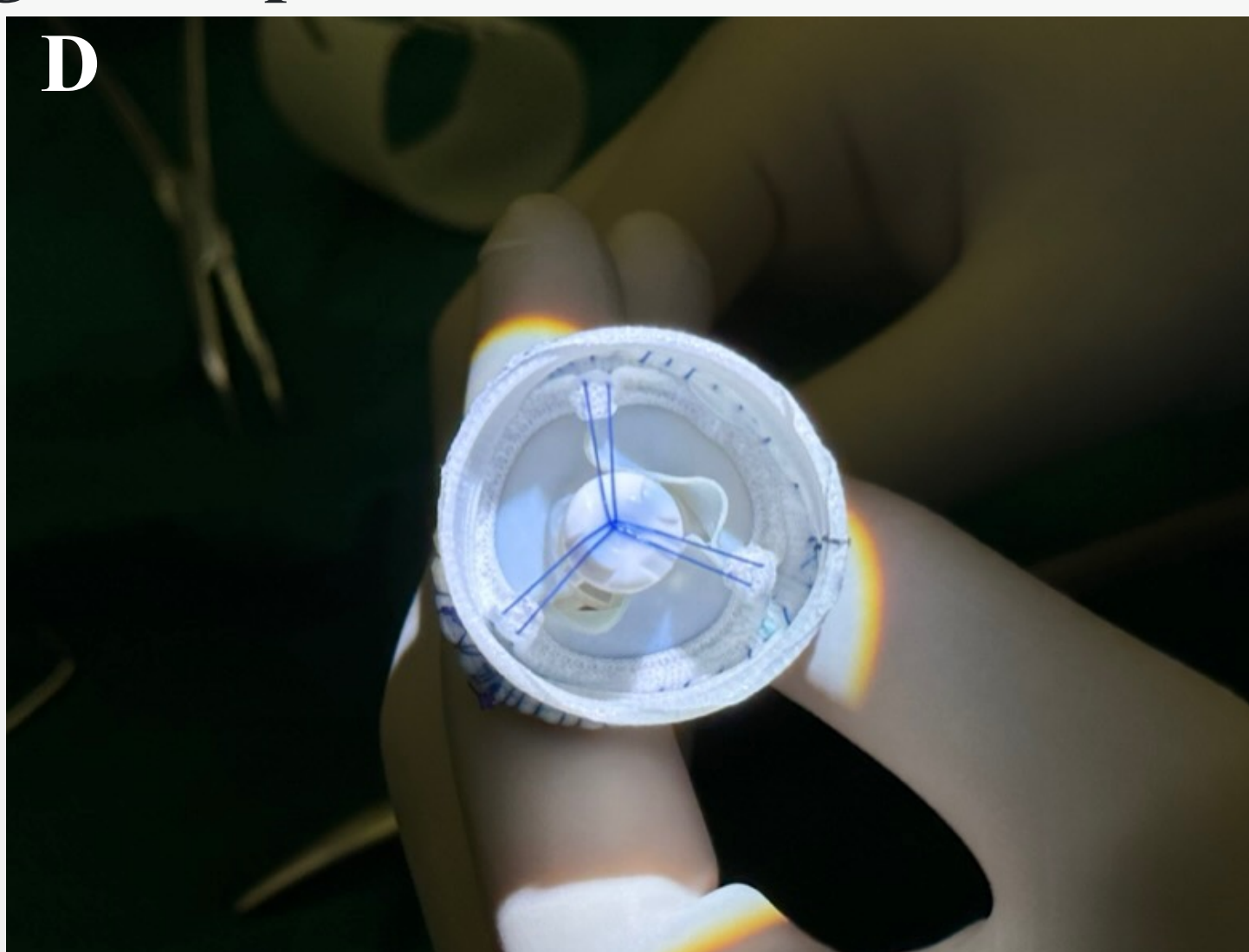
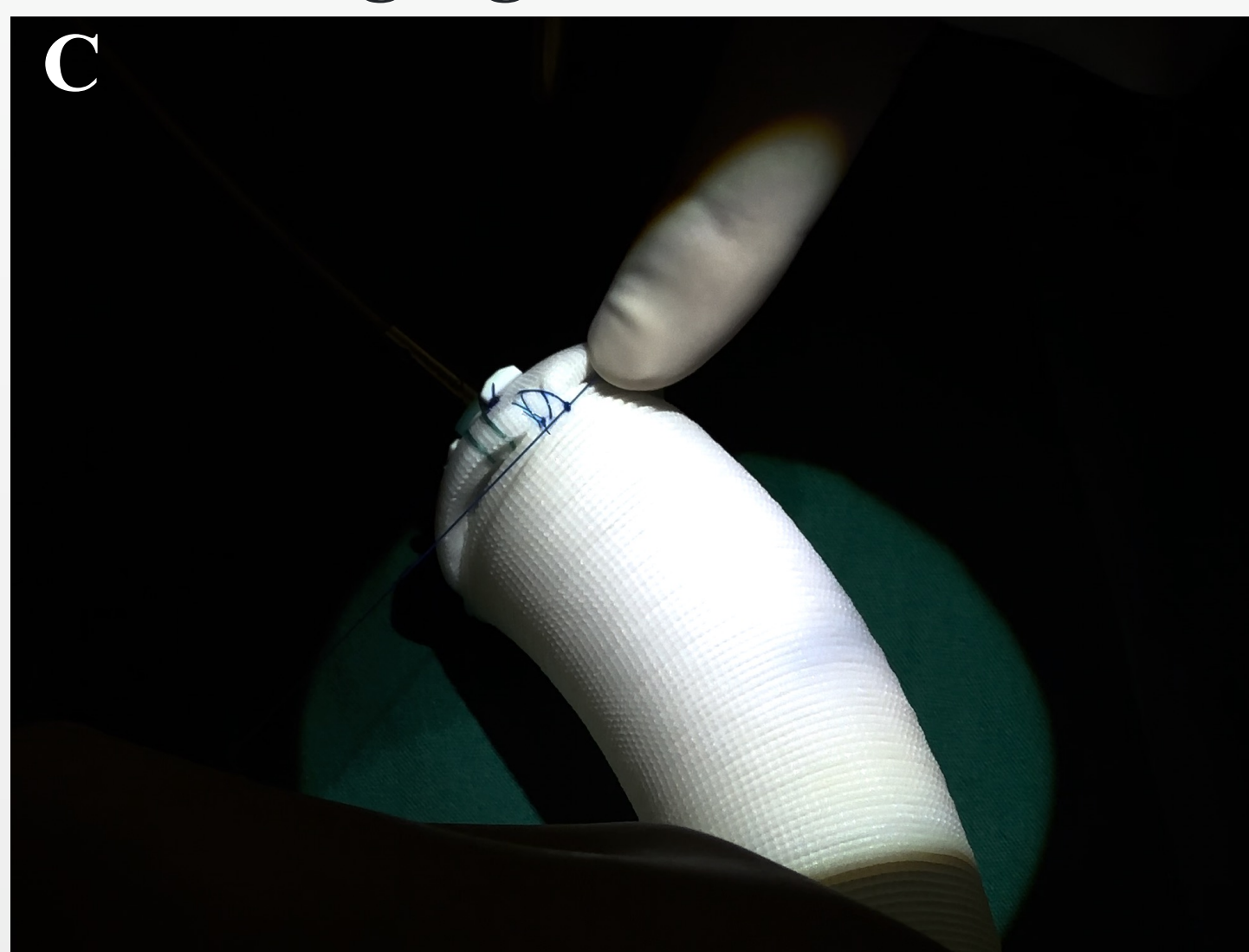
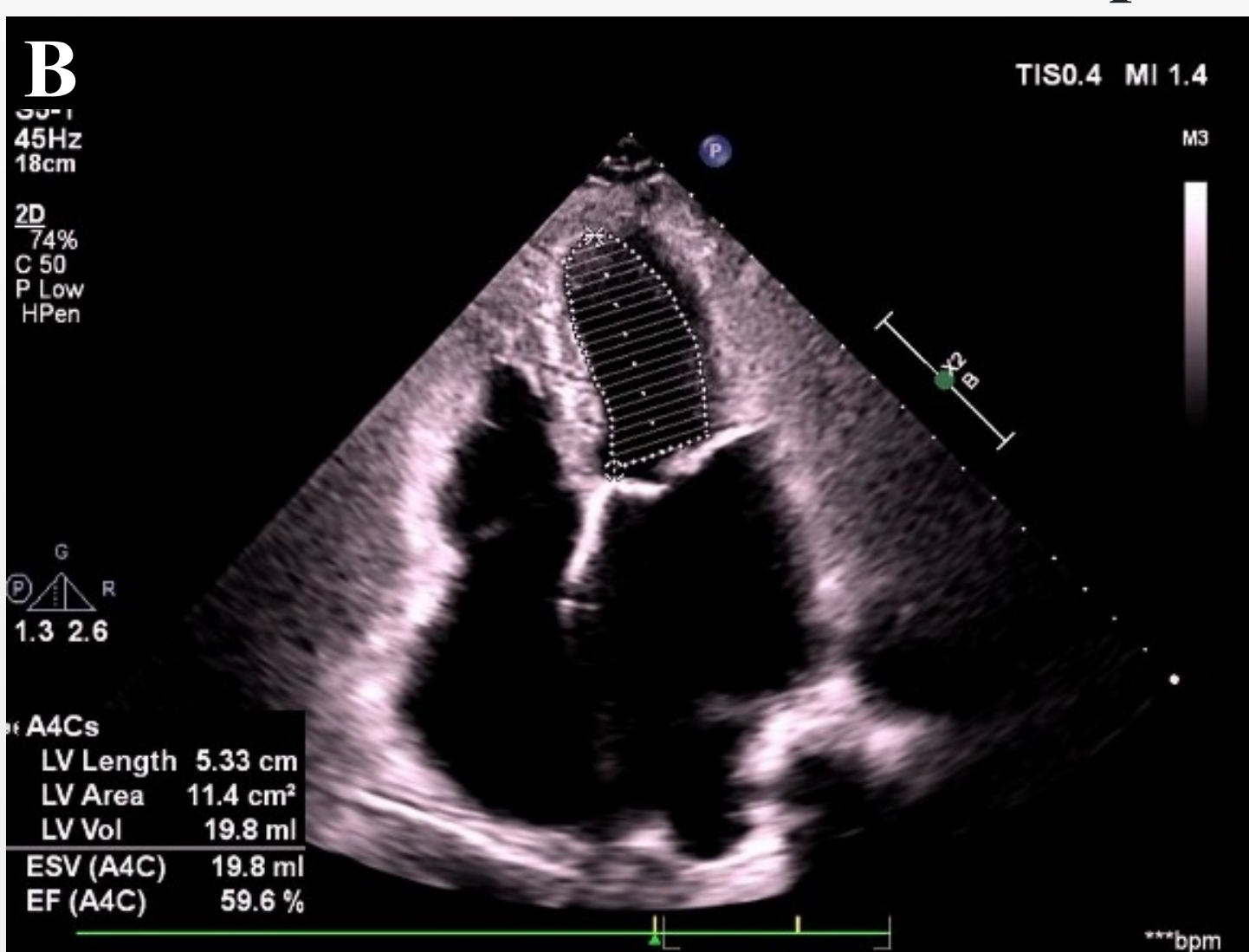
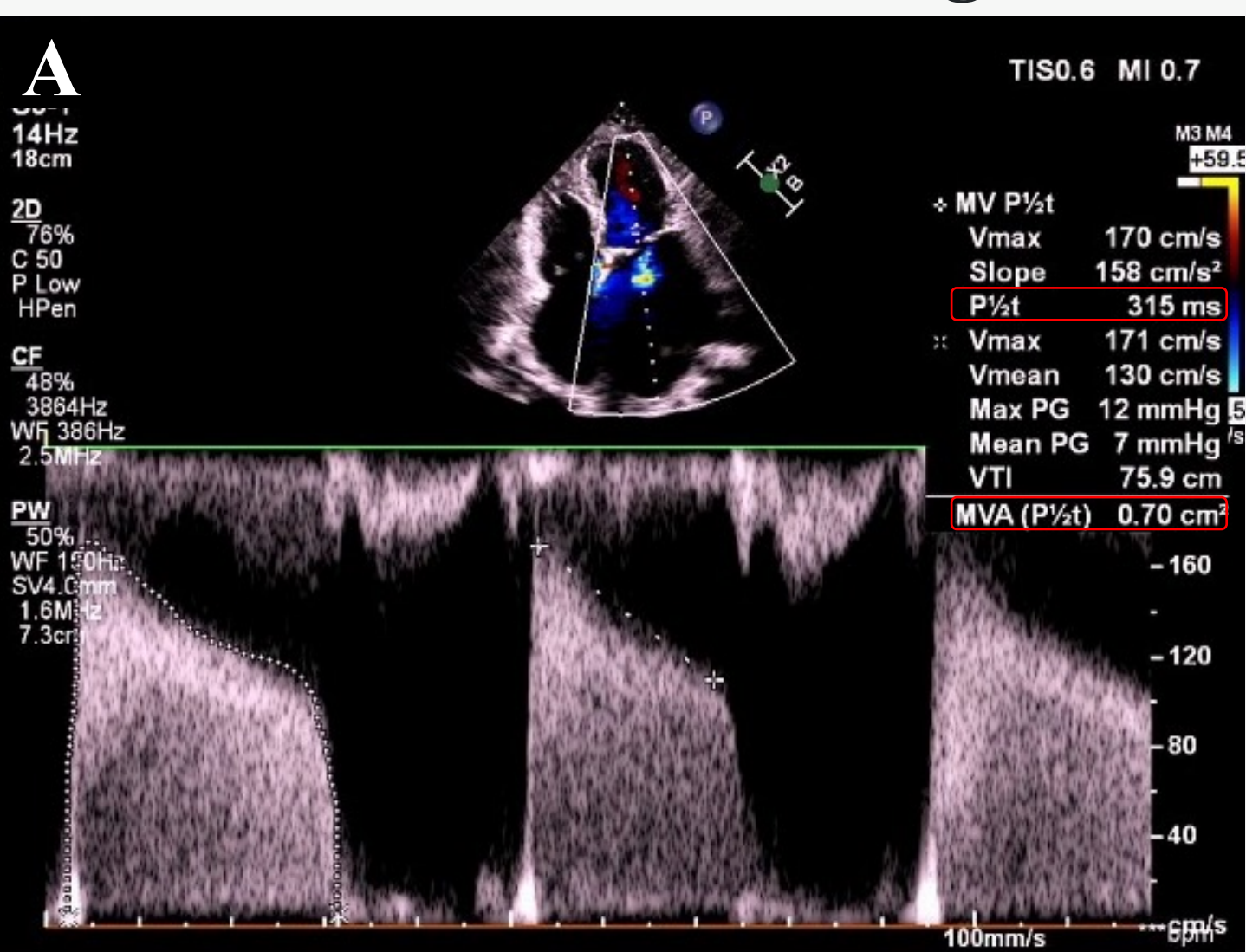
- Thoracoscopic mitral valve replacement is a common technique in cardiac surgery.
- Calcification of the annulus and a small left ventricle are the difficulties in thoracoscopic mitral valve surgery.
- Improper treatment for patients with these features can cause left ventricular rupture or prosthesis-patient mismatch.

Methods

- We performed a thoracoscopic mitral bioprosthesis replacement using the “chimney” technique for a 74-year-old female with severe mitral stenosis.
- The patient had dyspnea on exertion for 7 years, and had a history of stroke 5 years before this admission.
- Severe mitral valve stenosis / regurgitation, and severe tricuspid regurgitation were found. Her left ventricle end-diastolic diameter was 41.2 mm, and calcification was found at the posteromedial commissure. The mitral valve orifice area was 0.7 cm², and pulmonary artery systolic pressure 35 mmHg. Electrocardiogram indicated atrial fibrillation.
- EuroSCORE II: 6.34%. STS PROM: 11.30%.

Results

- Thoracoscopic mitral valve replacement using the chimney technique (see the video), tricuspid valve repair, and left atrial appendage were performed.
- Body surface area was 1.44 m², and a 25 # mitral bioprosthesis was implanted. No mitral regurgitation / stenosis in transesophageal imaging.
- Total operation time: 330 mins. Cardiopulmonary bypass time: 219 mins. Aortic cross clamp time: 135 mins.
- Postoperative ventilation time: 10 hrs. Intensive care unit stay time: 43.5 hrs. Postoperative stay: 8 days.
- Transthoracic echocardiogram showed neither mitral stenosis nor paravalvular regurgitation before discharge. The patient recovered at a 4-month follow-up visit.



Panel A-B. Transthoracic echocardiogram before surgery.

Panel C-D. Suture a bioprosthetic valve in a vascular graft.

Panel E-F. Implant the bioprosthesis.

Panel G. No mitral regurgitation in transesophageal imaging.

Panel H. Transthoracic echocardiogram showed no mitral stenosis before discharge.

Conclusions

The surgical effect was satisfactory, and no complication occurred. Thoracoscopic mitral bioprosthesis replacement using the "chimney" technique is safe and effective for selected patients.