Totally Endoscopic Transaortic Septal Myectomy With 3-Dimensional Visualization for HOCM

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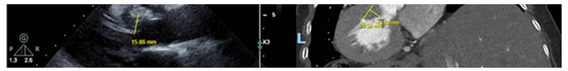
Background & Objective

Surgical septal myectomy is the reference standard for symptomatic HOCM with drug-refractory LVOT obstruction.
Robotic platforms improve visualization but remain unavailable in many institutions.
This case demonstrates a non-robotic, totally endoscopic transaortic myectomy using the DCT technique with 3D visualization.

Patient & Preoperative Findings

63-year-old woman with progressive exertional dyspnea, fatigue, and chest discomfort despite beta-blocker therapy.
Asymmetric septal hypertrophy; maximal septal thickness 15.86 mm by echocardiography and approximately 14 mm by CT.
SAM of the anterior mitral leaflet with severe mitral regurgitation and dynamic LVOT obstruction.
Peak LVOT gradient: 99 mm Hg; LVEF: 65.6%.

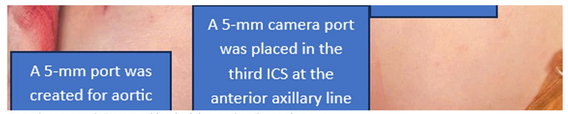


Preoperative echocardiography and CT showing basal septal hypertrophy.

Operative Concept

DCT technique

Double-port approach.
Camera and main working port in the same intercostal space for coaxial alignment.
Totally endoscopic visualization with primary skin incision <3 cm and no rib spreading.
Transaortic adaptation of the classical Morrow procedure.

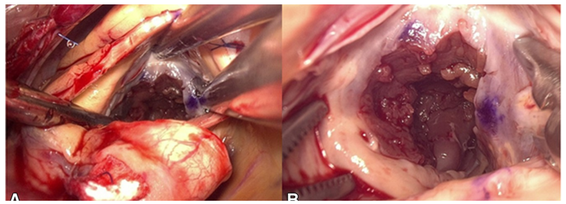


Port placement: 2.5-cm working incision and endoscopic ports.

Surgical Technique

Femoral artery and venous cannulation for cardiopulmonary bypass.
Right anterior mini-thoracotomy at the third intercostal space with soft-tissue retractor.
Aortic cross-clamp followed by transverse aortotomy.
3D endoscopic exposure of the LVOT and hypertrophied basal septum.
Targeted myectomy from the nadir of the right coronary cusp toward the anterior mitral leaflet.
No mitral intervention performed because residual regurgitation was SAM-related without structural leaflet pathology.

Intraoperative View



A. LVOT exposure via aortotomy. B. Resected hypertrophied basal septum after myectomy.

Operative Times

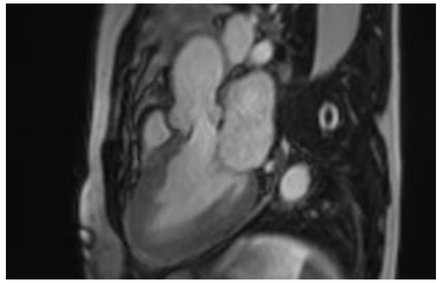
CPB time	Cross-clamp
125 min	93 min

Early Outcomes

Extubated 8 hours postoperatively.
Discharged on postoperative day 2.
Predischarge echocardiography: complete resolution of LVOT obstruction and trivial mitral regurgitation.
No intraoperative complications reported.

Extubation	Discharge
8 hours	POD 2

Follow-up Imaging



Cardiac magnetic resonance imaging at 1 month showing unobstructed LVOT.

1-month CMR: normal biventricular function and no residual gradient.
2-month echocardiography: unobstructed LVOT, normal mitral valve function, and stable findings.

Clinical Interpretation

The transaortic route provided direct exposure of the basal septum, enabled precise resection, and avoided unnecessary mitral valve manipulation in this SAM-related regurgitation case.

Central Message

Totally endoscopic transaortic septal myectomy using the DCT technique with 3D visualization may be a safe, feasible, and effective minimally invasive alternative for selected patients with HOCM.

Why It Matters

Offers a non-robotic option for centers without robotic platforms.
Maintains the key principles of surgical myectomy through a less invasive endoscopic route.
May expand access to advanced minimally invasive HOCM surgery in resource-variable settings.

Conclusion

Feasible transaortic endoscopic myectomy was completed with a 2.5-cm working incision.
LVOT obstruction resolved and mitral regurgitation improved to trivial without mitral intervention.
Further experience is needed to define patient selection and reproducibility beyond a single case.

References

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