

Robotic-Enhanced Convergent Plus Procedure

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Background

- The Convergent Procedure is a hybrid strategy for the treatment of persistent and longstanding atrial fibrillation (AF)¹
 - It combines epicardial ablation via subxiphoid pericardioscopic access with percutaneous endocardial ablation
- The Convergent Plus Procedure (CPP) utilizes left VATS access to expand the left atrial lesion set and to perform external occlusion of the left atrial appendage (LAA)²
- Our proposed approach: Robotic-Enhanced CPP
 - Subxiphoid thorascopic access inserted under direction visualization
 - 30° thoracoscope for improved visualization of the posterior left atrium (LA)

Setup

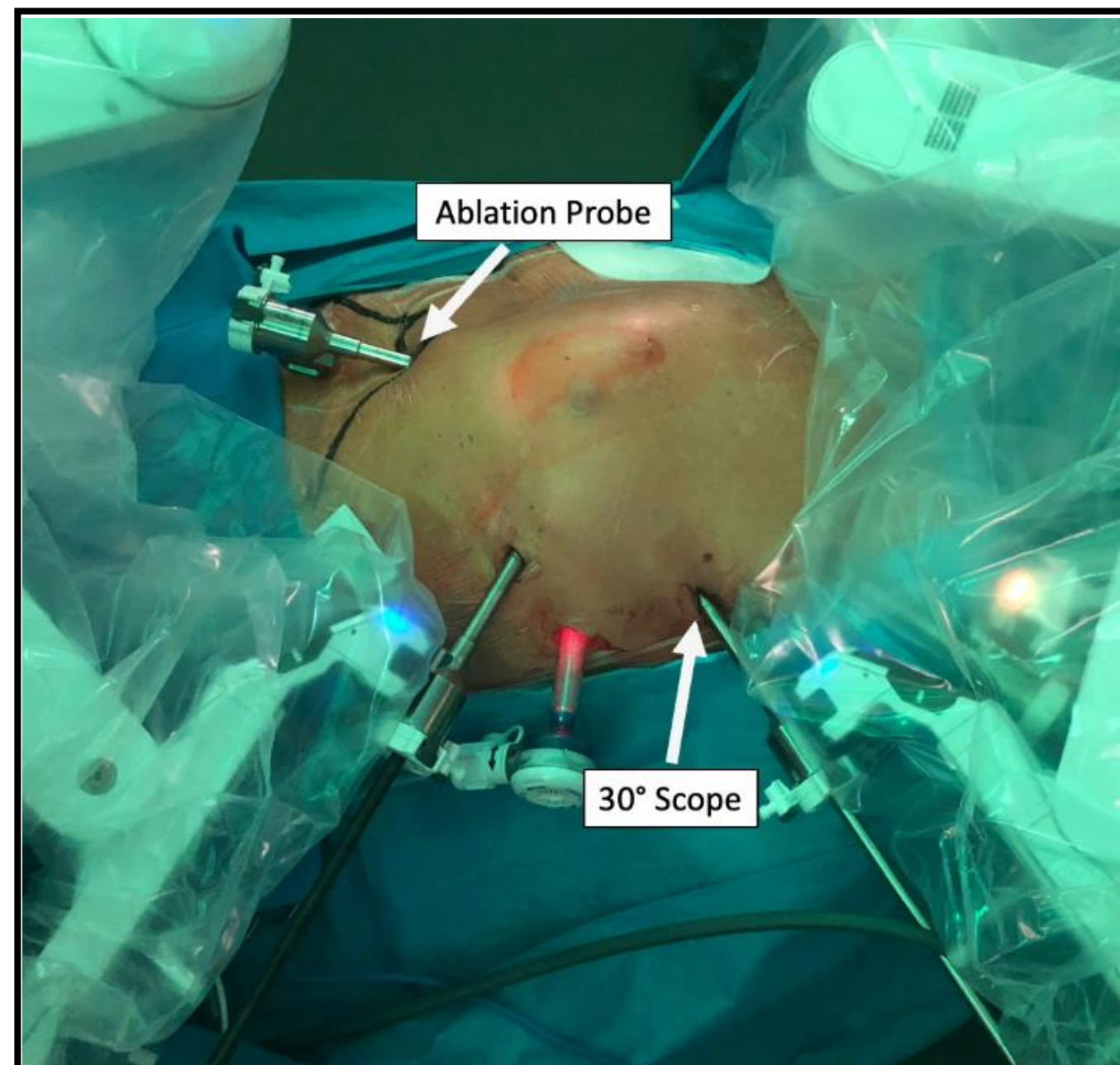


Figure 1: Thorascopic port placement for Robotic-Enhanced Convergent Plus Procedure

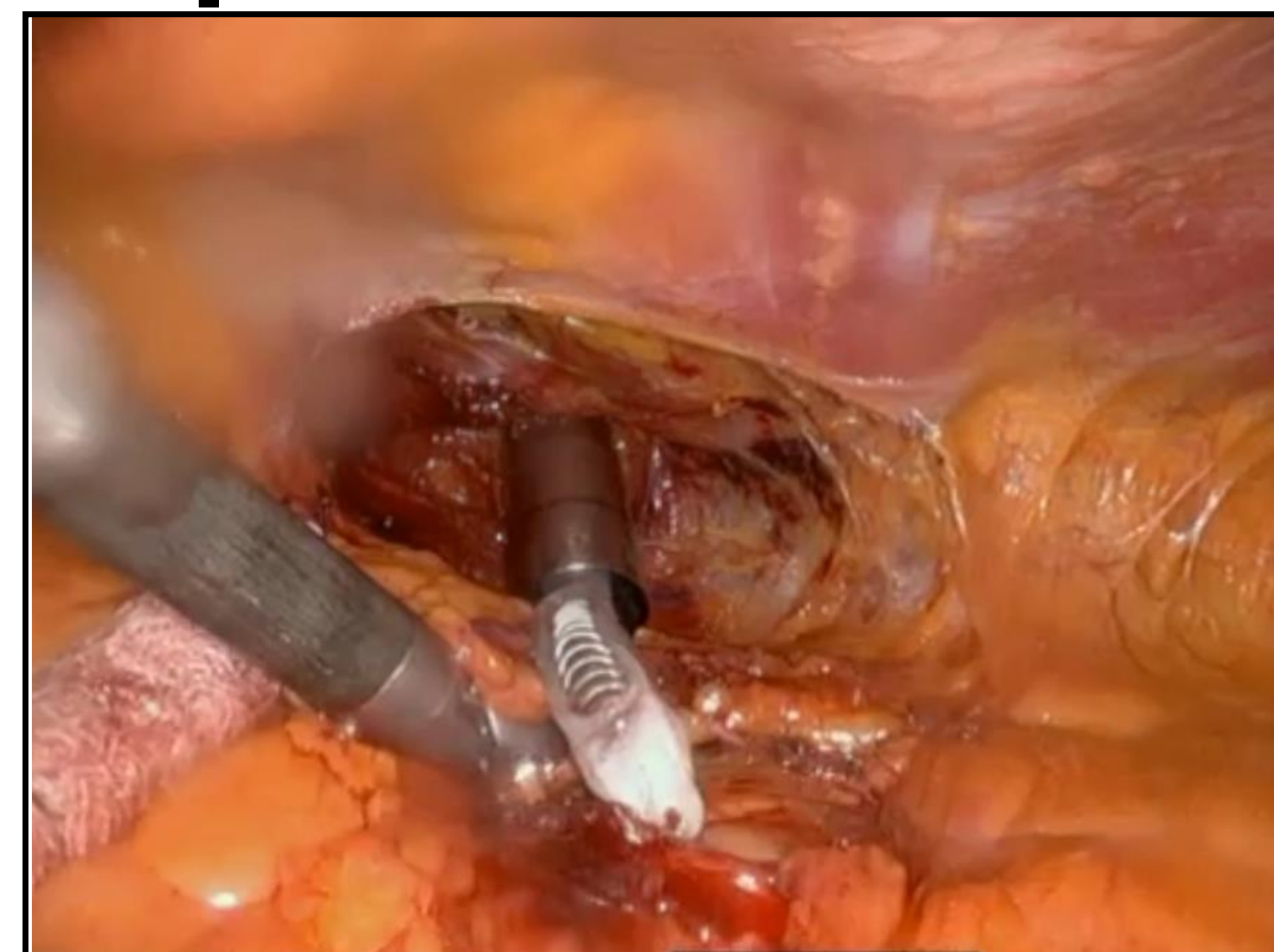


Figure 2: Insertion of ablation probe through subxiphoid port under direct visualization – eliminates need for cutdown

Results

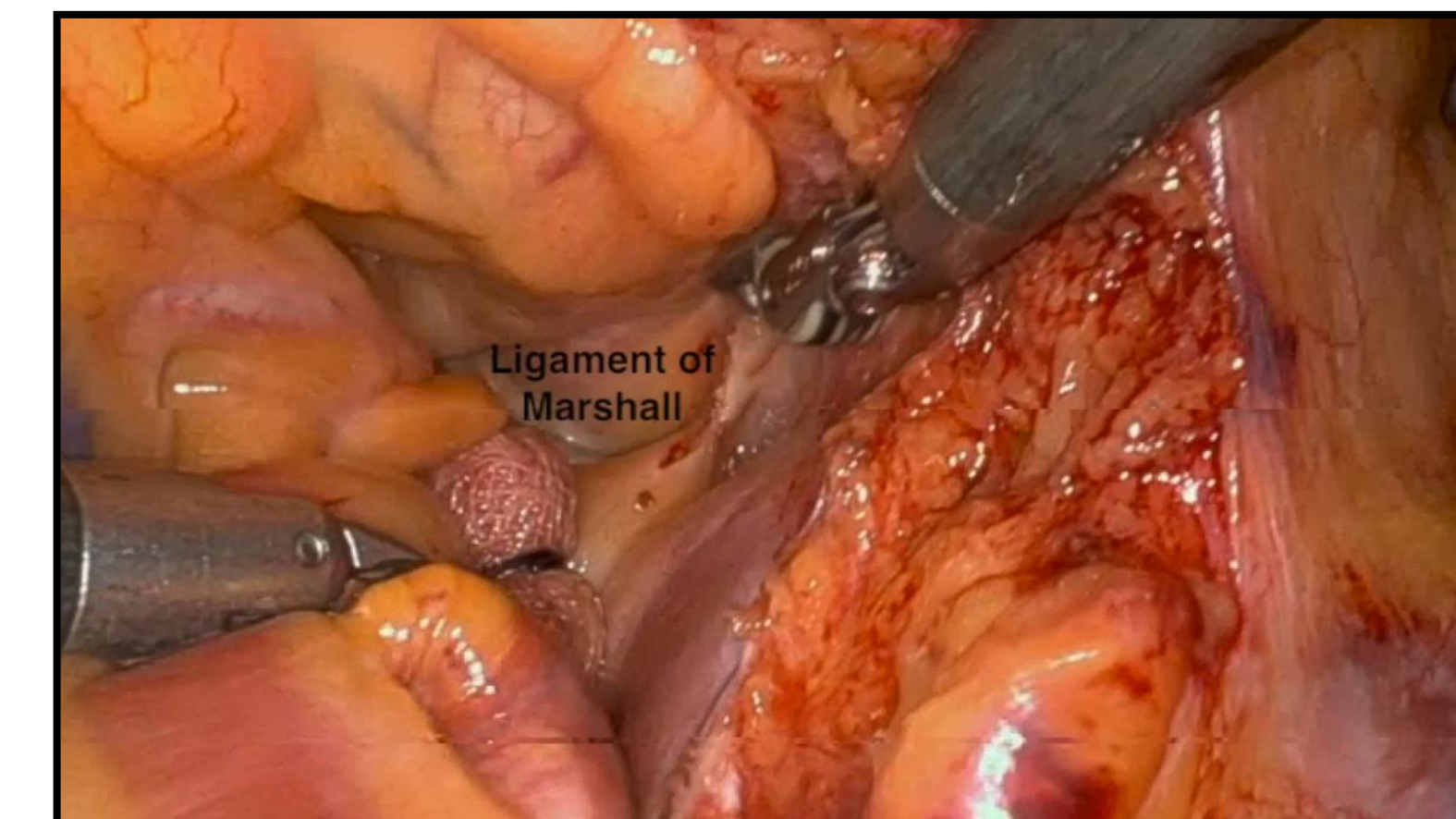
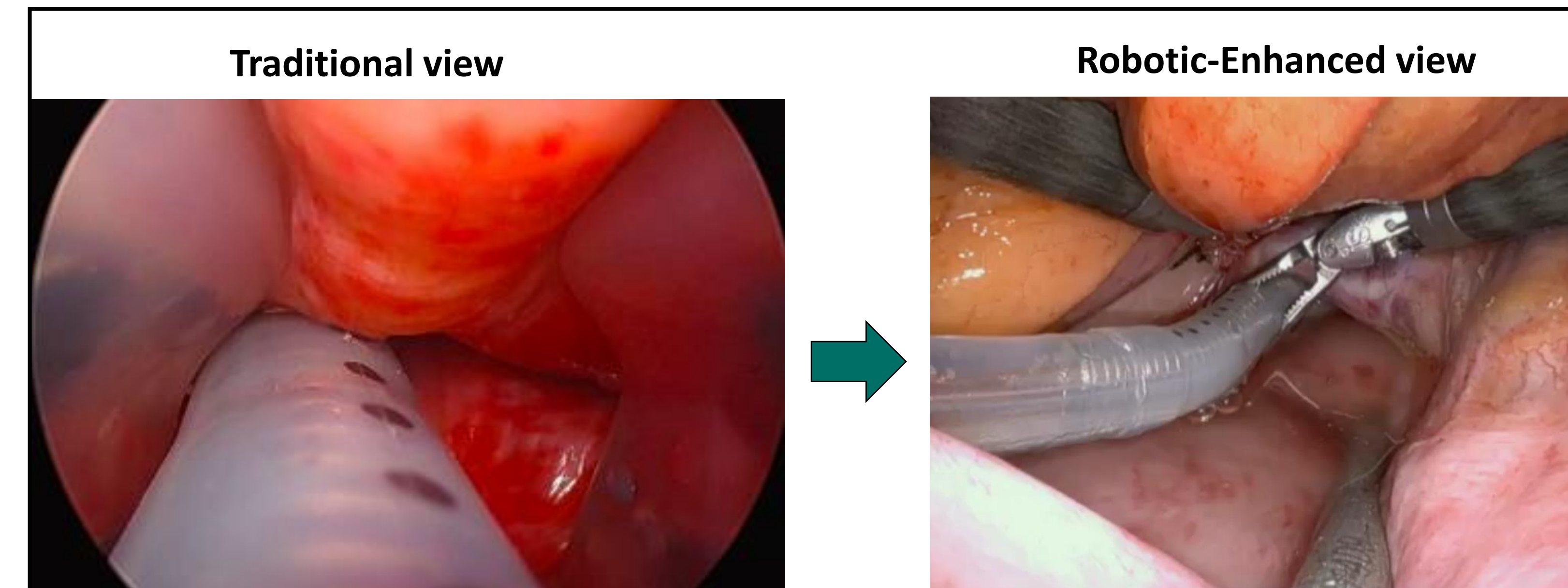


Figure 5: Ligation of the Ligament of Marshall in Robotic-Enhanced CPP

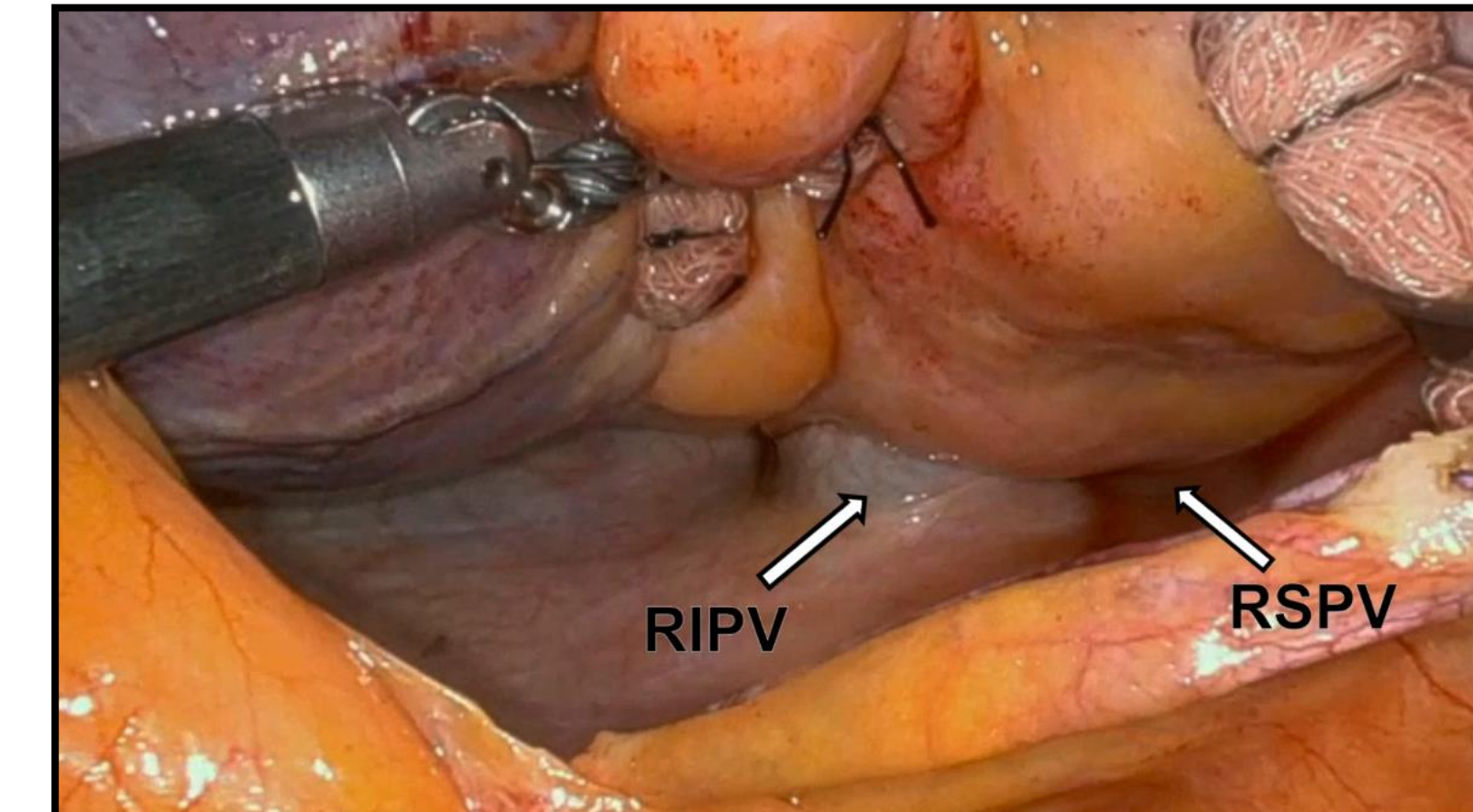


Figure 6: Improved visualization of posterior LA from left thorascopic access



Figure 7: External occlusion of LAA

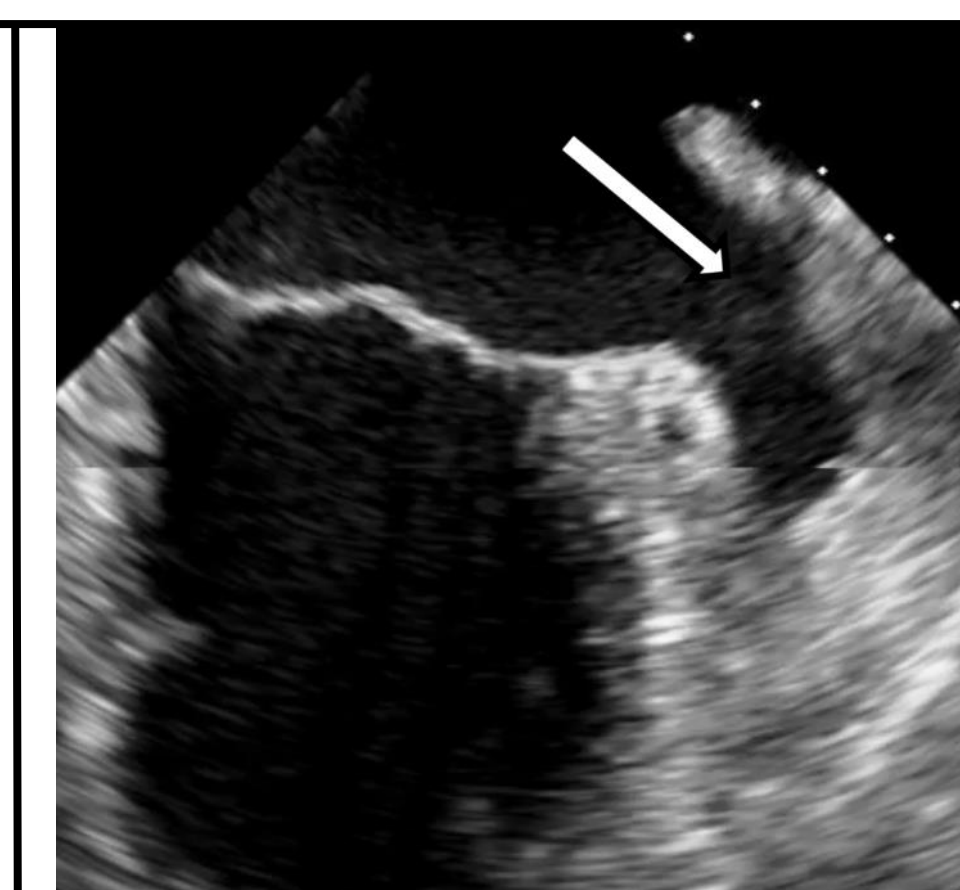


Figure 8: Intraoperative TEE imaging of LAA before and after external occlusion

Advantages

- Elimination of subxiphoid cutdown
 - Reduced post-procedure pain and risk of wound-healing complications
- Improved visualization of target anatomy (posterior left atrium, pulmonary veins)
- Ability to manipulate ablation probe utilizing robotic instruments → more precise lesion set
- Potentially decreased risk of LA injury
- Eliminating contraindications: able to perform the procedure in patients with previous cardiomy

Conclusions

- The Robotic-Enhanced CPP reduces the morbidity associated with prior iterations of the Convergent Procedure
 - Benefits secondary to the more precise and extensive placement of lesion sets are currently being investigated
- Next steps: refinement of a completely Robotic CPP to eliminate subxiphoid access entirely
- Will the robotic platform enable the placement of new or additional lesion sets to increase the efficacy and durability of the procedure?

References

- DeLurgio DB, Crossen KJ, Gill J, et al. Hybrid Convergent Procedure for the Treatment of Persistent and Long-Standing Persistent Atrial Fibrillation: Results of CONVERGE Clinical Trial. *Circ Arrhythm Electrophysiol.* 2020;13(12):e009288.
- Kiankhooy A, McMenamy ME. The Convergent procedure for AF: A surgeon's perspective. *J Cardiovasc Electrophysiol.* 2022;33(8):1919-1926.