

OBJECTIVE

- Robotic assisted mammary artery dissection is routinely performed with monopolar or bipolar electrocautery
 - Risk of thermal injury to the mammary artery
 - Necessitates frequent instrument changes to allow clip application
- Harmonic energy offers a harvest technique with minimal thermal risk to the conduit and reduced need for clip application

AIM / GOAL

- In pursuit of optimal harvest technique, we present a technique limiting electrocautery and utilizing the robotic harmonic shear as a harmonic scalpel for mammary artery dissection.

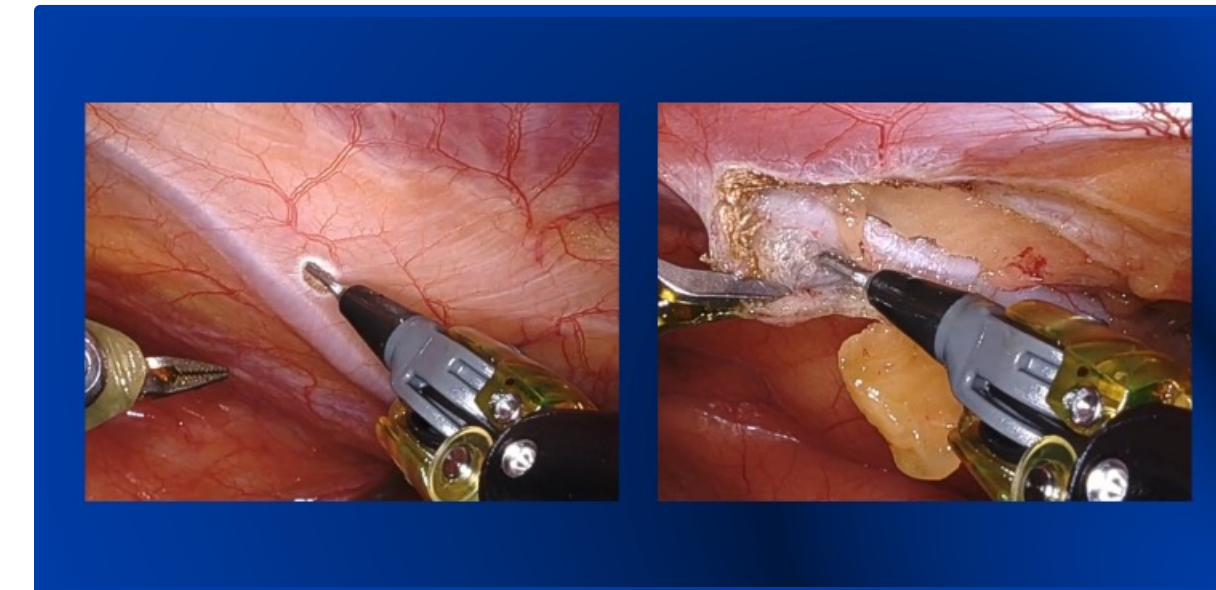
CONCLUSIONS

- Limitation of instrument exchanges increases operative efficiency and decreases robotic operative time.
- Absence of an instrument joint limits utility at extreme of conduit harvesting.
- The robotic harmonic shear can be utilized as a harmonic scalpel for safe left internal mammary artery harvest at the time of robotic assisted MIDCAB.

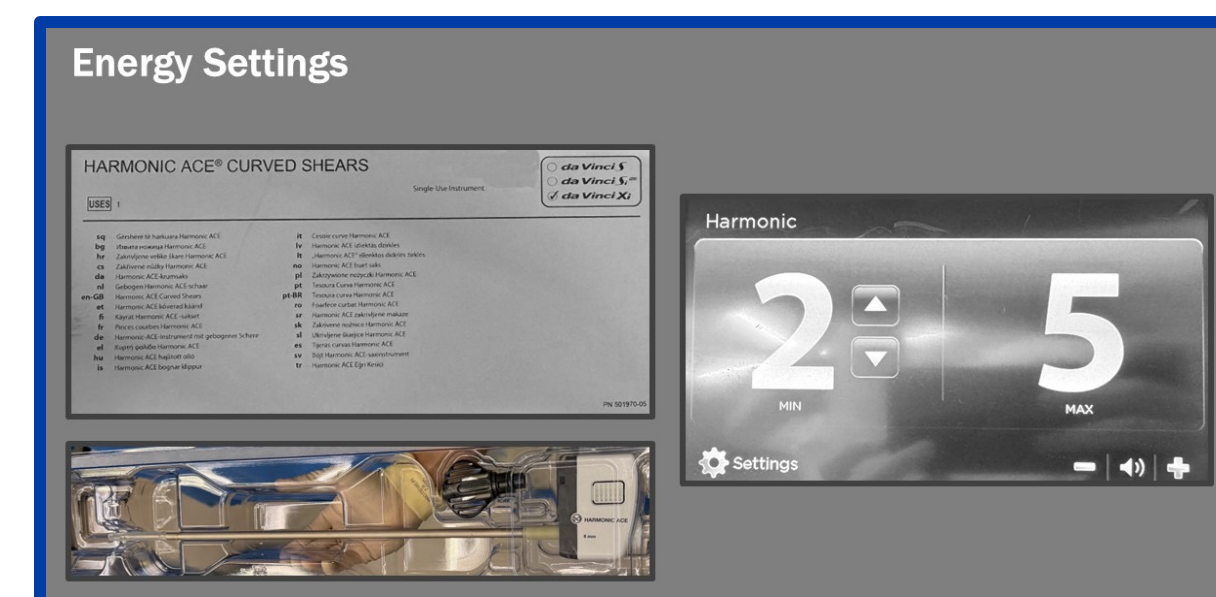
OPERATIVE PROCEDURE



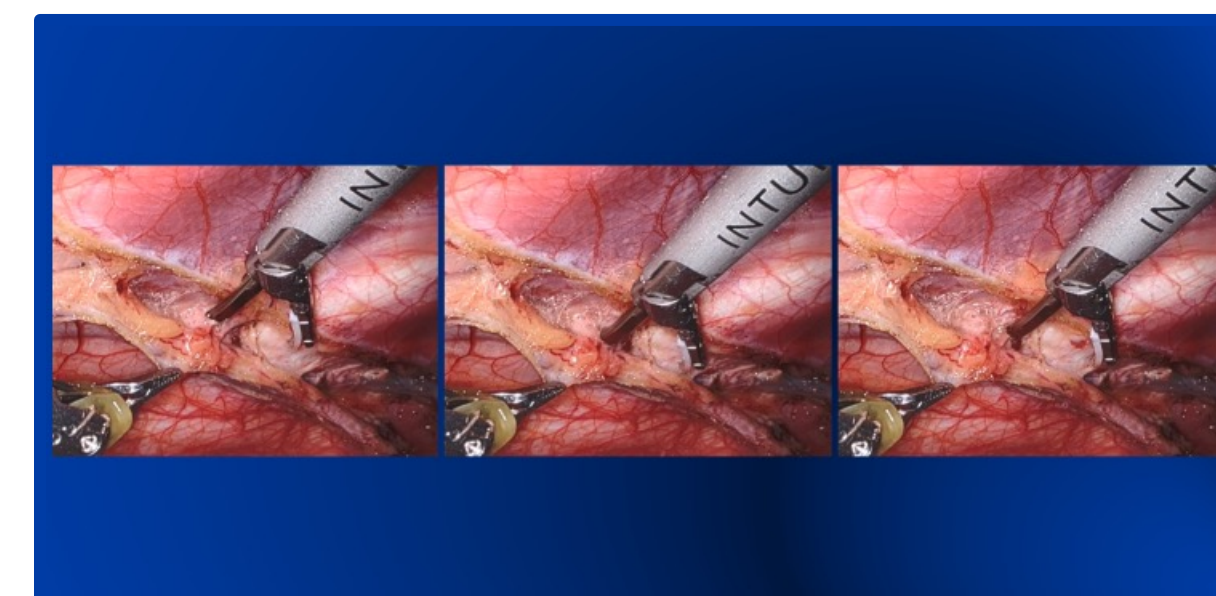
Standard robotic MIDCAB positioning is used. Ports are placed in the 3rd, 4th-5th, 6th interspaces.



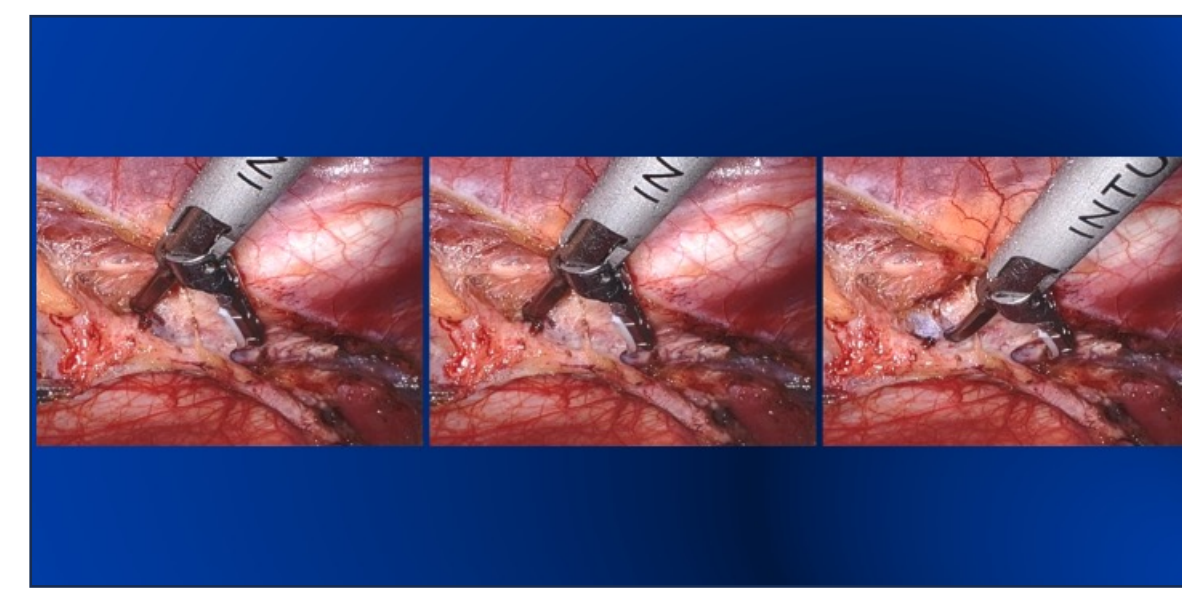
The endothoracic fascia is opened using the monopolar spatula for the entirety of the LIMA length.



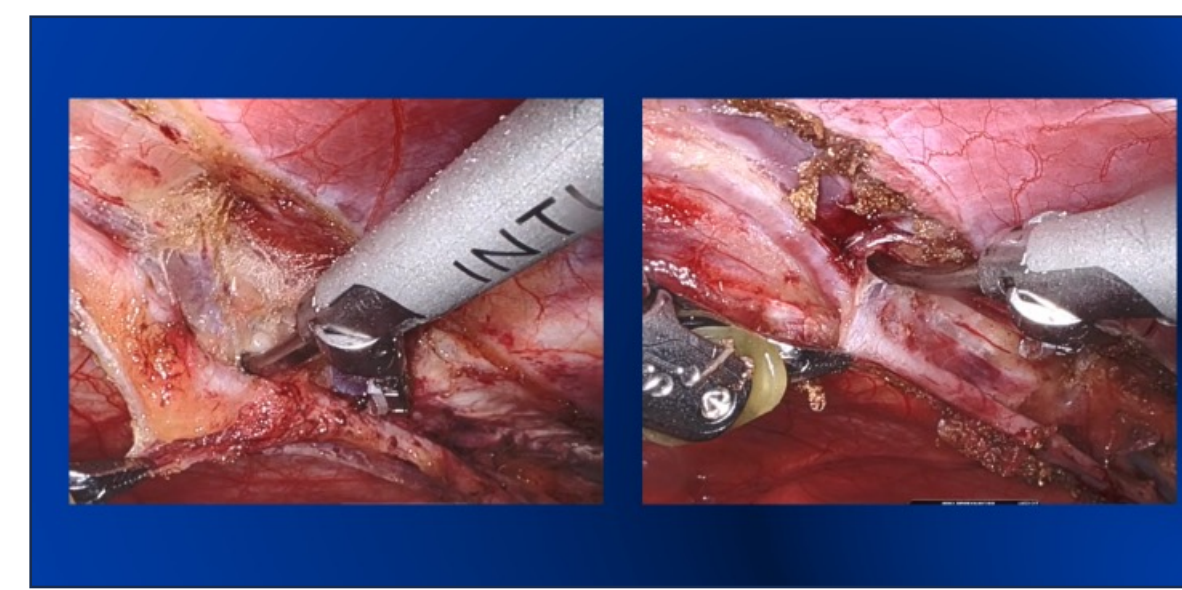
The robotic Harmonic ACE curved shear (Intuitive Surgical) is used in arm 4.



Movement is similar to open harvesting with rapid small oscillations of the instrument to vaporize peri-conduit adipose tissue. Note the instrument is *always* used open.



Branches are divided with gentle stable pressure from the harmonic scalpel and gentle downward traction applied with the left instrument (arm 2).



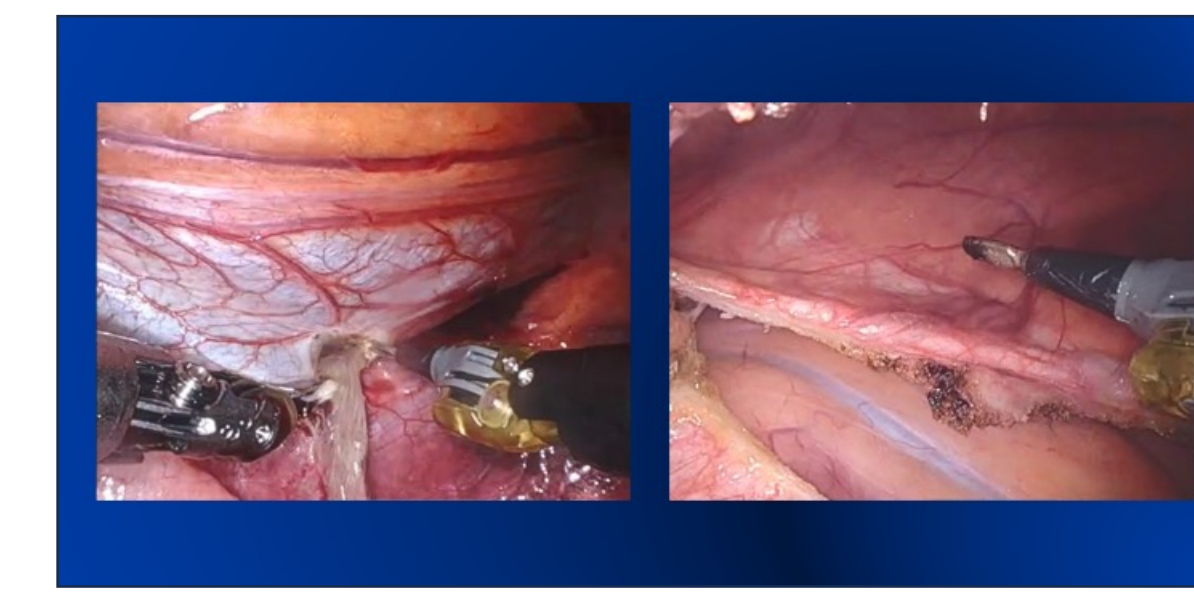
The harmonic harvest allows for a clip-free, hemostatic mammary artery harvest without spasm secondary to thermal energy.



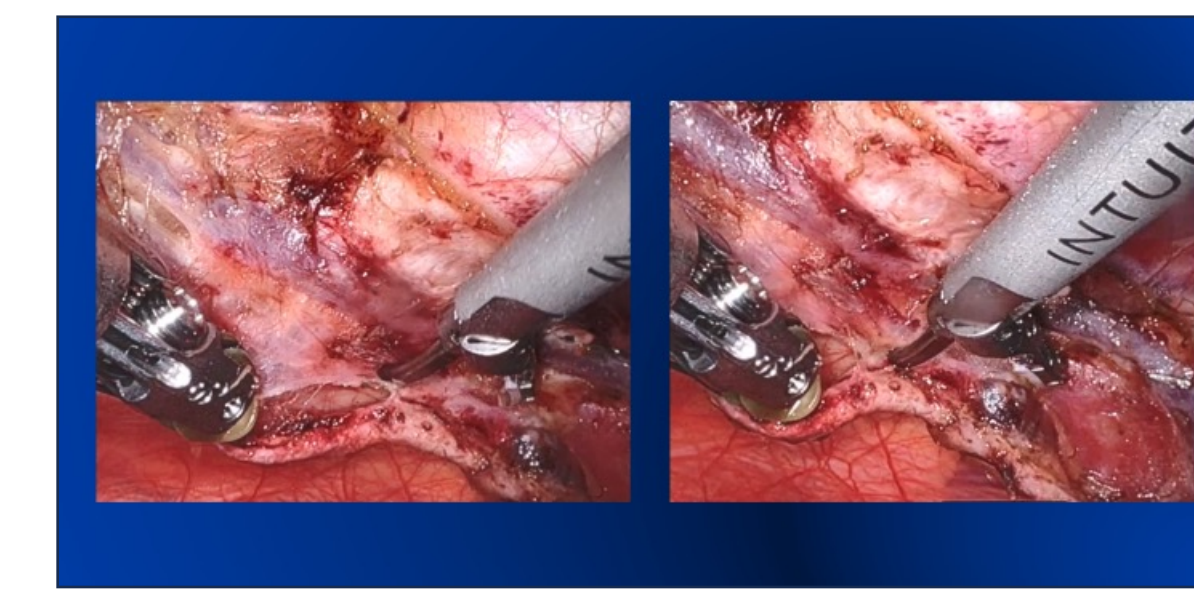
If bleeding is encountered, the preserved branch length allows for clip application and division with the monopolar spatula.



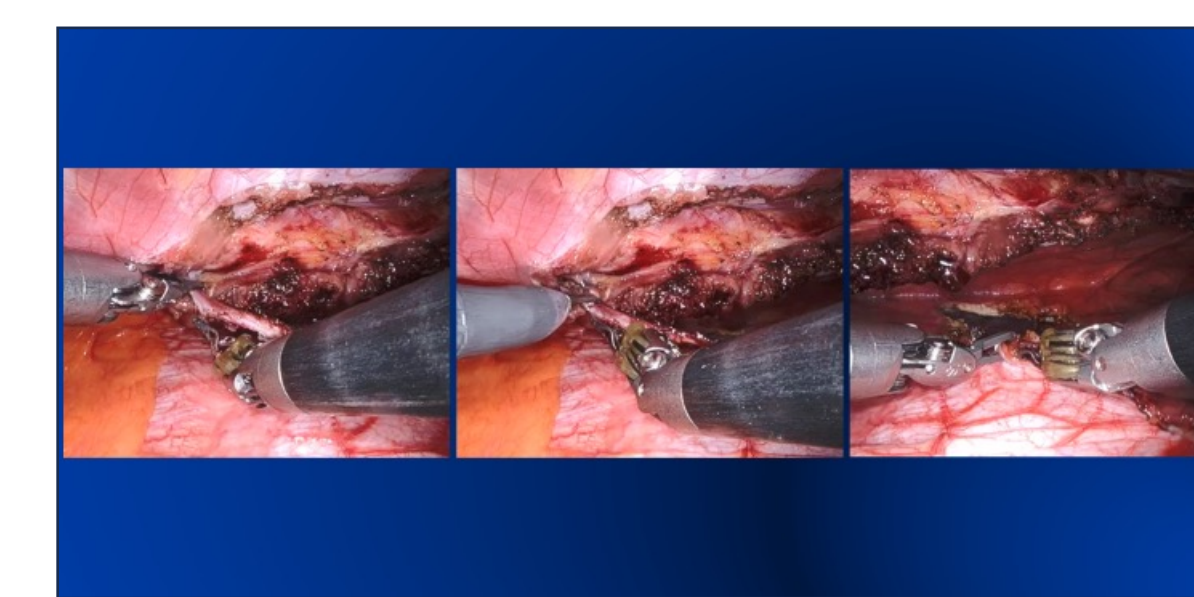
Due to the instrument lacking an endo-wrist, the extremes of mammary harvesting are performed in the standard fashion with electrocautery and clips.



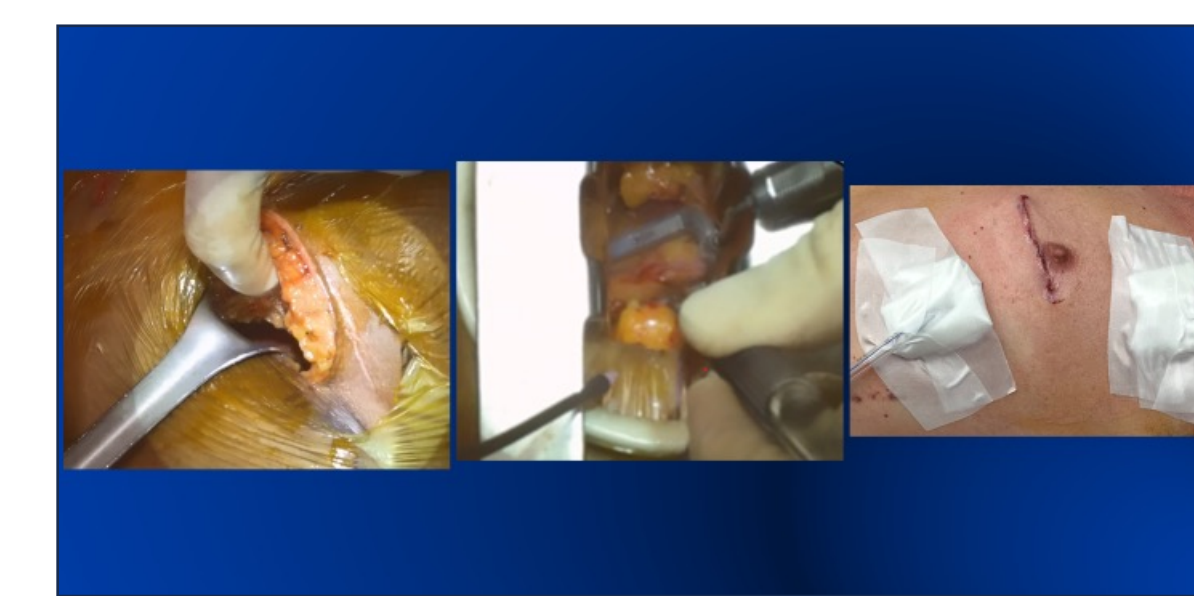
The anterior and posterior pericardium are opened in the usual fashion utilizing monopolar electrocautery.



The medial plan and any remaining medial branches are divided utilizing the harmonic scalpel.



The mammary artery is clipped in triplicate, divided sharply and clipped to the pericardial edge.



The remainder of the operation is completed in the standard fashion with a non-rib spreading mini thoracotomy.

DISCLOSURES

A Luckert: Intuitive Surgical Solutions (Consultant)

D Brinster: Cook Medical (Consultant), Terumo Aortic (Consultant), W.L. Gore & Associates (Consultant).

NC Patel: Intuitive Surgical Solutions (Consultant), Vascular Graft Solutions (Advisory Board)

REFERENCES

Lamm P, Juchem G, Weyrich P, Schütz A, Reichart B. The harmonic scalpel: optimizing the quality of mammary artery bypass grafts. Ann Thorac Surg. 2000 Jun;69(6):1833-5. doi: 10.1016/s0003-4975(00)01288-1. PMID: 10892932

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Ohtsuka, Toshiya, et al. "Thoracoscopic internal mammary artery harvest for MICABG using the harmonic scalpel." The Annals of Thoracic Surgery, vol. 63, no. 6, June 1997, https://doi.org/10.1016/s0003-4975(97)00292-0.

CONTACT INFORMATION

JS Newman: jnewman5@northwell.edu.