Robotic Assisted Thymectomy

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Thymectomy

- Indications
  - Thymoma
  - Thymic cysts
  - Thymic carcinoma
  - Myasthenia gravis

- Traditional approach: median sternotomy

- Radical “phrenic to phrenic” resection
VATS Thymectomy

- Spares median sternotomy
- Cosmetically favorable
- Improved post-op pulmonary function
- Decreased length of stay
- Possible decreased pain

Hess (Sarkaria) et a. Ann CT Surg 2016
Robotic Thymectomy

- Low morbidity
- Equivalent outcomes in myasthenia gravis
- Shorter learning curve vs. VATS
- Technically superior?
  - Advanced cases

Left versus Right Approach

- **Right**
  - Increased space (ventricle absent)
  - Visualization of cavo-innominate jxn
  - Visualization of thymic vein
  - Compromised view of left phrenic (more variable)

- **Left**
  - Facilitates thymic horn dissection?
  - Improved visualization of left phrenic
  - Less space (ventricle)
RA-VATS Thymectomy: TilePro
Robot Thymectomy: Left Approach

19 Oct 2009
Robotic Thymectomy: Advanced Cases (Right Approach)
Minimally invasive versus open thymectomy: a systematic review of surgical techniques, patient demographics, and perioperative outcomes

Nicholas R. Hess¹*, Inderpal S. Sarkaria²*, Arjun Pennathur², Ryan M. Levy², Neil A. Christie², James D. Luketich²

- 2,068 patients
  - 838 MIT vs 1,230 OT
- MIT decreased EBL, chest tube time, LOS
RA-VATS Thymectomy vs Sternotomy

Surgical treatment of early-stage thymomas: robot-assisted thoracoscopic surgery versus transsternal thymectomy

Bo Ye · Wang Li · Xiao-Xiao Ge · Jian Feng · Chun-Yu Ji · Ming Cheng · Ji-Cheng Tantai · Heng Zhao


- RA-VATS thymectomy decreased EBL, LOS, Op-Time, Costs

<table>
<thead>
<tr>
<th></th>
<th>RATS</th>
<th>TST</th>
<th>p value</th>
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<tbody>
<tr>
<td>No. of patients</td>
<td>23</td>
<td>51</td>
<td></td>
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<tr>
<td>Duration of surgery (min)</td>
<td>97 ± 38</td>
<td>214.5 ± 35.4</td>
<td>&lt;0.01</td>
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<tr>
<td>Blood loss (ml)</td>
<td>61.3 ± 21.8</td>
<td>466.1 ± 91.4</td>
<td>&lt;0.01</td>
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<tr>
<td>Postoperative pleural drainage (days)</td>
<td>1.3 ± 1.0</td>
<td>4.8 ± 1.0</td>
<td>&lt;0.01</td>
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<tr>
<td>Postoperative hospital stay (days)</td>
<td>3.7 ± 1.1</td>
<td>11.6 ± 10.4</td>
<td>&lt;0.01</td>
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<tr>
<td>Hospitalization costs (CNY)</td>
<td>53,885.8 ± 14,214.7</td>
<td>43,798.1 ± 33,779.9</td>
<td>0.174</td>
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<tr>
<td>Postoperative average drainage in 24 h (ml)</td>
<td>53 ± 43.1</td>
<td>475.5 ± 89.0</td>
<td>&lt;0.01</td>
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<tr>
<td>Conversions to open surgery</td>
<td>0</td>
<td>–</td>
<td></td>
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<tr>
<td>Blood transfusions</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Postoperative complications</td>
<td>1</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Follow-up period (months)</td>
<td>1–48</td>
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<tr>
<td>Recurrence</td>
<td>0</td>
<td>0</td>
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Comparison of robotic and nonrobotic thoracoscopic thymectomy: A cohort study

Jens C. Rückert, MD, PhD, Marc Swierzy, MD, and Mahmoud Ismail, MD

- Myasthenia Gravis: 79 VATS vs 74 Robotic
- Consecutive/Sequential Cohort Comparison
- Improved CR rate at 3.5 yrs w/ Robotic Approach
  - 39% v 20% (P=0.01)
RA-VATS Thymectomy for Thymoma

Robot-aided thoracoscopic thymectomy for early-stage thymoma: A multicenter European study

Giuseppe Marulli, MD, PhD, Federico Rea, MD, Franca Melfi, MD, Thomas A. Schmid, MD, Mahmoud Ismail, MD, Olivia Fanucchi, MD, Florian Augustin, MD, Marc Swierzy, MD, Francesco Di Chiara, MD, Alfredo Mussi, MD, and Jens C. Rueckert, MD

- 4 Centers, 79 Patients
- Median follow-up 40 months
- Excellent operative outcomes
- 5-year OS 90%
- 5-year DSS 97%
- Longer follow-up needed
Robot-assisted thymectomy via subxiphoid approach: technical details and early outcomes

Hanlu Zhang¹, Longqi Chen¹, Yu Zheng¹, Zihao Wang¹, Yingcai Geng¹, Fuqiang Wang¹, Dan Liu¹, Andong He¹, Jing Li², Yun Wang¹

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- 70 pts. MG and/or neoplasm

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<th>Histology</th>
<th>n (%)</th>
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<tr>
<td>Thymoma</td>
<td>34 (48.6)</td>
</tr>
<tr>
<td>Thymic hyperplasia</td>
<td>12 (17.1)</td>
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<tr>
<td>Thymic cyst</td>
<td>13 (18.6)</td>
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<tr>
<td>Teratoma</td>
<td>6 (8.6)</td>
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<tr>
<td>Thymic carcinoma</td>
<td>5 (7.1)</td>
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Robotic Thymectomy: Summary

- Improved morbidity over sternotomy
- Equivalent outcomes in myasthenia gravis
- Equivalent short-term outcomes in thymoma
- Shorter learning curve vs. standard VATS
- Technically superior vs VATS: advanced cases
- Long-term outcomes needed for thymoma

New Gold Standard For Early Stage I and II Tumors?

Thank You

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