Robotic assisted cardiac surgery
Minimally invasive alternatives

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No disclosures
Objectives

• Understand current minimally invasive and robotic surgical techniques
• Recognize the types of pts that could benefit
• Be aware of the benefits and limitations of these procedures
Minimal Incision Surgery
Potential Benefits

Same principles of surgical repair

- Shorter hospital stay
- Reduced postop pain
- Return to work sooner
- Improved cosmetic results
Minimally Invasive Cardiac Surgery

Median Sternotomy
10-15 cm.
Sternum divided

Total Endoscopic
1-2 cm.
Between ribs
Robotic Approach
Indications

- Mitral valve disease
- Tricuspid valve disease
- ASD/PFO closure
- Atrial fibrillation
- CABG
- Congenital
Minimal Incision Surgery
Potential Benefits (n=600)

<table>
<thead>
<tr>
<th></th>
<th>Standard Median Sternotomy</th>
<th>Robotic or VATS</th>
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<tbody>
<tr>
<td>Hospital Stay</td>
<td>5-7 days</td>
<td>3-4 days</td>
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<tr>
<td>Back to Work</td>
<td>4-6 weeks</td>
<td>2 weeks</td>
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Robotic Approach
Contraindications

• Coronary disease
• Vascular disease
• Prior sternotomy / right thoracotomoty
Pre-Robotic CTA Essential

Ulceration & Plaque

Normal
63 yr male

- Shortness of breath
- Palpitations
- Paroxysmal afib
- Echo
  - Large secundum ASD
  - Severely dilated RA and RV
  - Mild depressed RV function
63 yr male
63 yr male

- Recommended closure
- Maze with LAA ligation
- Robotic assisted
  - Size of defect
  - Maze, LAA
Minimally Invasive CV Surgery
Robotic-assisted Surgery

2 surgeon team approach
Robotic Assisted Cardiac SX
63 yr male
63 yr male
65 year old female

- Shortness of breath with activity
- Hx of cardiac murmur and MVP
- No chest pain or palpitations
- Echo
  - Bileaflet prolapse
  - Sever MV regurgitation
  - LVEF 67%
Robotic-assisted MV Repair
POST BYPASS
Post op case 1 & 2

• Extubated in operating room
• ICU care 8 hours
• Home on POD #3
Mayo Experience

>350 robotic mitral repairs for prolapse

- Repair rate 100%
- Hospital stay 3 days
- Mortality 0%
- Stroke <1%
- Reoperation <1%
- Bleeding <1%
- 100% 1 year follow-up
  - 84% none – trivial MR
  - 14% mild MR
  - 2% moderate MR
Time to Return to Work

Open MVrep 36
Robotic 57

Suri, Burkhart. ATS 2012
Combining 3-D Echo and Robotic Valve Surgery

MV PFE
3-D Echo and Robotic Valve Surgery

MV PFE
Robotic assisted cardiac surgery

- Safe and effective
- Strict adherence to proven
  - Indications
  - Materials / techniques
- No increased risk
- Benefits: QOL, return to work, cost?