MINIMALLY INVASIVE MITRAL SURGERY

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New Keyhole Heart Surgery Arrived With Fanfare, but Was It Premature?

Ralph King Jr.
Staff Reporter
Dr. Cooley’s reaction

- They took something awfully simple
- And made it simply awful!
Meta-analysis of R mini thoracotomy vs sternotomy mitral surgery
Sundermann et al, JTCVS Nov, 2014

- 20,000 pts, 45 studies

- MICS MVS vs Conventional sternotomy
- No difference in
  - All cause mortality – 1.4% vs 1.7%
  - Stroke 1.7% vs 1.6%
  - AKI 2.1% vs 2.1%
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- 20,000 patients, 45 studies

- MICS MVS has greater
  - Procedure time < .001
  - CPB time < .001
  - Clamp time < .001
  - Aortic dissection < .05
    - 4 vs 0
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• 20,000 patients, 45 studies

• MICS MVS has less
  – Blood drainage postop  <.001
  – Transfusion          <.004
  – Postop Vent         <.001
  – Postop AF           <.07
  – ICU LOS             <.001
  – Hosp LOS            <.001
  – Av Cost $7594 less  <.07
  – Superior cosmetics and patient satisfaction
Positioning for MICS MVR
Arterial cannulation

- Femoral artery – open or percutaneous
  - Preop CTA to r/o aortoiliac disease

- Axillary artery – direct or with a side conduit

- Central Aortic – More accessible for mini AVR
Venous Cannulation

- Femoral with TEE guidance
  - Percutaneous or cut down
  - Beware cannula dislodgement with LA retractor
  - Position deeper in SVC than for mini AVR
  - Good venous drainage critical
  - Can supplement with direct SVC cannula if necc.
    - DO NOT proceed further until good venous drainage established
Cygnet aortic clamp

Rigid shaft opened

Rigid shaft closed
Chitwood clamp
Intra Aortic Occlusion balloon

- **IntraClude intra-aortic occlusion device**
  - Delivers antegrade cardioplegia
  - Vents the aortic root
  - Monitors aortic root pressure
  - Occludes the ascending aorta from within
  - Useful in redo’s and porcelain aorta
Myocardial preservation

- Antegrade cardioplegia
- Retrograde via Coronary Sinus – if AR
  - Direct insertion with TEE guidance
  - Percutaneous Coronary Sinus Catheter
- Cardioplegia
  - St Thomas’ – every 15-20 min
  - Del Nido – every 60 min
  - Custodial – every 60-90 min
- Fibrillation strategy
  - Used routinely by some
  - Visualisation can be compromised
  - Possibly higher rate of gaseous emboli
  - Not an option if significant AR
MICS MV Surgery
Relative contraindications

• MAC – more complex surgery – longer clamp time
• Ascending aorta calcification – Intraclude balloon
• Redo chest – Fibrillation strategy
• Aortic regurgitation – retrograde cardioplegia only
• PAD – axillary cannulation
• Pectus excavatum – heart pushed over to left
• Avoid morbid obesity when starting out
Re Evolution Summit
Hands on teaching of MICS
April 5 and 6, 2018

Google ‘ReEvolution Summit for details
Search ‘Debakey Education’ on Youtube for meeting content
Change with the Times

Sternotomy → Minimally Invasive

“Less is More”