

Surgical Management

Surgery for Pulmonary NTM Disease



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Anschutz Medical Campus

Disclosures:

Intuitive – Teaching, Consultation
Director, American Board of Thoracic Surgery
Councilor, American Board of Surgery
Director, Complex General Surgical Oncology Board
Annual Meeting Chair, Society of Thoracic Surgeons

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Surgery for Pulmonary NTM Disease
Case Presentation

- 62 year old female
- Chronic productive cough, recurrent infection, fatigue
- Documented MAC infection by ATS criteria, now macrolide resistant
- Referral and evaluation at NJH

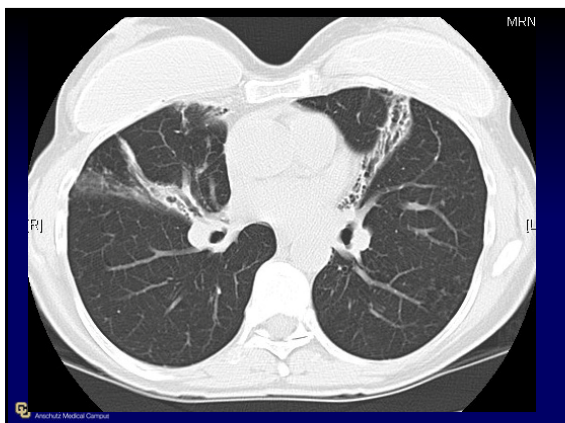
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Case Presentation

- Imaging suggests areas of focal bronchiectasis involving RML, Lingula
- New antibiotic regimen initiated
- Returns for surgery 8-12 weeks after initiation of therapy

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Surgery for Pulmonary NTM Disease

Indications for Surgery

Persistent, focal (cavitary or bronchiectatic) lung disease after antimicrobial treatment, usually in the setting of recurrent symptoms, documented treatment failure, or antimicrobial resistance.

Surgical resection should be seen as an adjunct to antimicrobial therapy, which remains the mainstay of treatment.

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Basics of Surgical Therapy

What is the Goal?

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Basics of Surgical Therapy - Goals

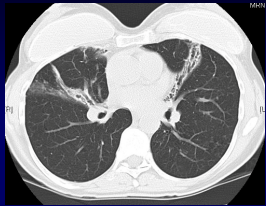
- Eradicate infection
 - Culture negative
 - Off antibiotics
 - Symptom free
- Symptom control
 - Intractable cough
 - Hemoptysis
- Limit damage to uninvolved lung

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Surgery for Pulmonary NTM Disease

Presentation

- Middle-aged females, thin, Caucasian, nonsmokers, right middle lobe / lingular disease
- Isolated large, thick-walled cavitary disease.
- Elderly men, smokers, ETOH abuse, underlying COPD. Resembles TB, may progress to complete lung destruction.



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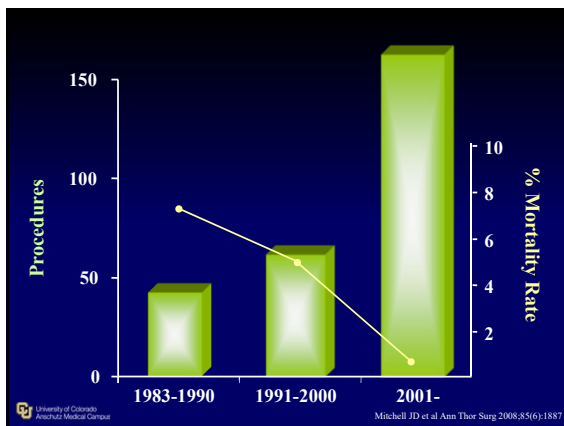
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Results of Surgical Therapy

- Corpe, 1981: 131 cases, mortality 6.9%, BPF 5.3%, 93% sputum conversion rate
- Nelson, 1998: 28 cases, mortality 7.1%, BPF 3.6%, complication rate 32%, 88% sputum conversion rate
- Shiraishi, 2002: 21 cases, mortality 0%, complication rate 29%, sputum conversion 100% → 90% at 2 years
- Mitchell, 2008: 265 cases, mortality 2.6%, complication rate 18%, BPF 4.2%, 87% sputum conversion rate

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Surgery for Pulmonary NTM Disease
Minimally Invasive (VATS) Approach

- Study period: July, 2004 to June, 2010
- 171 patients → 212 cases
 - 41 patients had bilateral resections
- Mean age: 59 years (26 – 82 years)
- Predominately Caucasian (93%) and Female (93%)

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Surgery for Pulmonary NTM Disease
Minimally Invasive (VATS) Approach

- Prior thoracic surgery in 10%
- Mean duration of medical therapy prior to referral for surgery: 61 months (4-354 months)
- Indications for surgery: Focal parenchymal disease with recurrent hemoptysis or pulmonary infections, or failure or intolerance of medical therapy

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Surgery for Pulmonary NTM Disease
Minimally Invasive (VATS) Approach

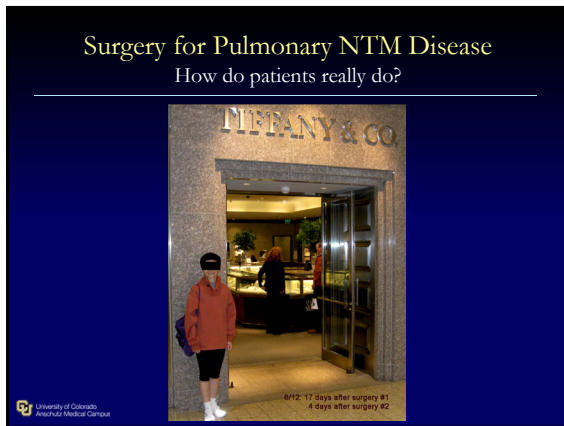
Lobectomy	126	Conversion to thoracotomy in 10 cases (4.7%)
Segmentectomy	73	
Mixed	13	

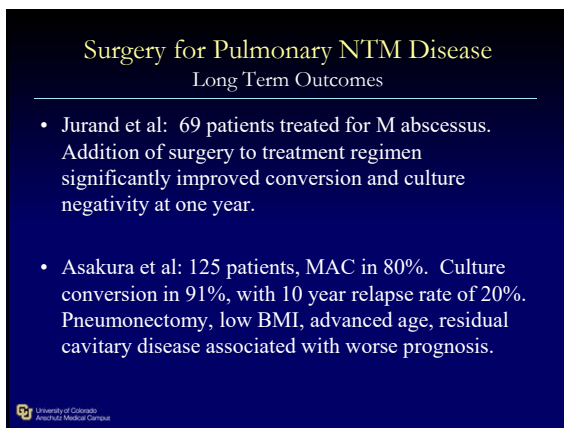
No operative mortality; Complications in 19 patients (8.9%)

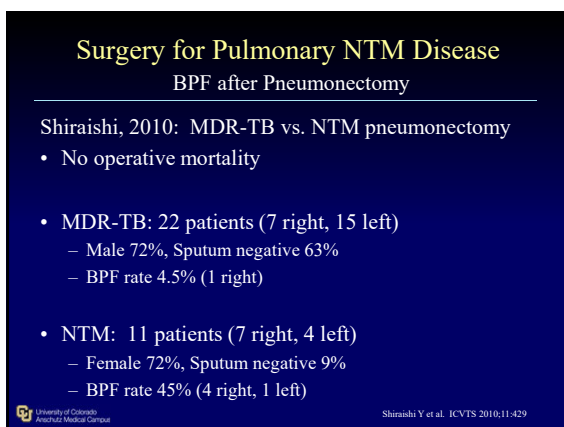
Mean hospital length of stay 3.7 days (1 – 23 days)

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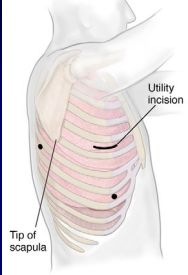




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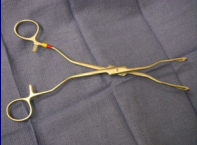
Surgery for Pulmonary NTM Disease “VATS” Approach

- Thoracoscopic Lobectomy
 - Two 1 cm incisions
 - One 3 cm “utility” incision
 - No rib spreading
- Operation otherwise identical to open approach
- Double lumen tube
- No epidural catheter
- Prior surgery not absolute contraindication



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Thoracoscopic Surgery Instruments



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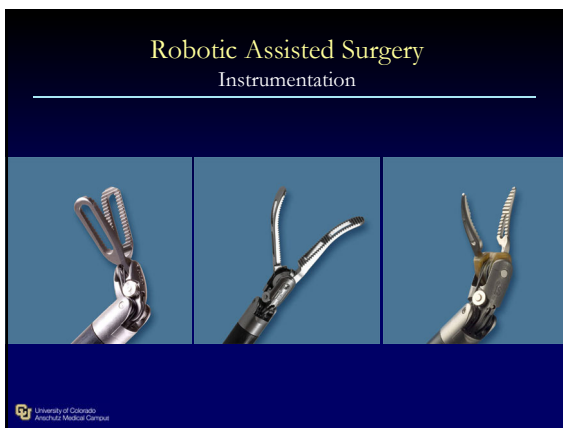
Surgery for Pulmonary NTM Disease Robotic Approach

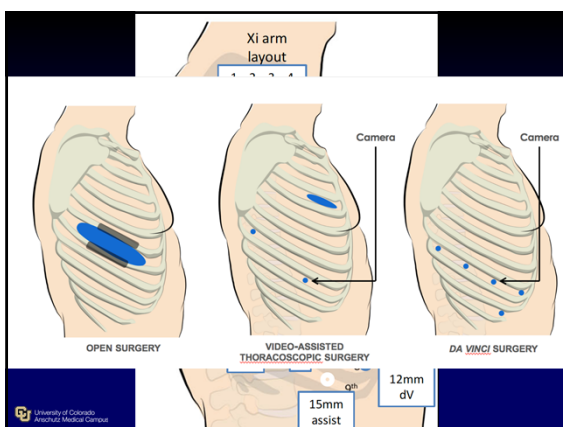


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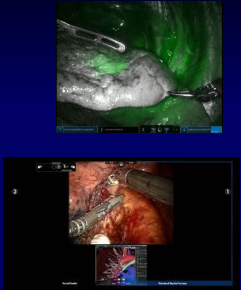




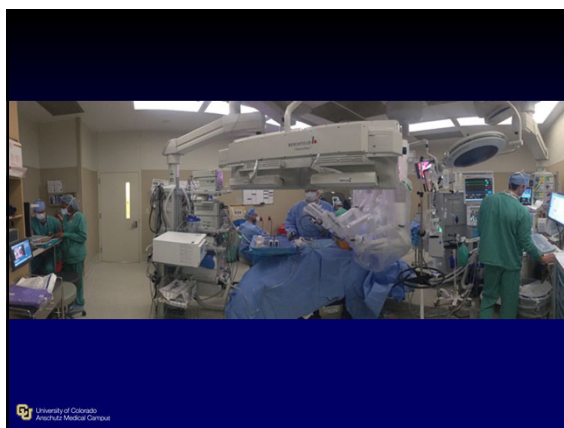
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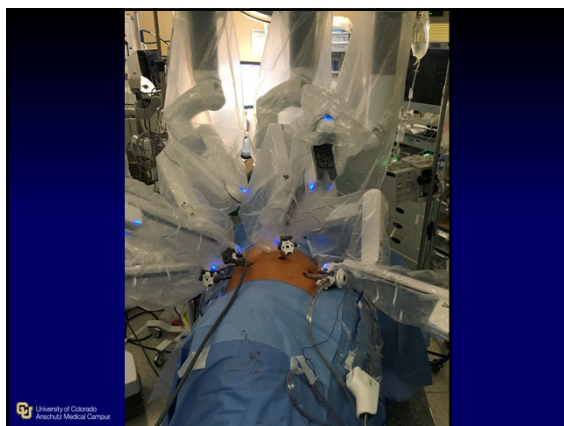
Robotic Assisted Thoracic Surgery
What are the Advantages?

- Optics
 - Magnified 3D HD
 - Immunofluorescence (FireFly)
 - TilePro
- Surgeon Autonomy
 - Integrated energy, stapling
 - 4th Arm = Reliable assistant
- Simulation

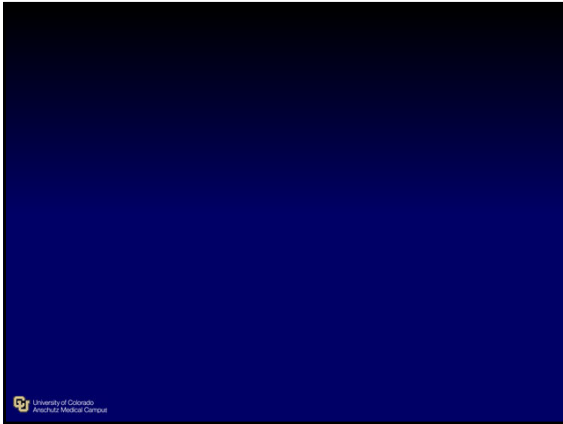


 Ergonomics





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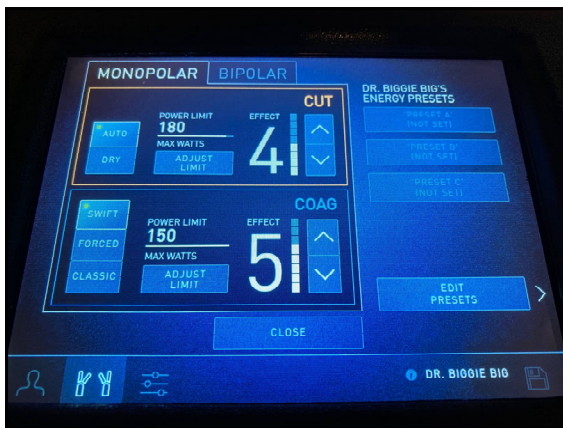


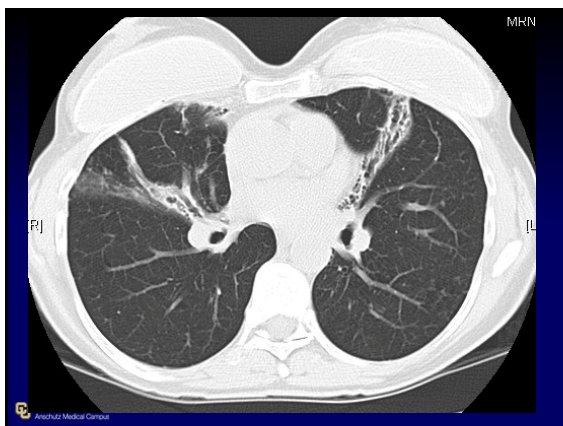




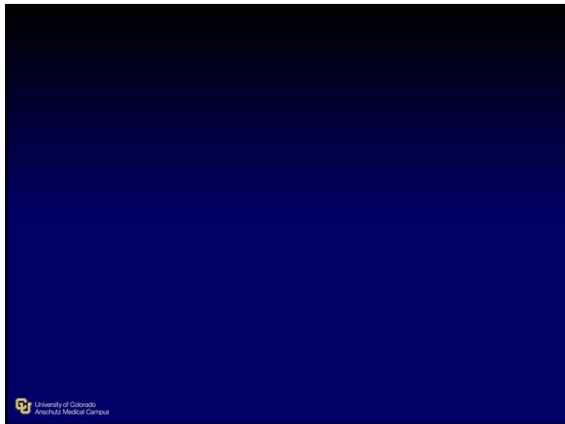
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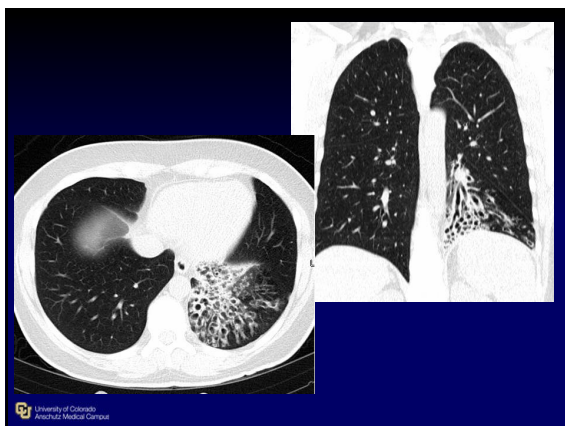


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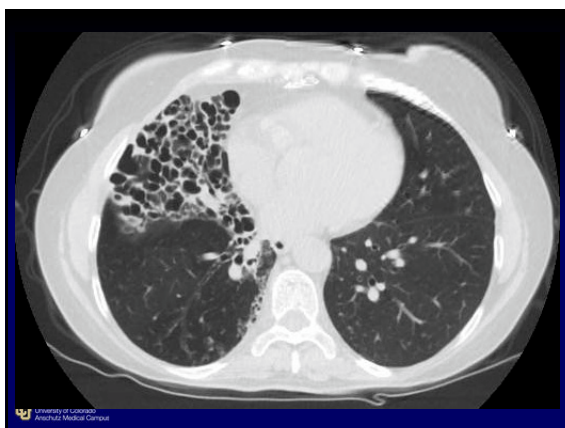
Surgery for Pulmonary NTM Disease
Common Questions

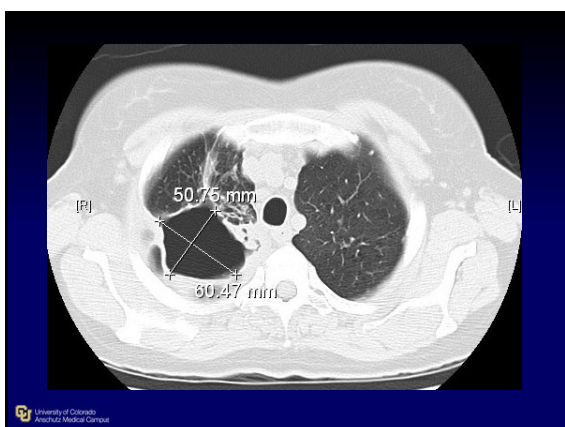
- Should I have surgery to treat my NTM infection?
- Can I have my surgery using a minimally invasive (VATS) approach?



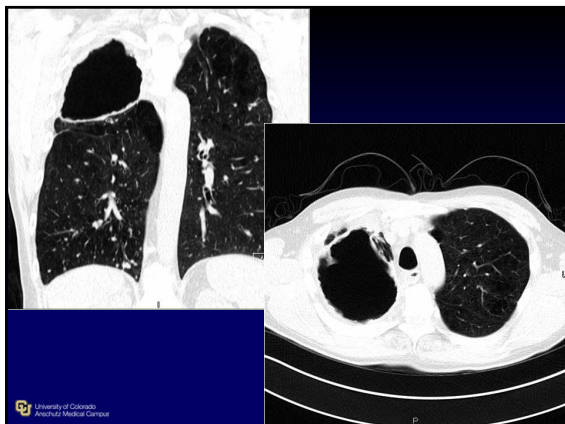
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Common Questions

- Should I have surgery to treat my NTM infection?
- Can I have my surgery using a minimally invasive (VATS) approach?
- Can I have the surgery and skip the medicine?
- When should the surgery occur?
- What will my breathing be like after the surgery?



Surgery for Pulmonary NTM Disease

Summary

- Surgical resection in pulmonary NTM disease may lead to improved outcomes in selected cases
- Complex lung resection and muscle flap use often possible using modern minimally invasive techniques
- Coordination of care best approached in multidisciplinary environment
- Resection for infectious lung disease differs from resection for cancer: experience counts