Post-operative "Fast-Track" pathways for lung resection

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Overview:

• What is a “fast-track pathway”?

• Do they work? What does the literature say?

• Implementing a pathway

• How we do it at Mayo Clinic (VATS / robotic lobectomy)
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What is a “fast-track pathway”?

…Or enhanced recovery after surgery (ERAS)

- A structured protocol of perioperative and postoperative surgical management
- Guideline(s) of defined events at defined time points to guide patient management
- “Fast-track”?? (not a race)
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What is a “fast-track pathway”?  
• Set up so individual clinical decisions do not have to be made for medications, drain management, prophylaxis, etc., etc.  
• Standardization, written down, “don’t miss anything”  
• Consistent, quality care  
  • (as opposed to just winning the length of stay race)
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Why do it?

• Standardization – doing what works
• Primary goal: Quality care for all patients
• Secondary goal: accelerate recovery, reduce morbidity, reduce cost, and shorten hospital stay
• Improve efficiency, minimize confusion in large practices
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Points to remember:

• Starts in the preop visit – managing patient expectations

• Team sport – anesthesia, recovery room, nursing, PAs, etc.

• Many barriers to implementation
  • Multidisciplinary collaboration, belief that it works or team can do it, liability issues, “my way is best”, inability to delegate/let go
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Points to remember:

• One size does not fit all
• Exceptions will and must occur
• Doing it without increasing readmission rates or decreasing patient satisfaction
• High rates of adherence for majority of patients a great thing
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Do they work? What does the literature say?

• >1000 papers with PubMed term “fast track surgery”
• Majority in colorectal, cardiac (early extubation)
• Many randomized, control trials to demonstrate efficacy in other disciplines
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Do they work? What does the literature say?

Literature sparse for lung resection

- Many small series describing things that can work, but no Level I evidence
- Opportunities for further study
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Do they work? What does the literature say?

- Recent UK survey concluded that only about 1/3 of surgeons used principles of fast-track surgery for colon resection, despite strongest evidence for colorectal surgery.
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Mayo Clinic VATS / robotic lobectomy pathway

• By piece of equipment / intervention
• By postop day
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Chest tube management:
Lobectomy - single 28 Fr CT in place positioned posteriorly at the apex
Suction applied to it overnight, then typically off suction POD#1
Chest tubes are removed POD#1 if no evidence of air leak, ongoing bleeding, or chyle leakage
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Chest tube management:

- Typically tolerate drainage >250cc over a 24 hr period and still remove the chest tube early in the absence of diagnoses such as heart failure, cirrhosis, or other conditions predisposing to increased pleural drainage

- Air leaks usually the limiting factor for chest tube removal rather than fluid drainage

- Patients going beyond the mean 3 day hospital stay would be candidates for Heimlich valve application if a persistent air leak exists
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Epidural catheter: We do not use routine epidural catheters for MIS lobectomy

Pain Management: No epidural; PCA pump for intravenous narcotics and Ketorolac if no contraindications

Intercostal nerve blocks typically placed at the end of the procedure prior to closure

Local anesthetic applied at each port site prior to incision
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CXR: Immediately postop, then after chest tube removal prior to discharge. No routine daily CXRs.

Blood work: None routinely unless indicated for another purpose.

Arterial lines: In for surgery and evening of first night after surgery. Removed POD#1 if patient hemodynamically stable.
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Intravenous lines: Single line left in place under saline lock for access during hospital stay until discharge.

Diet: DAT as soon as patient awake and alert enough to eat.

Oxygen: As required to maintain O2 saturation >92%

Blood: No routine group and screen
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• DAY OF SURGERY:

Oxygen titration protocol, pulmonary hygiene protocol, Ancef 1 gram IV x1 dose after surgery, sequential compression devices, Ketorolac injections PRN, chest tube(s) to -20 cm H20 suction, arterial line, pulse oximeter, urine catheter, ECG monitor, heparin 5000U SQ BID, DAT if up in chair
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POD #1: Transfer to general floor care if criteria met, pulmonary hygiene protocol, oxygen titration protocol, pulmonary rehab consult, sequential compression devices (D/C SCDs if ambulating >6x daily), heparin 5000U SQ BID, advance to general diet as tolerated, cap IV when PO intake >500 mL, remove urine catheter if present, ambulate with assistance 4-6x/daily, chest tube removed (CXR) or put to water seal
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POD #2: Oxygen titration protocol, pulmonary hygiene protocol, pulmonary rehab as required, ambulate 6-8 times/day, general diet as tolerated, sequential compression devices (D/C SCDs if ambulating >6x daily), heparin 5000U SQ BID
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POD#3 Day of planned discharge, heparin 5000U SQ BID, appropriate chest tube management, PA/LAT CXR when chest tube discontinued, pain management for discharge discussed, finalize dismissal planning/follow-up arrangements, Patient Satisfaction survey
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Implementing a pathway & monitoring adherence

• “I’m sooo hungry” – institutional barriers, culture

• Measuring pathway metrics

• Iterative re-evaluation of outcomes
  • 100% adherence is not a realistic goal; but 0% adherence is an epic failure

• Share data with collaborating physicians, patients, nurses, OR team members, etc.
Questions & Discussion
Thank you!!