Laparoscopic Appendectomy: the best surgical approach for Appendicitis is

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Overview

- History and Prevalence
- Advantages of Laparoscopic (LA) over Open (OA) in
  - Nonperforated appendicitis
  - Complicated appendicitis
- Points of Controversy
- Utility in Surgical Training
- Conclusion
Appendectomy History

- First depicted by Da Vinci in 1492
- Term appendicitis coined by Fitz in 1886
- McBurney in 1894 described his RLQ muscle splitting incision
Appendectomy History

- First Laparoscopic appendectomy performed in 1980 by Kurt Semm, German Gynecologist
Why is the Debate Relevant?

- Most common intraabdominal infection requiring emergency surgery
- Lifetime risk is 6%
- In the US, 56,666 per month, 1,863 per day, 77 per hour, 1 per minute
Nonperforated Appendicitis

- Laparoscopic Appendectomy
  - Decreases risk of wound infection
  - Decreases time to return to normal activity
  - Quality of life and cosmesis improved postoperatively
Wound Infection

- Randomized controlled study
  - n = 583
  - Significantly fewer wound infections with incidence of 7% in OA vs 3% in LA¹

- Meta Analysis of Randomized Studies
  - n = 1962
  - Reduced wound infection rate when 17 trials were analyzed by 60% (p<0.001)²

Wound Infection

- Overall complication rate decreased with laparoscopic approach
  - Retrospective review of 43,757 patients undergoing appendectomy
  - Significant decrease in post op infectious complications from 11% to 8% with LA (p<0.0001)

Decreases Time to Return to Activity

- Time to return to work reduced from 16 to 10 days with LA¹
- Meta analysis of 17 randomized studies (1962 patients)
  - Faster return to full activities by 35% with the laparoscopic approach²

Quality of Life and Cosmesis Improved

- Assessment of quality of life in regards to physical functioning and general health were significantly improved in patients undergoing laparoscopic approach at 2 weeks

Quality of Life and Cosmesis is Improved

- Discharge to home in perforated and non perforated appendicitis is 14% higher in LA¹
- Retrospective review of 43,757
  - Higher percentage of patients with LA discharged to home²

Cosmesis and Quality of Life Improved

Operating Time

- OR time on average 17 minutes longer
- OR time consistently longer but does this make OA superior?
  - LA offers significant improvement in post op outcomes
  - Many of these studies completed in mid-late 1990s and proficiency at laparoscopy significantly improved
Complicated Appendicitis is

- Laparoscopic appendectomy
  - Decreases length of hospital stay
  - Decreases incidence of wound infection
Complicated Appendicitis is defined as operative findings of gangrenous or perforated appendix with or without abscess.
Length of hospital stay

- Length of hospital stay shorter
  - Retrospective review, n = 2,722
    - Patients over the age of 65 decrease in length of stay from 7 to 4.5 days with LA (p < 0.0001)
  - Additionally, 86% compared to 70% were able to discharge to home versus SNF

Length of hospital stay

Wound Infection

- Retrospective study
  - n = 299
  - Reduction in wound infections from 18 to 6%¹
- Retrospective study
  - n = 244
  - Reduction from 10% to 0% (p<0.001)²

Points of Controversy

- Intraabdominal abscess
- Costs
Intra abdominal Abscess
Intraabdominal Abscess

- Retrospective review of complicated appendicitis, n = 244
  - Incidence 5.7% in LA vs 4.3% in OA, not significantly different¹
- Meta-Analysis, n = 1962
  - Similar IAA rate with 95% CI²
- Retrospective study, n = 299
  - Incidence similar at 4.1% LA vs 4.9% OA³

Intraabdominal Abscess

- Higher incidence in studies with perforated appendix suggests that pathology of the appendix and not technique is the cause.
- Radiographic study used to determine presence of IAA influences outcome results.
Cost $$$

The good news is it's curable, the bad news is you can't afford it.
Cost $$$

- **Retrospective study**
  - LA $3,960 vs OA $4,120
  - Shorter OR time and LOS offset increased OR costs¹

- **Retrospective study of elderly patients**
  - Total costs equivalent b/w OA and LA
  - Additionally higher rate of LA patients discharged to home vs SNF²

Cost $$$

Decreased OR time
+ 
Increased comfort level
+ 
Improvement in equipment
= 
Decreased OR costs with LA
Surgical Training

- Health care institutions, industry, and patients increasing demand for laparoscopic surgery
- To effectively train the upcoming generation of general surgeons, laparoscopic skills are essential

"For goodness sake, Harry. All the child wants to do is take out your appendix."
Surgical Training

- LA a perfect teaching ground for residents
  - Teaches basic laparoscopic technique
  - Simple procedure
  - Fast learning curve

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Surgical Training

Surgical Training

- Study evaluated outcomes of residents performing LA and Laparoscopic R hemicolectomy
  - Skills for intaabdominal access for cannulation, port placement, bowel manipulation transferred from one procedure
  - Low complication rates and conversion to open in hemicolectomy cases

Conclusions

- Lower infection rate
- Faster return to work
- Improved quality of life and cosmesis
- Equal IAA rates
- Comparable costs
- Excellent tool for surgical resident training