Surgical Technique to Improve Recovery

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Surgical Technique & Periop Medicine to Improve Recovery

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Learning Objectives

• How surgeon & perioperative team can change to optimize outcomes:

  - MIS Surgery: laparoscopic, robotic, Ffascial closure
  - TAP blocks
  - Meds: antibiotics, VTE prophylaxis, stress-dose steroids
Minimally Invasive Surgery – is ERP needed?
ERP Less
• Pain
• Opioids
• Ileus
• LOS
• Costs

MIS Less
• Pain
• Opioids
• Ileus
• LOS
• Costs
Laparoscopy in Combination with Fast Track Multimodal Management is the Best Perioperative Strategy in Patients Undergoing Colonic Surgery

A Randomized Clinical Trial (LAFA-study)

- 9 centers across the Netherlands
- 427 patients randomized
- 4 arms
- Powered to detect $\Delta$1 day (400 patients)
Laparoscopy in Combination with Fast Track Multimodal Management is the Best Perioperative Strategy in Patients Undergoing Colonic Surgery

*A Randomized Clinical Trial (LAFA-study)*

<table>
<thead>
<tr>
<th>Type</th>
<th>LOS</th>
<th>Total LOS</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS / ERP:</td>
<td>5 (4-8)</td>
<td>5 (4-7)</td>
<td></td>
</tr>
<tr>
<td>MIS / Std:</td>
<td>6 (4-8.5)</td>
<td>6 (4.5-10)</td>
<td></td>
</tr>
<tr>
<td>Open / ERP:</td>
<td>6 (4.5-10)</td>
<td>7 (5-11)</td>
<td></td>
</tr>
<tr>
<td>Open / Std:</td>
<td>7 (6-10.5)</td>
<td>7 (6-13)</td>
<td></td>
</tr>
</tbody>
</table>

p<0.001  p<0.001
N = 150, 1/11/2012 – 8/11/2014
Single surgeon, non-emergency colorectal surgery

Definitions:
1. MIS = minimally-invasive surgery, incl. minimal access surgery (non-laparotomic)
2. Low intra-op fluids = median of 712 cc / hour  or 9 cc / kg / hour
3. Low intra-op narcotics = median of 78 mcg / hour or 1 mcg / kg / hour
4. DOS = day of surgery (PO intake > 200 cc before midnight, OOB documented prior to midnight)
Robotic Issues

• Position
  - Prolonged Trendelenburg, “Docked/Locked”
  - Increased peak airway pressures
  - Venous congestion

• More/larger ports/more $$$ relative to lap

• Steep learning curve ➔ prolonged exposure time
Robotic Pelvic Surgery

• Clear benefit for Prostatectomy, Gynecologic, poss/prob. Rectal surgery

• Shorter LOS, less EBL, fewer conversions to laparotomy
BIAS
• 458 studies (2253 authors)
• Cross-referenced w “open payments” database
• 52% of studies w. 1+ authors w. undeclared payments
• Undeclared payments ➔ “recommend” robotics
  OR 4.29, 95% C.I. 2.55 - 7.21
How to Close Fascia?

Dogma:
1 cm x 1 cm stitch bite / length
using #2 double looped PDS
Small bites versus large bites for closure of abdominal midline incisions (STITCH): a double-blind, multicentre, randomised controlled trial

- 560 patients randomized
- small bites (aponeurosis only) vs big bites
- 2-0 PDS vs. #1 double-looped PDS
- At 1 year 13 vs. 21% hernia rate (p = 0.02)
How to Close Ileostomy Wound?

Dogma:
Leave it open, pack it, close it, drain it
• 6 RCTs, 1102 patients
• Trial sequential analysis showed that the risk of type 1 error was minimal and meta-analysis was conclusive
• Purse-string lower infection, better QoL
• current available evidence is robust and conclusive results of the current study should be incorporated into clinical practice without a need for further trial data
Optimal TAP

- Timing: Preemptive vs. Convenience?
- Availability/Expertise/Equipment?
- Injectate?
56 RCTs
N = 3,428
Open/lap
C-section, TAH
CCY, appy,
Bariatric
Colorectal
Prostatectomy,
Kidney
Pediatric

Ma J
Anes
2017
**TAP Blocks—When?**

**Pre-incision vs. Post-incision**

RCT
N = 75, open TAH
Group I: pre-incision
Group II: post
Group III: sham
Decreased intra-op and post-op opioid use in pre-emptive group

Amr et al., *Anesth Ess.* 2011
1. Insert needle 0.5-1 cm into tissue plane

2. Use continuous fanning motion while withdrawing needle

3. Inject while slowly withdrawing needle
My Approach Open & Lap Cases

- 20 mL liposomal Bupivicaine
- 30 mL plain Bupivicaine – 0.25 or 0.5%
- 100 mL injectable saline

→ 150 mL total

- 80 mL (20 mL x4) TAP: lap > U/S ; start > end
- 70 mL for fascia and skin infiltration
Prolonged IV Antibiotics after Intra-abdominal Sepsis?

Dogma:
2 weeks (switch from IV to oral when patient tolerates PO) i.e. educated guess
518 patients with complicated intra-abd sepsis (IAS) randomized after source control
Max. 10 days vs. 4 ±1 day
Trial of Short-Course Antimicrobial Therapy for Intraabdominal Infection

Robert G. Sawyer, M.D., Jeffrey A. Claridge, M.D., Avery B. Nathens, M.D., Ori D. Rotstein, M.D., Therese M. Duane, M.D., Heather L. Evans, M.D., Charles H. Cook, M.D., Patrick J. O’Neill, M.D., Ph.D., John E. Mazuski, M.D., Ph.D., Reza Askari, M.D., Mark A. Wilson, M.D., Lena M. Napolitano, M.D., et al., for the STOP-IT Trial Investigators

Table 2. Primary and Major Secondary Outcomes.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control Group (N = 260)</th>
<th>Experimental Group (N = 257)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary outcome: surgical-site infection, recurrent intraabdominal infection, or death — no. (%)</td>
<td>58 (22.3)</td>
<td>56 (21.8)</td>
<td>0.92</td>
</tr>
<tr>
<td>Surgical-site infection</td>
<td>23 (8.8)</td>
<td>17 (6.6)</td>
<td>0.43</td>
</tr>
<tr>
<td>Recurrent intraabdominal infection</td>
<td>36 (13.8)</td>
<td>40 (15.6)</td>
<td>0.67</td>
</tr>
<tr>
<td>Death</td>
<td>2 (0.8)</td>
<td>3 (1.2)</td>
<td>0.99</td>
</tr>
<tr>
<td>Time to event — no. of days after index source-control procedure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis of surgical-site infection</td>
<td>15.1±0.6</td>
<td>8.8±0.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diagnosis of recurrent intraabdominal infection</td>
<td>15.1±0.5</td>
<td>10.8±0.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Death</td>
<td>19.0±1.0</td>
<td>18.5±0.5</td>
<td>0.66</td>
</tr>
</tbody>
</table>
VTE Chemoprophylaxis

Dogma:
Only while hospitalized
Double blind RCT abdominal or pelvic cancer
332 patients
enoxaparin till discharge vs. enoxaparin x28 days
VTE 12% vs. 4.8% p=0.02
Stress Dose Steroids?

Dogma:
Steroid dependent Patients
Benefit from Stress-dose Steroids
• 315 patients, mostly kidney transplant patients, Stress-dose vs. usual home dose

• 2 RCTs
  - no difference in hemodynamic profiles

• 7 Cohort studies
  - no patient developed unexplained hypotension or adrenal crisis
  - 1 patient in each cohort had steroids stopped 36 – 48 hours preop developed unexplained hypotension which responded to fluids & hydrocortisone (1970’s)
92 patients; Outcome: no postural hypotension POD#1
High-dose: 95%
Low-dose: 96%
Met criteria for non-inferiority p=0.007

Our Approach:
Dexamethasone 8 mg on induction
Summary

• Minimally-invasive surgery (MIS) dovetails with ERP
  - Potential/perceived detrimental effects outweighed by its benefits
  - STITCH trial fascial closure – an extension of MIS

• Preemptive blocks and infiltration optimal

• Prolonged ABX & stress-dose steroids not needed
• Prolonged VTE chemoprophylaxis needed
Question Dogma

• Enhanced Recovery principles of optimal perioperative care can be extended to surgical techniques and standards of care that are traditionally considered outside the purview of ERP

• Introspection ➔ Continuous Q.I. ➔ Optimization

• Best possible outcomes for our patients
Cleveland:
The Forrest City