TO STAPLE OR TO SEW

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Fast Track Surgery

- Multimodal Rehabilitation
- Accelerated recovery
- Accelerated rehabilitation
- Enhanced recovery
- Optimize perioperative care by reducing the expected stress response & known organ dysfunction associated with surgery
- Shortens recovery time
Fast Track Surgery

- Developed in 1997 by Dr. Henrik Kehlet
  Department of Surgical Gastroenterology, Hvidovre University Hospital
  Copenhagen, Denmark
Three Phases

- **Preop** = prehabilitation
  education and preparation for surgery

- **Intra-op**
  Newer anesthetic, analgesic, and surgical techniques to decrease surgical stress response

- **Post-op rehabilitation**
  Revision of traditional surgical practice
Pre-op (prehab)

- Optimization of Preexisting Organ Function
- Optimization of Nutritional Status
- Improvement of Physical Fitness
- Preoperative Fasting
  - a 2-hour fast for liquids and a 6-hour fast for solids
  - Exceptions: gastroparesis, GI obstruction, upper GI malignancy
- Preoperative Ingestion of Oral Carbohydrate Drink
  - drink containing 100 g of carbohydrate the evening before surgery and a second drink containing a 50 g 2 to 3 hours before induction of anesthesia
  - reduces insulin resistance, catabolic stress response, less muscle loss
Pre-op (prehab)

- **Patient education**
- **Premedication**
  - Benzodiazepines - anxiolytics
  - Fentanyl
  - Opioid-sparing: COX-2 inhibitors, Acetaminophen
  - Beta blockers and alpha 2 agonists
  - Antacids and H 2-receptor antagonists
  - anti-PONV medications: dexamethasone and odansetron
Intra-operative

- Attenuation of surgical stress response
  - local anasthesia
  - Regional Anesthesia - spinal, epidural, and peripheral nerve blocks
- normothermia
- fluid management
  - avoid hypovolemia and postoperative fluid overload
- MIS
Post-operative

• Pain management
  Opioid sparing NSAIDs
  Regional anesthesia

• Prevention of nausea and vomiting
  risk factors: female, nonsmoker, a history of PONV, opioid use
  Antiemetics: cholinergic (muscarinic), dopaminergic (D₂), histaminergic (H₁), or serotonergic (5-HT₃) receptors. Reduce risk of PONV 26% each
  Prophylaxis: moderate risk 2 antiemetics, high risk 3 antiemetics.
Post-operative

- **Ileus**
  - thoracic epidural
  - early feeding
  - Prokinetics—metoclopramide
  - reduce perioperative sodium
  - avoidance of fluid excess
  - IV infusion of lidocaine during surgery and the first 24 postoperative
Post-operative

• Feeding
• liquids on the night following the operation
• light solids POD 1
• normal diet POD 2
• Exceptions: upper GI anastomoses
Post-operative

- Drains and Catheters
  - studies do not support the routine use of drains & NG
  - Exception: esophagectomy
- D/C Foley 24 to 36 hours after surgery including epidural in place
Post-operative

• Mobilization
  “out-of-bed” day 0
Discharge

- oral intake is adequate
- pain is well controlled with oral analgesics
- voiding without difficulty
- passing flatus or stool
- ambulating independently or at baseline levels
- able to care for themselves at home
- Teaching is complete
Conventional Postoperative Care with the Usual Anticipated Problems

- Pain
- Stress response/organ dysfunction
- Nausea, vomiting, ileus
- Hypoxaemia, sleep disturbances
- Fatigue
- Immobilisation, semistarvation
- Drains/nasogastric tubes, restrictions

Surgery

Delayed recovery
Kehlet’s “Fast Track Surgery” Principles

- Staff training/reorganisation and procedure specific care plans
- Preoperative information and optimisation of organ function
- **Stress reduction**
  - Regional anaesthesia
  - Minimal invasive operations
  - Normothermia
  - Pharmacological modifiers
- Effective pain relief and prophylaxis for nausea and vomiting
- **Modification of perioperative care**
  - Early mobilisation
  - Minimal use of tubes, drains, and catheters
  - Oral nutrition

Fast track surgery

**Documentation**
- Morbidity
- Safety
- Cost
- Patient satisfaction

Previous systematic reviews comparing stapled and handsewn colorectal anastomosis that are available in the medical literature have not shown either technique to be superior. An update of this systematic review was performed to find out if there are any data that properly answer this question.
Selection criteria

- All randomised controlled trials (RCTs) comparing stapled and handsewn colorectal anastomosis

- Participants: adult patients with elective colorectal anastomosis surgery

- Interventions: endoluminal circular stapler and handsewn colorectal anastomosis surgery

- Outcomes: a) mortality; b) overall anastomotic dehiscence; c) clinical anastomotic dehiscence; d) radiological anastomotic dehiscence; e) stricture; f) anastomotic haemorrhage; g) reoperation; h) wound infection; i) anastomosis duration; and j) hospital stay.
Data analysis

- Independently analysed by the two review authors & cross-checked.
- Details of randomizations, blinding, whether an intention-to-treat analysis was done or not, and the number of patients lost to follow-up recorded.
- The analysis of the risk of bias was updated according to the software ReviewManager 5.1.
- The results of each RCT were summarized on an intention-to-treat basis in 2 x 2 tables.
- External validity was defined by the characteristics of the participants, interventions and the outcomes.
- The RCTs were stratified according to the level of colorectal anastomosis.
- The risk difference (RD) method (random-effects model) and number needed to treat (NNT) for dichotomous outcome measures and weighted mean differences (WMD) for continuous outcomes measures, with the corresponding 95% confidence intervals (CI), were presented.
- Statistical heterogeneity was evaluated using a funnel plot and the Chi2 test.
**Main results**

Nine 9 trials and 1,233 patients: 62 staples vs 611 manual suture.

a) Mortality, result based on 901 patients: RD -0.6%

b) Overall dehiscence (1,233) RD 0.2%

c) Clinical anastomotic dehiscence (1,233) RD -1.4%

d) Radiological anastomotic dehiscence (825) RD 1.2%

e) Stricture (1,042) RD 4.6%,

f) Anastomotic haemorrhage (662) RD 2.7%,

g) Reoperation (544) RD 3.9%,

h) Wound infection (567) RD 1.0%

i) Anastomosis duration (159): WMD -7.6 minutes

j) Hospital stay (159): WMD 2.0 days
Conclusions

■ The evidence found was insufficient to demonstrate any superiority of stapled over handsewn techniques in colorectal anastomosis, regardless of the level of anastomosis.

■ No randomised clinical trials comparing these two types of anastomosis in elective conditions in the last decade. The relevance of this research question has possibly lost its strength where elective surgery is concerned.

■ New clinical trials are needed in risk situations- emergency surgery, trauma and IBD
THANKS !
Definitions

Risk Difference The risk difference describes the absolute change in risk that is attributable to the experimental intervention. If an experimental intervention has an identical effect to the control, the risk difference will be 0. If it reduces risk, the risk difference will be less than 0; if it increases risk, the risk difference will be bigger than 0. The risk difference cannot be above 1 or below -1. Switching between good and bad outcomes for the risk difference causes a change of sign, from + to - or - to +.

The weighted mean is similar to an arithmetic mean (the most common type of average), where instead of each of the data points contributing equally to the final average, some data points contribute more than others. The notion of weighted mean plays a role in descriptive statistics and also occurs in a more general form in several other areas of mathematics. If all the weights are equal, then the weighted mean is the same as the arithmetic mean. While weighted means generally behave in a similar fashion to arithmetic means, they do have a few counterintuitive properties, as captured for instance in Simpson's paradox.
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Sew or staple

- Best done by hand choledochojejunostomy, not strangulate a wide range of tissue thickness. Ibd to thick to staple, no stapler room
- Staple in accessible location LAR speed poor risk patient, staples are not safer than sutres – peritonitis poor tissue perfution, damage control