The impact of laparoscopy on incisional hernia rates
- an analysis of 1057 colorectal cancer resections

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Introduction

• Incisional hernia affects 2-20% of abdominal surgery cases
  – Reduction of quality of life
  – Costs – repair / recurrence

• Expected to be less in laparoscopic era
  – Port site / extraction site

• Parastomal hernias
  – Closure of stoma site
Aim

• To determine frequency of incisional hernia formation after laparoscopic and open colorectal cancer surgery
Method

• Retrospective analysis
• Colorectal cancers - Jan 06 – Dec 11
  – Curative
  – Primary adenoca
  – Without abdominal wall reconstruction
  – 5 year annual follow up
  – CT surveillance scans at 1, 2/3, 5 years
  – Open v laparoscopic by intent
Method (cont’d)

• Open – midline, closed continuous en masse

• Laparoscopic
  – 3 x 12mm lateral ports, 1 x 5mm contralateral port
  – 5mm -> extraction site (muscle cutting)
  – Full thickness closure
Method (cont’d)

• Hernias at
  – extraction site / port site / parastomal / closure of stoma site
• Hernia defect sizes measured:
  – Maximal lateral and vertical dimensions
• Reliability of measurements
  – 2nd assessor – 20 cases
• Parastomal hernia – any breach of sac through abdominal wall
• Hernia repairs
Results

1310 cases

253 excluded

1057 cases included

LAPAROSCOPIC 289 cases

OPEN 768 cases

LAP w STOMA 37 cases

LAP wo STOMA 252 cases

OP w STOMA 282 cases

OP wo STOMA 486 cases

LAP w STOMA REVERSED 12 cases

OPEN w STOMA REVERSED 68 cases
Results

• Median follow up: 44 months
• Overall: 14.8% (157/1057) developed hernia
Overall

Incisional hernia rate %

<table>
<thead>
<tr>
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<th>Open (n=768)</th>
<th>Laparoscopic (n=289)</th>
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<tbody>
<tr>
<td>Incisional hernia rate %</td>
<td>14.4</td>
<td>15.9</td>
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p = 0.561
Overall

Incisional hernia rate (%)

- Open (n=768): 14.4%
- Laparoscopic (n=267): 14.2%
- Laparoscopic conv to open (n=22): 36.6%

p = 0.039
Non stoma cases

![Bar chart showing incisional hernia rates](chart.png)

- Open (n=486): 10.7%
- Laparoscopic (n=252): 11%

P = 0.956
Non stoma cases

Incisional hernia rate (%)

Open (n=486)  Laparoscopic (n=252)

- Open:
  - Port: 0%
  - Midline: 10.7%
- Laparoscopic:
  - Port: 4%
  - Extraction: 6.3%
  - Midline: 0.7%
Hernia defect size

P = 0.025, Cronbach’s alpha = 0.95
Stoma cases

Parastomal hernia incidence (%)

- Open (n=282): 12.7
- Laparoscopic (n=37): 40

P < 0.001
Stoma closures

- Open (n=68): 4.41%
- Laparoscopic (n=12): 8.33%
Hernia repairs

Emergency repair during initial admission

Repair within 1st year

Repair after 1st year

After OPEN surgery n = 19

n= 1
Midline (open repair)  n =1

n= 3
Midline  n =2
(rec = 2)
Early closure of ileostomy n =1

n= 15
Midline  n = 13 (rec = 1)
Stoma closure site (lap repair) n = 1
Midline and stoma closure site n = 1

After LAPAROSCOPIC surgery n=16

n= 3
Port site (open)  n =2
Midline (open)  n = 1 (rec = 1)

n= 6
Port site (open)  n =3
Extraction site (lap) n = 1
Extraction site (open) n =1 (rec = 1)
Early closure of ileostomy n = 1

n= 7
Extraction site (open)  n =2
Extraction site (lap) n = 3 (rec = 1)
Stoma closure (lap) n =1
Midline (open) n = 1
Conclusions

• Incisional hernia frequent in laparoscopic surgery as in open
  – Conversion to open increases risk
• Parastomal hernia more frequent in laparoscopic surgery
  – Role of extraction site
  – Absence of other distracting aperture?
  – Implication for Single Incision surgery
• Incisional hernia after lap surgery more likely to require repair and sooner
• Hernia defects smaller after laparoscopic approach
Discussion

• Port site hernia:
  – fascia closure device
  – 5mm camera

• Extraction site hernia:
  – Pfannenstiel extraction v lateral transverse extraction
  – Muscle splitting v muscle cutting

• Parastomal:
  – Use of mesh in end stoma