Postoperative Ileus and Incisional Hernia: Midline vs. Pfannenstiel Extraction Site for Laparoscopic Right Hemicolectomy with Intracorporeal Anastomosis

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Background

- Laparoscopic right hemicolectomy is the gold standard for right-sided colon cancer and endoscopically unresectable polyps
- Intracorporeal anastomosis (ICA) can improve postoperative recovery compared to extracorporeal anastomosis (ECA)
- No consensus on the ideal extraction site for laparoscopic right hemicolectomy with ICA

Aim

Compare midline vs. Pfannenstiel extraction site outcomes after elective laparoscopic right hemicolectomy with ICA

Methodology

- Retrospective chart review of patients who underwent elective laparoscopic right hemicolectomy with ICA using midline or Pfannenstiel extraction site at a Canadian centre Jan 2016 - Dec 2023
- Excluded: Inflammatory or infectious etiologies, concomitant secondary surgeries, cirrhotic liver disease
- Ethics obtained from institutional research ethics board
- Descriptive statistics performed using SPSS 29.0.2.0 and multivariable logistical regression conducted using logistf package in R 2024.09.0+375

Table 1: Demographics of ICA Pfannenstiel vs. midline extraction

Variable	Pfannenstiel n=150 (72.7%)	Midline n=55 (27.3%)	p-value
Female Sex	27 (48.2%)	74 (49.7%)	0.787
Mean Age (SD)	70.4 (12.9)	73.2 (11.1)	0.158
Immunosuppression	4 (2.7%)	0 (0%)	0.576
History of Incisional or Ventral Hernia	14 (9.3%)	6 (10.9%)	0.736
Smoking History	32 (21.3%)	17 (30.9%)	0.154
Obese (BMI≥35)	5 (4.1%)	8 (16.3%)	0.006
Diabetes	29 (19.3%)	19 (34.5%)	0.027

Table 2: ICA Pfannenstiel vs. midline extraction postoperative data

Variable	Pfannenstiel	Midline	p-value
First Flatus (SD)	2.0 (1.0)	2.7 (1.1)	<0.001
First Bowel Movement (SD)	2.0 (0.8)	3.0 (1.3)	0.020
Ileus	8 (5.3%)	9 (16.4%)	0.011
Surgical Site Infection	0 (0.0%)	3 (5.5%)	0.019
Incisional Hernia	0 (0.0%)	6 (10.9%)	0.006
Mean Hospital Stay (SD)	2.8 (1.8)	3.7 (3.1)	0.013

Results

- **Pfannenstiel** extraction site resulted in **earlier flatus** (2.0(1.0) vs. 2.7(1.1) days, p<0.001), **earlier bowel movement** (2.0(0.8) vs. 3.0(1.3) days, p=0.020), **fewer ileus** (8(5.3%) vs. 9(16.4%), p=0.011), and **shorter hospital stay** (2.8(1.8) vs. 3.7(3.1)) days (p=0.013) versus midline extraction
- **Midline** extraction resulted in **more surgical site infections** (5.5% vs. 0%, p=0.019) and **more incisional hernias** (10.9% vs. 0%, p=0.006) than Pfannenstiel
- **Midline extraction** was associated with **over 40-fold increased odds of developing incisional hernia** compared to Pfannenstiel after adjusting for confounders (p=0.005)

Table 3: Multivariable Firth's logistic regression of risk factors for postoperative incisional hernia

Variable	OR	95% CI	p-value
Midline Extraction Site	40.5	2.6 – 11,443.9	0.005
Obese (BMI≥35)	18.9	1.5 – 2,230.8	0.023
History of Incisional or Ventral Hernia	53.8	4.6 - 657.1	0.001
Surgical Site Infection	76.7	3.8 – 1,096.9	0.004

References

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Conclusion

- **Pfannenstiel extraction sites** are associated with **shorter hospital stay**, **earlier return of bowel function**, **fewer ileus**, **fewer surgical site infections**, and **fewer postoperative incisional hernias** than midline. Pfannenstiel extraction site is preferred over midline extraction for laparoscopic right hemicolectomy with ICA.