Transversus abdominis plane (TAP) block improves gastrointestinal recovery after laparoscopic colectomy

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McGill GENERAL SURGERY

OBJECTIVE

- To investigate effects of surgeon-administered transversus abdominus plane (TAP) block on postoperative opioid requirements, return of gastrointestinal (GI) function and length of stay (LOS) after laparoscopic colectomy

BACKGROUND

- The optimal postoperative analgesia regimen for colorectal surgery has yet to be defined, despite well-established recovery pathways aiming to reduce GI complications[1]
- Opioid analgesia is among the commonly used therapies in the post-operative period and is a major risk factor for ileus, leading to a higher incidence of delayed GI recovery, complications, longer LOS, and higher costs[2-4]
- Colorectal surgery patients are among the most likely (10%) to have persistent opioid use up to three months after surgery, exacerbating the current opioid crisis[5]
- Other non-opioid analgesia modalities such as epidural or patient-controlled analgesia are not clearly effective[6,7]
- Little data exists surrounding appropriate non-opioid post-colectomy analgesia and efficacy of surgeon-administered TAP block on post-op opioid use, GI function, and LOS[8]

METHODS

- **Retrospective chart review**

Participant inclusion criteria

- Patients who underwent elective laparoscopic colectomy (without stoma) and Pfannensteil extraction
- From single colorectal referral centre
- All managed with enhanced recovery after surgery pathway with 3-day target LOS
- Operation dates: January 2017- December 2019
- Grouped by TAP received (TAP +) versus standard analgesia (TAP -)

Exclusion criteria

- Conversion to open, stoma creation, closure of stoma, emergency surgery, pelvic surgery or recurrent malignancy

TAP Block

- Preparation of 40 mL of 0.25% bupivacaine with 10 mg dexamethasone
- Administration of 3 x 7 mL lateral to the rectus sheath, bilaterally
- Surgeon-delivered under laparoscopic guidance

Measures

- Opioid consumption in the post-anaesthesia care unit (PACU) and on each post-operative day in morphine milligram equivalents (MME)
- Time time to GI-3 (time to toleration of solid diet and passage of flatus or bowel movement)
- LOS
- In-hospital complications

RESULTS

- Total participants: n = 149 [TAP+, n= 74] [TAP–, n=75]
- Matched for age, gender, comorbid status, indication for surgery (*Table 1*)
  - Subgroup analysis included left versus right hemicolectomy patients

MME: No statistically significant difference found among MME between TAP+ and TAP- groups from PACU to POD 2 *(Graph 1)*

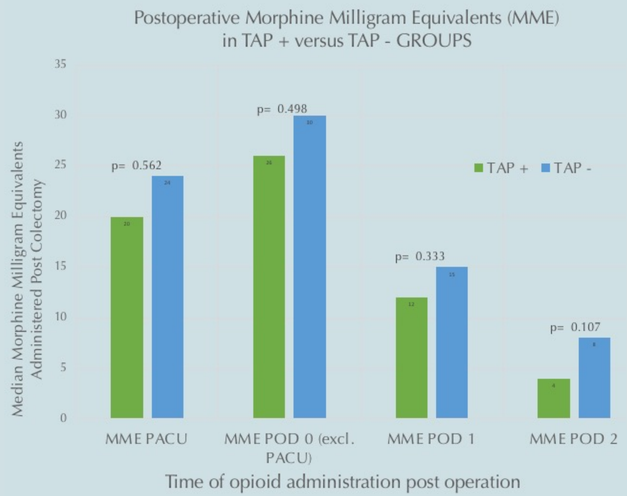
- No difference in MME use in subgroup analysis
- 48% of patients in both groups did not require opioids on POD 0

GI-3: Reduced to 2 days in left hemicolectomy patients (*Graph 2,* p=0.024)

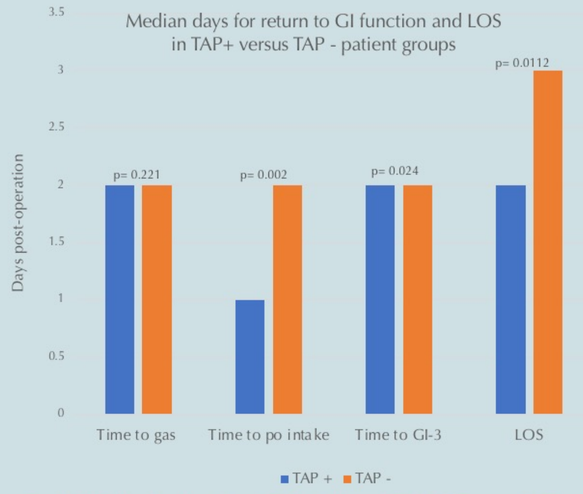
LOS: Reduced to 2 days in left hemicolectomy patients (*Graph 2,* p=0.011)

	TAP + (n=74)	TAP - (n=75)	p-value
Mean age, years (SD)	64.9 (13.6)	64.5 (14.0)	0.839
Male gender	42 (57%)	36 (48%)	0.285
Mean body mass index, kg/m² (SD)	27.2 (6.0)	27.2 (5.1)	0.974
ASA physical status			0.194
1	1 (1%)	5 (7%)	
2	40 (54%)	34 (45%)	
3	33 (45%)	36 (48%)	
Mean Charlson comorbidity index	2.3 (1.7)	2.3 (1.7)	0.975
Indication for surgery			0.986
Neoplastic	54 (73%)	55 (73%)	
Inflammatory bowel disease	5 (7%)	3 (5%)	
Diverticular disease	14 (19%)	15 (20%)	
Other	1 (1%)	1 (1%)	
Procedure			0.384
Right colectomy	27 (36%)	35 (47%)	
Left/sigmoid colectomy	31 (42%)	24 (32%)	
Anterior resection	16 (22%)	16 (21%	
Mean operative time, min (SD)	181 (72)	188 (67)	0.467
Median stay in PACU, min [IQR]	208 [150-305]	170 [130-212]	0.007

Table 1. Patient and operative demographics



Graph 1. Postoperative morphine milligram equivalents in TAP+ versus TAP -



Graph 2. Median days for return to GI function and LOS in TAP+ versus TAP -

DISCUSSION and CONCLUSION

- TAP blocks were not associated with a difference in opioid consumption after laparoscopic colectomy in PACU, nor on POD 0-3
- TAP blocks were associated with faster return of GI function and shorter LOS in laparoscopic left hemicolectomies. More data is needed regarding the exact mechanism by which TAP blocks impact patients with left hemicolectomy more significantly than right hemicolectomy
- These data suggest that administration of intraoperative surgeon-administered TAP blocks may improve GI recovery

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