Canadian Attitudes Toward Use of Primary Repair in Management of Colon Trauma

A Survey of 317 Members of the Canadian Association of General Surgeons

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PURPOSE: The majority of recent American articles on management of colon trauma promote liberal use of primary repair. The extent to which Canadian surgeons have embraced such recommendations is unknown. METHOD: To determine the current attitude of Canadian surgeons toward the use of primary repair, we surveyed the members of The Canadian Association of General Surgeons regarding their management of three fictitious cases of penetrating and blunt colon trauma. RESULTS: Three hundred seventeen members of The Canadian Association of General Surgeons responded. Ninety-two percent managed a fictitious case of early, uncontaminated stab wounds by primary repair. Delay in treatment or fecal contamination was associated with a significantly reduced number of respondents choosing primary repair (P < 0.001). Surgeons were less likely to choose primary repair for management of a case of blunt colon injury (35 percent; P < 0.001), and only 25 percent considered primary repair an option for a case of low velocity bullet wounds; 2 percent chose it for high velocity bullet wounds. Overall, the most common response to colon trauma scenarios was colostomy. However, 96 percent of respondents selected primary repair as the treatment of choice for at least one clinical situation depicted in the questionnaire. The likelihood of choosing primary repair was independent of surgeons' experiences or the level of the surgeons' trauma center. CONCLUSIONS: Although there are still settings in which many Canadian surgeons consider colostomy the appropriate treatment for colon injuries, primary repair has definitely established a foothold in all levels of Canadian general surgery practice. [Key words: Trauma; Colon; Primary repair; Colostomy]

METHODS

A questionnaire (Figs. 1–4) depicting three fictitious cases of colon injury was developed; each case presented a different management dilemma. Stab wound, blunt, and gunshot injury mechanisms were assessed.
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1. NAME ________________________________

2. INSTITUTION __________________________

3. Trauma Centre Designation (Trauma level)
   A. Level 1
   B. Level 2
   C. Level 3
   D. Other / N/A

4. Number of trauma laparotomies you perform per YEAR.
   A. 6 or less
   B. 7-12
   C. 13-24
   D. > 24

5. Number of colon injuries you treat per YEAR
   A. 6 or less
   B. 7-12
   C. 13-24
   D. > 24

Figure 1. The Questionnaire (Part I). N/A = not applicable.

CLINICAL SCENARIOS
For the following cases, please insert your preferred surgical option.

SURGICAL OPTIONS:
1. Primary repair of colon injury.
2. Divided colostomy at injury site.
3. Repair and exteriorization.
4. Resection and primary anastomosis.
5. As in No. 4 with addition of proximal defunctioning stoma.

CASE NO. 1: 35 year old male. Stab wound. Normotensive and stable throughout. Only injury is 2cm laceration anterior sigmoid colon.

What is your clinical response given the following associated conditions? (Please answer all six).

Less than six hours since injury:
- No soiling
- Local soiling
- Diffuse soiling

Greater than six hours since injury:
- No soiling
- Local soiling
- Diffuse soiling

Figure 2. The Questionnaire (Part II).

CASE NO. 2: 35 year old male. MVA blunt abdominal trauma. Blood pressure 90 at scene. Normotensive at Emergency twenty minutes later. Two units of blood in Emergency. Blood pressure drifting down as transferred to operating room forty minutes after arrival.

Findings: 1500 ml blood in peritoneal cavity
- 2cm small bowel laceration, repaired easily.
- 3cm liver laceration - not bleeding.
- 2 cm laceration sigmoid colon - adjacent colon appears normal. Minimal contamination.

Clinical Response: __________________________

Figure 3. The Questionnaire (Part III). MVA = motor vehicle accident.

Permission to distribute the questionnaire to the members of the Canadian Association of General Surgeons (CAGS) was received from the CAGS executive and a total of 1,098 questionnaires were distributed.

An attempt was made to identify the experience of respondents by assessment of trauma center level, number of trauma laparotomies per year, and number of colon injuries managed per year. An assessment was made to determine whether the respondents' levels of experience related to treatment choice.

A respondent's treatment choices were "tracked" throughout the questionnaire to determine whether a choice of primary repair in a stab wound was likely to be associated with similar choices elsewhere. The confounding effects of increased soilage, delayed treatment, and penetrating vs. blunt and low vs. high velocity bullet wounds on treatment choice were also assessed. Results were analyzed by chi-squared, Wilcoxon's matched-pair signed-rank test, and Friedman's two-way analysis of variance methods.

RESULTS
Questionnaires were sent to the 1,098 members of CAGS. There were 317 (29 percent) valid returns.

Trauma Experience
One-third of respondents worked in level I trauma centers. Sixty-two percent of surgeons did 6 or fewer trauma laparotomies per year, 23 percent performed 7 to 12 per year, and only 9 percent performed more than 12 trauma laparotomies per year. Ninety-two percent of respondents managed six or fewer colon injuries per year.

Stab Wound Management
In the case of minimal delay and no soiling, 92 percent of respondents chose primary repair (Table 1). The effect of delay and/or soilage was associated with a statistically significant reduction in the choice of primary repair (Tables 2 and 3). Only 67 percent chose primary repair at more than six hours, even when there was no soilage. Similarly, the effect of any degree of soilage had a sharp effect on the surgeons' proclivity toward primary repair.

Blunt Injury Management
The most common response for managing blunt colon injury was colostomy, which was chosen in 45 percent of cases. Pi-