Cost-effectiveness of surgical technique for the management of appendicitis.

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Introduction

Presently, there is equipoise regarding the surgical technique used to manage the appendiceal stump during laparoscopic appendectomies. The two dominant approaches involve use of either the laparoscopic stapler or endoloops. Healthcare resources are limited and the demands on these items are ever increasing.

Objective

The purpose of this project is to determine whether the routine use of endoloops, compared to laparoscopic staplers, is cost effective from a hospital payer perspective. The total costs borne by the hospital were compared for routine stapler and endoloop users. Secondary outcomes included operating room time, length of stay, and complication rate among cases performed via either technique.

Methods

A retrospective cohort design was used, and patients from 2 major academic centres were assigned to a group based on the technique routinely used by their surgeon. A total of 1078 electronic charts were reviewed among patients diagnosed with acute appendicitis to determine length of stay, length of operating time, surgical technique employed, post-operative complications and overall patient outcomes. Non-operative patients, those who underwent open appendectomies, pediatric patients and patients admitted for a diagnosis other than appendicitis were excluded. The final analysis consisted of data from 567 patients. Costs were determined using a previously published model derived from publically available data from the Ontario Case Costing Initiative, in conjunction with local cost data for disposable procurement.[1]

Results

Of the 1078 charts reviewed, 567 adult patients had a laparoscopic appendectomy during their index admission for acute appendicitis, and were included in the analysis. The mean total hospital cost accrued by routine endoloop users was significantly less than surgeons who used staplers ($2002 vs. $2201, p=0.032). In addition, the mean cost of disposables was increased for stapler users (p<0.001). There was no difference in the length of hospital stay (p=0.321) or operating time between the two groups (p=0.082). On average, the use of staplers saved less than 5 minutes per case

Conclusions and Discussion

Overall, the findings of this project suggest that surgeons who routinely use endoloops are superior to stapler users from a hospital payer perspective. Furthermore, a cost-savings model can be derived from this data to predict the amount of funds recovered by hospitals that convert high stapler users to endoloop users. This information may aid individual clinicians in making financially efficient decisions at their respective institutions.

	Non-Stapler Surgeons	Stapler Surgeons	p value
N	173.0	395	
Mean OR Time (mins)	72.6	68.0	P=0.082
Disposable Cost ($CAD)	308.0	607.9	P<0.001
Length of Stay (days)	1.5	1.4	P=0.32
Stapler Use (% of cases)	26%	79%	P<0.001
Complications	9%	10%	P=0.64

1. Murphy PB, Paskar D, Hilsden R, Koichopolos J, Mele TS. Acute care surgery: a means for providing cost-effective, quality care for gallstone pancreatitis. World J Emerg Surg. 2017;12:20.