Evaluation of Laparoscopic Versus Open Appendectomy: A Hospital Based Study

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ABSTRACT
Both open and laparoscopic appendectomies are commonly performed procedures. The aim of this study was to investigate the difference in the benefits of laparoscopic appendectomy over open appendectomy. The subjects were then randomised into the open appendicectomy and laparoscopic appendicectomy groups, comprising of 30 patients each. This present study suggest that the laparoscopic appendectomy is a safe and effective approach for perforated appendicitis.

KEYWORDS: Acute appendicitis, Laparoscopic appendectomy and Open appendectomy

Introduction:
Acute appendicitis is a common surgical emergency requiring rapid intervention, with a lifetime risk of 6-7%. Open appendicectomy (OA), first described in 1894 by McBurney, performed through the right lower quadrant muscle splitting incision has for long been applied as the Gold standard procedure. This procedure has mainly remained unchanged for about 100 years due to its favorable efficacy and safety.

In 1983, Kurt Semm, a German gynaecologist, introduced the used laparoscopy to remove the appendix, the debate over laparoscopic appendicectomy (LA) versus open appendicectomy (OA) has remained active. LA has gradually gained widespread use for the treatment of acute appendicitis because meta-analyses of prospective randomized trials have concluded that LA is better than OA as OA in terms of postoperative wound infections, analgesia requirement, hospital stay, return to work intervals, and overall recovery. The main aim of the study was to investigate the difference in the benefits of laparoscopic appendicectomy over open appendicectomy.

Material and Methods:
This study was conducted in the Department of Surgery, Pacific Institute of Medical Sciences, Udaipur, India during the period from August 2015 to March 2016. Ethical clearance was obtained by the Ethics Committee of the institute before commencement of the study. Of these surgeries, 30 were performed laparoscopically and 30 by open surgery based on the operating surgeon's preference. The results and student t-test were used for statistical analysis.

Results and Discussion:
A total of 60 patients underwent appendectomy during the study period. Of these surgeries, 30 were performed laparoscopically and 30 by open surgery based on the operating surgeon's preference. The number of males was 63.33% in the laparoscopic group and 36.6% in the open group. Average age and male:female ratios were similar in both groups table-1. The average body mass index was higher in the laparoscopic group (LA 25.6kg/m2; OA 23.2kg/m2) the duration of surgery was 72 minute in the laparoscopic group and 58 minute in the OA.

Among 60 laparoscopic patients 14 had complicated appendicitis, 4 of them were abscesses, 10 were gangrenous and 01 were perforated. 12 were complicated appendicitis in the open group, and of them 2 were abscesses, 8 were gangrenous and 2 were perforated.

Table-1: Demographic details:

<table>
<thead>
<tr>
<th>variables</th>
<th>Laparoscopic Group</th>
<th>Open Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Yrs)</td>
<td>30.5±4.02</td>
<td>26.01±4.21</td>
</tr>
<tr>
<td>Male</td>
<td>19 (63.33%)</td>
<td>19 (63.33%)</td>
</tr>
<tr>
<td>Female</td>
<td>11 (36.6%)</td>
<td>11 (36.6%)</td>
</tr>
<tr>
<td>BMI</td>
<td>25.6 ± 2.01</td>
<td>23.2 ± 2.03</td>
</tr>
<tr>
<td>WBC</td>
<td>12.5 ± 6.04</td>
<td>12.3 ± 2.01</td>
</tr>
</tbody>
</table>

Table-2: Comparison of variables between the two groups:

<table>
<thead>
<tr>
<th>variables</th>
<th>Laparoscopic Group</th>
<th>Open Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean operative time (Minute)</td>
<td>72±4.31</td>
<td>58±7.01</td>
</tr>
<tr>
<td>Hospitalization (days)</td>
<td>1.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Time to oral intake (hrs)</td>
<td>41</td>
<td>67</td>
</tr>
<tr>
<td>No of analgesic doses</td>
<td>2.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Duration of post-op ileus (days)</td>
<td>1.5</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Excellent results following laparoscopic appendectomy and easier availability of instruments for laparoscopic surgery in recent years has made laparoscopic appendicectomy a popular choice of surgery.
amongst many patients for both simple and complicated cases of acute appendicitis. The rate of LA between 1998 and 2008 increased from 20.6% to 70.8%, becoming the prevalent approach to treat acute appendicitis since 2005. It is generally believed that minimally invasive surgeries result in less postoperative pain, fewer complications and shorter recovery periods in comparison to open surgeries. This was supported by Nowzaradan et al and in meta-analysis by Garbutt et al and Sauerland et al, who have all shown that there is less post-operative pain, lesser complications and faster return to normal activities with laparoscopic appendectomy.11,12,13

In present study, the number of wound infections were considerably more in open appendectomy as compared to the laparoscopic surgery. The rate of intraoperative bleeding and prolonged ileus was seen only among the open group and there were no cases among the laparoscopic group. Most studies have reported no significant differences in the occurrence of wound infections between laparoscopic and open appendectomies.14,15 Very few studies have corroborated our findings where wound infections among the open surgeries were higher than the laparoscopic surgeries.16,17,18 In yet another meta-analysis, Golub et al found a wound infection rate for laparoscopic group was less than half the rate in patients undergoing open appendicectomy.22 The chance of wound infection is greater in open appendectomy party because the inflamed appendix is removed from the abdominal cavity directly through the wound, whereas in laparoscopic appendectomy it is extracted via a bag or trocar. In addition, the port-site wounds in LA are smaller compared to the longer wounds of OA, especially in obese patients.23 The number of doses for pain medication was higher among those undergoing open appendicectomy. This was in accordance to a similar study by Xiaohang Li et al.19 Intra-arterial bleeding was more in the open surgery category while the urinary tract infection and intraabdominal abscess was same in both the cases. This was in contrast to a study by Xiaohang Li et al who found all these complications to be more among the people who underwent laparoscopic surgery rather than the open one.23

Regarding the time of operation, it was longer in the laparoscopic group than in the open group. This was observed in several other studies and has been attributes to the inexperience of the surgeons, as this is still a new technique.24,25 There was an earlier return to normal activity in the patients who underwent laparoscopic appendectomy compared to those who went through open appendectomy. This was supported by a large scale meta-analysis conducted by the Cochrane colorectal cancer group.26 This was because the incision were of minimal trauma and less pain.27 Thereby the recovery was faster. The reason also could be because the return to oral feeds is faster in this group.

Conclusion:
These findings suggest that the laparoscopic appendectomy is a safe and effective approach for perforated appendicitis. Despite a prolonged operative time, LA was found to be superior to OA with respect to the postoperative pain, hospital stay, early recovery, wound infection and cosmesis. The added advantage of laparoscopic appendectomy is its improved diagnostic ability.

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Reference: