Original Research Article

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Comparative study of laproscopic versus open appendicectomy

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ABSTRACT

Background: Open appendicectomy (OA) has been the treatment of choice for acute appendicitis since its introduction in 1884. Since its initial description in 1983, laproscopic appendicectomy (LA) has struggled to prove its superiority over the open technique. This is in contrast to laproscopic cholecystectomy over open cholecystectomy. Some early studies showed equivocal results about benefits of LA. Recent studies showed overall benefits in favour of LA. So we have done comparative study with the aim to compare the safety and benefits of LA over OA.

Methods: We have studied data of 753 appendicectomies done in Dr. D.Y. Patil Medical College Kolhapur from July 2011 to June 2016 for a period of 5 years.

Results: We found mean operation time 32±5.7 minute and 36±7.4 minute in LA and OA. Duration of postoperative stay was 1.2 days shorter in LA group. LA required 1.1 less shots of analgesics. Oral feeding was resumed 21 hours earlier in LA as compared to OA.

Conclusions: Our study found that LA is effective and safe procedure irrespective of age, sex and BMI of the patient. It requires less operative time, has minimal complications, less hospital stay, less narcotic analgesics requirements, early return of bowel movement and the advantage of diagnosing the concomitant pathologies.

Keywords: Appendicitis, Laproscopic appendicectomy, Open appendicectomy

INTRODUCTION

Open appendicectomy has been a treatment of choice since its introduction by Mc-Burney in 1884. In 1981, Semm a German gynecologist performed the first laproscopic appendicectomy.² Recently several authors proposed that the new technique of laproscopic appendicectomy should be the preferred treatment of appendicitis. However unlike laproscopic cholecystectomy LA has not yet gained popularity.³ Acute appendicitis is the most common cause of acute abdominal pain.4 It has been a safe and effective procedure for acute appendicitis for more than a century. According to literature, approximately 7% of the population develop appendicitis in their lifetime with common incidence between 10 - 30 years of age group thus making appendicectomy the most frequently

performed abdominal operation.⁵ LA has advantage of shorter hospital stay, early return of bowel function, early mobilization, less analgesics requirement postoperatively. The aim of this study was to compare the effectiveness and safety of LA and to evaluate the parameters like operative time, number of analgesics required, resumption of oral food, hospital stay etc.

METHODS

Conducted study of consecutive patients with 753 appendicectomies in Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra, India since July 2011 to June 2016. Preoperative diagnosis was made using history, clinical examination and imaging studies. In OA group only appendix removed via McBurney's incision was included. Patients with following conditions like liver

cirrhosis, coagulation disorders, generalized peritonitis, and shock at time of admission, ascites, severe cardiopulmonary diseases, pregnant patients were excluded from study. Also in whom laproscopy appendicectomy procedure combined with another procedure like tube ligation, ovarian cyst, and ectopic pregnancy was excluded from study. Operating time in minutes was calculated from time of first incision up to placement of last stich on closing wound. Postop hospital stay in days was defined as the time patient left operation theatre up to the time of discharge from hospital. Numbers of shots of narcotic analgesics given to patients postoperatively were recorded. Time of resumption of oral food in hours was calculated from the time of surgery. Data was analyzed using standard statistical methods. Descriptive statistical including means, medians, standard deviation, percentages were used to describe study population on all variables. For categorical variables x2 test and Fischer exact test are used to make comparison.

For laproscopic approach, 10 mm umbilical camera port, 5 mm right hypochondriac and 10 mm lower abdominal

trocar positions are used. The mesoappendix was cauterized with bipolar cautery up to base of appendix. Base of appendix was ligated with endoloop constructed with a Roeder's knot on catgut no.0. The specimen was removed from lower abdominal port. In open approach, we used traditional Grid-iron incision over McBurney's point . The appendix base was ligated transfixed and cut, not buried. All patients received preoperative and postoperative antibiotics, a combination of 3rd generation ecephalosporin (ceftrixone), aminoglycoside (amikacin) and metronidazole. All patients were discharged on resumption of solid food and remission of fever.

RESULTS

During study period, total 753 appendicectomies were performed, of which 443 were open and 310 were laproscopic. Ages of patients ranged from 7 to 60 years. In the open group 207(46.73%) were adult males, 191 (43.11%) were adult females and 45(10.15%) were children. In laproscopic group out of 310 patients, 131 (42.25%) were adult males, 147 (47.42%) were adult females and 32 (10.32%) were children.

Table 1: Outcome comparison between LA and OA.

Outcome	LA	OA difference	Mean	Odds ratio
Operating time(minutes)	32±5.7	36±7.4	-4	0.79, CI 95%
Number of narcotic analgesic doses.	2.1	3.2	-1.1	0.39, CI 95%
Resumption of oral food(hours)	37	58	-21	0.40, CI 95%
Hospital stay (days)	3.3	4.5	-1.2	0.46, CI 95%

Operating time in LA was 32±5.7 minutes and in OA it was 36±7.4 minutes (OR-0.79, CI 95%). Average number of shots of narcotic analgesics required for OA was 3.2 while for LA was 2.1 (OR-0.39, CI-95%). Oral feeding was resumed after average 58 hours after surgery in (OA) and average 37 hours after LA (OR-0.40, CI-95%). Mean difference in favor of LA was 21 hours. Post-operative hospital stay was 4.5 days in OA and 3.3 in LA (OR-0.46 CI-95%). LA group required 1.2 days less postop stay than OA. There was no death in either group (Table 1).

DISCUSSION

10.32% of our patients were children in laproscopy group. We used same trocar positions in children as in adults. The CO2 pressure was kept 12 to 14 mmHg in adults and around 10 mm of Hg in children. We did not encounter any difficulty in operating in children except for crowding of instruments. No difference in majority of complications in OA and LA children.⁶ 21 patients were around 60 years of age. No special problem was encountered during operating these patients. But we did not tried LA in patients with COPD and severe heart diseases as increased intraabdominal pressure may

compromise cardiovascular hemodynamics.⁷ Around 18 patients in OA and 16 patients in LA were obese (BMI >25).In these patients LA has shown extra advantages over OA.⁸ In OA in these obese patients the wound complication rate (infection, dehiscence) was higher and the hospital stay and antibiotic, analgesics requirement was significantly more than LA. Also it is difficult to do OA in obese patients through McBurney's incision and it requires larger incision.

As concomitant pelvic pathology can be diagnosed and managed very effectively during laproscopy, LA is very much useful in female patients. So any female patient of reproductive age group having suspected appendicitis should have laproscopic appendicectomy as concomitant pathology can be dealt in same session. Wound complications (infections/dehiscence) are much more in OA than in LA. Although some study reports shows higher intraabdminal abscess formation in LA, other reports show no significant difference between LA and OA.⁹

Adhesion formation is now one of common complications following intraabdominal operations. A

study has shown that the rate of adhesion is about 80% in OA compared to 10% in LA in three months after surgery. ¹⁰ Regarding the indications of LA may include females of reproductive age group, doubtful diagnosis of appendicitis, recurrent appendicitis, high working class, obese patients. ⁵

General anaesthesia and pneumoperitoneum is required for laproscopic procedure which poses risk to certain group of patients with cardiorespiratory compromise. So LA is not recommended for patients with CPD or cardiac disease. LA should also be avoided in previous lower abdominal surgery, generalised peritonitis and stump appendicitis. Laproscopic appendicectomy in pregnancy is associated with low rate of intraop complications in all trimesters. However LA in pregnancy is associated with significantly higher rate of fetal loss compared to OA.

CONCLUSION

Laproscopic appendicectomy is an effective and safe option and the procedure of choice for most patients regardless of age, sex and BMI. It requires less operative time, less hospital stay, early mobisation, and early resumption of oral intake, less postop narcotics requirements, early return to work, less complication, cosmetic and advantage of diagnosing and managing concomitant pathologies.

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