International Surgery Journal
Singh LM et al. Int Surg J. 2018 Sep;5(9):3034-3037
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20183718

Original Research Article

A retrospective comparative study between laparoscopic and open appendectomy in teaching hospital of India

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Received: 09 August 2018
Accepted: 16 August 2018

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ABSTRACT

Background: This study was aimed to compare laparoscopic with open appendicectomy and ascertain the therapeutic benefit, in the overall management of appendicitis. Laparoscopic appendicectomy though widely practiced has not gained universal approval. Laparoscopic appendicectomy in India is relatively new and the literature is exiguous.
Methods: The study group consisted of 100 patients suffering from appendicitis. 40 patients underwent laparoscopic appendicectomy (LA) and 60 patients underwent open appendecectomy (OA). Comparison was based on length of hospital stay, operating time, postoperative morbidity, postoperative complications, duration of convalescence and operative cost in terms of their medians.
Results: The rate of infections and overall complications (LA: 5%, OA: 11.66% were significantly lower in patients undergoing LA. The median length of stay was significantly shorter after LA (45% discharged 2nd day) than after OA (36% discharged on 4th day). VAS WAS 0-2 IN 60% cases LA and9-10 in 00% cases as compared to OA VAS Was 0-2 in15% and 9-10 in 3.33% cases.
Conclusions: LA is associated with increased clinical comfort in terms of fewer wound infections, faster recovery, earlier return to work and improved cosmesis. Hospital stay for LA is significantly shorter and the one-time operative charges appear to be almost the same.

Keywords: Appendicitis, Appendicectomy, Laparoscopic, Open

INTRODUCTION

Appendicitis continues to be the most common acute abdominal condition that requires immediate surgical treatment approximately 7-10% of the general population develops acute appendicitis with the maximal incidence being in the second and third decades of life.

Appendectomy is one of the commonly performed procedures in General surgery. McBurney described the operative technique for right iliac fossa pain using Gridiron incision in 1894. This remained the technique for appendicectomy and did not change much until almost a century later, when in 1983; Semm described the first Laparoscopic appendectomy. Laparoscopic appendectomy for appendicitis is considered safe and effective.[1]

First large study of laparoscopic appendectomies was reported by Pier et al. Laparoscopic appendicectomy was described earlier than Laparoscopic cholecystectomy, still it did not get the same widespread acceptance. Role of laparoscopic appendicectomy for the treatment of acute appendicitis is still not clearly defined. Studies done so far have given mixed results. Some favouring one or the other technique.[2]

METHODS

The present study was carried out on patients admitted in surgical wards of Sanjay Gandhi Memorial Hospital associated with S. S. Medical College, Rewa, Madhya Pradesh during the period of April 2016 to March 2017.

A Total of 100 patients were included in this study. Patients of acute and/or recurrent appendicitis, or cases who came for interval appendectomy, admitted through OPD during the period of study were included in the study. Detailed history and clinical examination, baseline blood investigations and radiological investigations were done. Initial conservative management, including IV fluid resuscitation with Ringer's lactate solution/Foley's catheterization/nasogastric intubation, was done as per need. Operative procedure (laparoscopic appendectomy or OA) was planned and performed as per the patient choice and patient's consent of that particular operation and patient's preoperative condition and patients were grouped in LA) and OA group. Both procedures were compared in relation to duration of operation, postoperative pain, postoperative hospital stay, complications, time taken for return to normal activity, diagnosis of additional pathologies, relief of symptoms, and cosmesis.

RESULTS

In this study hundred patients were included of which 40 patients underwent laparoscopic appendicectomy while 60 patients underwent open appendicectomy Patients were ranged from 8 years to 72 years in age. Patients mean age were (LA: 23.1 years, OA: 22.2 years) older and more likely female (LA: 61%, OA: 58.9%). A large percentage (58%) of the lower income group preferred laparoscopic appendicectomy contrary to the popular belief that laparoscopic surgery was a delicacy for the higher income group (Table 1).

Table 1: Demographic profile of the patients.

Variables	LA (n = 40)	OA (n = 60)
Mean age (years)	23.1 years,	22.2 years
Sex ratio (F/M)	61/59%	58.9/41.1%
Socio-economic status; lower/higher	58/42%	60.2/39%

Table 2: Appendix as noted during operation.

Pathology	LA (n = 40) (%)	OA (n = 60) (%)
Inflamed appendix	22 (55)	36 (60)
Adhesion	10 (25)	12 (20)
Lump	1 (2.5)	3 (5)
Distended appendix	5 (12.5)	4 (6.76)
Appendicular Perforation	4 (10)	5 (8.33)
Inflamed	12(30)	26(43.33)
Normal	8(20)	10(16.67)

Findings of the patients undergoing surgery are depicted in Table 2. Inflamed appendix was detected in 12 patients whereas in 8 patients appeared normal, and in OA group 26 were inflamed and 10 normal despite severe symptoms.

Clinically if any patient noted Appendicular lump that treated conservative and advised appendicectomy after 6 weeks of interval in spite of that one patient in LA group and 3 in OA group found intraoperative, in these patients were early lumps, not apparent on clinical examination either preoperatively or under anesthesia. In all these patients the appendix was gently dissected with blunt dissection. Caution was also taken during ligation of the base which was friable and tended to cut through.

Table 3: Post-operative complications

Complications	LA (n=40) (%)	0A (n=60) (%)
Port infection/wound	00 (00)	03 (5)
Fistula	00 (00)	00 (00)
Late intestinal obstruction	2 (5)	1 (1.67)
Port site Hernia /incisional	00 (00)	2 (3.33)
Bleeding from port/ secondary hemorrhage	00 (00)	00 (00)
Injury to other organs	00 (00)	00 (00)
Pelvic abscess	00 (00)	01 (1.67)
Total	2 (5)	7 (11.66)

Table 4: Postoperative pain.

VAS (pain)	LA n = 40 (%)	OA n = 60 (%)
0-2	24 (60)	09 (15)
3-4	09 (22.5)	17 (28.33)
5-6	04 (10)	27 (45)
7-8	03 (7.5)	05 (8.33)
9-10	00 (00)	02 (3.33)
Total	40 (100)	60 (100)

Table 5: Postoperative hospital stay.

Stay (day)	LA n = 40 (%)	OA n = 60 (%)
1	00	00
2	18 (45)	00
3	15 (37.5)	30 (50)
4	06 (15)	22 (36.66)
5	01 (2.5)	02 (3.33)
6	00 (00)	01 (1.67)
7	00 (00)	02 (3.33)
>7	0 (00)	03 (5)
Total	40 (100)	60 (100)

The rate of infections and overall complications were significantly lower in patients undergoing LA (Table 3).

Histopathology revealed normal appendix in 3 patients in the LA group and 16 patients in the OA group. For the other patients in both the groups histopathology was suggestive of acute appendicitis.

Any surgery laparoscopic or open my result to less or more postoperative pain also in the present study SAV suggested that complain of pain was less in large no. of patient in LA group (Table 4).

Length of hospital stay ranged from 2 days to >7 days. The length of stay was significantly shorter after LA (Table 5). After comparing other covariates LA remained associated with a shorter postoperative hospital stay, fewer days return to general diet, shorter duration of parenteral analgesia, fewer milligrams of oral analgesia, stays and earlier return to full activity.

DISCUSSION

Appendicitis is a most common condition faced by general surgeons In India and treated by appendicectomy most accepted and easy to do open appendicectomy and another method is treating by laparoscopic surgery. Understanding of pathophysiology of appendicitis and its management has come a long way since Claudius Amyand performed the first appendectomy in 1736.[3,4] In 1889, McBurney favored early operative intervention and also devised the muscle splitting incision.[5] In 1983, Semm described the first laparoscopic appendectomy. Now, laparoscopic appendectomy has become commonly available and surgeons are moving toward scar less natural orifice surgery.

Laparoscopic appendicectomy has been shown to be both feasible and safe in comparison with open appendicectomy.[6,7] In addition to improved diagnostic accuracy, laparoscopic appendicectomy confers advantages in terms of fewer wound infections, less pain, faster recovery and earlier return to work.[8,9] However laparoscopic appendicectomy is time consuming.[10,11] It is also argued that the advantages of laparoscopic appendicectomy are marginal compared to open appendicectomy performed by an experienced surgeon through a short, cosmetically acceptable incision with minimal complication and shorter hospital stay.[12]

As noted in the present study most literature report a median hospital stay of 2-5 days irrespective of laparoscopic or open procedure. Although some recent retrospective cohort studies or chart reviews found laparoscopic appendicectomy associated with significantly shorter hospital stay.[13,14] However, others report no significant difference between laparoscopic appendicectomy and open appendicectomy.[15,16]

The heterogeneity of published results regarding length of hospital stay may be caused by a variety of factors: The current literature describes that the difference may be affected by hospital factors or social habits rather than reflecting differences resulting from the operative technique itself.[16] In the present study those patient was having no pain no other complications also stay for long time that was suggestive of social factor and fear in the name of operation even in that condition a significantly shorter hospital stay found in patients undergoing LA.

Some studies noted a shorter operating time for patients undergoing OA while others revealed no difference. In the present study more operating time was noted for LA. This was because of the learning curve during the earlier phase of the present study. Level of surgical experience, patient selection in the earlier stages accounted for increased operative time.

In accordance with other studies there were significantly fewer wound infections in the laparoscopy group. This has been confirmed in the present study that a reduction in wound infection can be achieved by extraction of the specimen through a port or with the use of an endobag. At a glance the median operative cost of LA seems to be marginally greater compared to OA. But considering the total cost of the disease when cost of accommodation, operation and time of work, and the patient's consumption is considered laparoscopic appendicectomy provides a clinical comfort and economic benefit in all patients.

A shorter hospital stay, resulting in a marginal difference in itemized total costs between the two procedures, offset the increased operative expenses. The studies concluded that laparoscopic appendicectomy was slightly more expensive, but it allowed earlier return to normal daily activities than open appendicectomy.[16]A few recent randomized controlled trials have even gone to the extent questioning the benefits and efficacy of LA.[15,16] Some authors have concluded once and for all that laparoscopic appendicectomy is out.[16] But in the present study we definitely find an overall advantage of LA. Since studies on laparoscopic appendectomies from our country are few, questions remain: Can it be improved anymore?

CONCLUSION

LA is associated with increased clinical comfort in terms of fewer wound infections, faster recovery, earlier return to work and improved cosmesis. Hospital stay for LA is significantly shorter and the one-time operative charges appear to be almost the same.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Singh LM, Wadiwa YS. A retrospective comparative study between laparoscopic and open appendectomy in teaching hospital of India. Int Surg J 2018;5:3034-7.