

Section

Surgery

Original

Article

A Prospective Study on Advantages of Laparoscopic Over Open Appendicectomy in a Tertiary Care Teaching Hospital

Gaurav Wadhawan , Kamlesh Damor*

Assistant Professor; Department of Surgery, Pacific Medical College and Hospital, Udaipur, Rajasthan.

ABSTRACT

Background: Appendix has no known function and is commonly termed as a 'vestigial' organ, yet diseases of the appendix loom large in surgical practice; and therefore, appendicitis continues to be the most common acute abdominal condition that requires immediate surgical treatment.

Methods: This Prospective Study was undertaken for a period of 6 months on patient diagnosed with appendicitis and admitted to surgery ward at Pacific Medical College and Hospital, Udaipur, Rajasthan. Patients were enrolled on the basis of inclusion and exclusion criteria and written informed consent was taken from the patients before the commencement of study.

Results: Proved that laparoscopic procedures cause less post-operative pain than their conventional counterparts. Analgesic requirement for post-operative analgesia was significantly less in LA (mean 4 inj. doses) compared to the OA (mean 6.5 inj. doses). Hospital stay was less for LA (1.55 days) than OA (4.5 days) Full recovery on the basis of return to normal activity was earlier in LA (5.45 days) as compared to OA (9.56 days).

Conclusion: LA holds a promising prospect and may replace OA in the near future as the method of choice for effective and qualitative clinical management of appendicitis in emergency and in elective set up.

Key words: Appendicectomy, comparative, laparoscopy

DOI:10.21276/iabcr.2018.4.2.50

Received: 15.03.18

Accepted: 21.04.18

*Corresponding Author

Dr. Kamlesh Damor,
26,27/1 C/O Bhagwatilal Gupta, near Om Arts, New Fatehpura, Udaipur.
Email: dr.kamlesh2003@gmail.com

Copyright: © the author(s) and publisher. IABCR is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.



This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial

INTRODUCTION


The immature residuum of the caecum has no known function and is generally named as a 'vestigial' organ, but an infected appendix keeps on being the most widely recognized intense stomach condition that requires quick careful treatment.^[1]

Appendicitis is a standout amongst other known therapeutic ailments presenting as acute conditions in emergencies and also might be a standout amongst the most troublesome cases encountered in casualties; often requiring removal of the inflamed appendix.^[2,3]

Appendicectomy is the only way to get rid of this ailment and has been one of the commonest emergency procedures in

surgery. Appendicectomy may be performed as a laparoscopic or as an open operation. Open appendicectomy (OA) through laparotomy has been the gold standard for more than a century as far as surgical removal of appendix is concerned.^[4] But due to the rising demands of minimal invasive surgery options, therefore, it has rapidly evolved as a major speciality in the past decade. Laparoscopic surgery has thoroughly changed the concept of general surgery over the last 15 years and surgeons have rapidly progressed from the diagnostic to the advanced procedures.

Access this article online

Website:	Quick Response code
www.iabcr.org	
DOI: 10.21276/iabcr.2018.4.2.50	

How to cite this article: Wadhawan G and Damor K. A Prospective Study on Advantages of Laparoscopic Over Open Appendicectomy in a Tertiary Care Teaching Hospital. Int Arch BioMed Clin Res. 2018;4(2):175-178.

Source of Support: Nil, **Conflict of Interest:** None

Several past studies proved that laparoscopic appendectomy (LA) should be preferred for the treatment of acute appendicitis. There are so many advantages of LA like less pain, faster recovery, fewer wound infections, improved cosmesis and less post-operative morbidity are obvious from the various randomized trial conducted worldwide comparing OA and LA. Review of the world literature suggests that definitely the trend is moving from open to LA.^[5]

Even though modern diagnostic facilities, surgical skills, fluids and antibiotics therapy has brought down the mortality from 50% (before 1925) to less than 1/10,000 people, still the morbidity is more than 5-8%.

Reginald Fitz coined the term "Appendectomy" in 1886. Mc Burney popularized the concept of early surgery and the muscle splitting incision technique. LA has been well established by Semm.^[6]

Laparoscopic appendectomy may be feasible, but whether it confers any advantage to patients with appendicitis is not known. Therefore, this study was conducted to compare the effectiveness of laparoscopic and conventional "open" appendectomy in the treatment of acute appendicitis.

METHODS

To achieve the above aims, this study was conducted at tertiary teaching institute in the Department of Surgery, Pacific Medical College and Hospital, Udaipur, Rajasthan over a period of 6 months September 2017 to February 2018 in patients with clinical diagnosis of appendicitis.

Initially 45 patients were enrolled presented with clinical diagnosis of appendicitis. Out of 45 patients, only 40 patients were selected on the basis of inclusion and exclusion criteria. 40 patients were equally distributed in equally in two treatment groups - OA and LA group.

Factors and variables recorded include:

Demographic data, clinical features, investigations, technique, post-operative pain, post-operative use of analgesia, complications, scar size, return of bowel movements, starting of oral liquids, hospital stay, functional index, time to subjective full recovery and days of sick leave have been documented.

And outcome has been recorded in a predesigned case record form.

Return to normal activity and work was determined by questioning during post-operative clinic.

RESULTS

Forty patients (n=40) with similar characteristics of appendicitis were recruited to either open (50%) or laparoscopic (50%) appendectomy. [Table 1]

The maximum number of cases was observed in the age group of 25-40 years with a Male (24) to Female (16) ratio of 1.5:1. The average age of patients undergoing LA was 30.5 years while it was 32.45 years for those undergoing OA [Table 1].

Post-operative pain. (upto 7 days) [Graph 1] It has been shown that those patients who underwent successful laparoscopic appendectomy have a better post-operative recovery. The reduced trauma to the abdominal wall is a very significant factor in post-surgical discomfort. The better mobility of the abdominal musculature and the earlier ambulation, reduce the risk of the early post-operative complications of pneumonia and embolism. In order to

assess the post-operative pain, VAS was applied. It was clearly observed from the data of our study that Patients had less post-operative pain with LA than OA during 1st week post-operatively. Patients subjected to OA had more post-operative pain at 28 days after operation. 24 h after surgery pain scores were 3.87 in LA and 4.95 in OA. After 3 days average VAS scores were 1.25 for LA and 2.15 for OA. After 1 week, in LA group VAS was .97 and 1.53 in OA group. Thereafter it was not significant. Patients undergoing OA had low but persistent post-operative pain 4 weeks post-operatively, but this may well be of no clinical significance given the values are low.

Analgesic requirement for post-operative pain [Table 2] relief in LA was about 4 Inj. doses compared to 6.5 inj. doses in OA group.

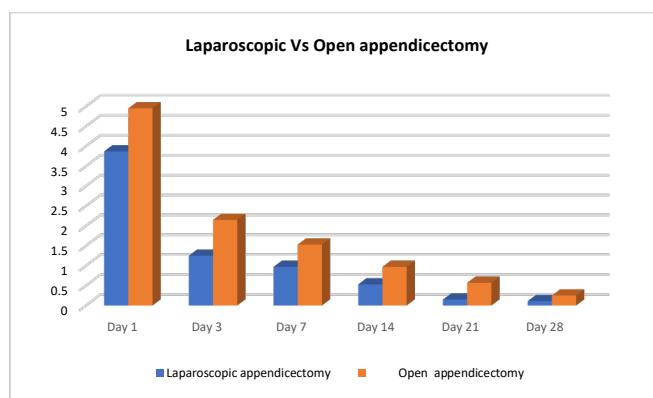
Starting of oral liquids [Table 3] was earlier in LA group than in the OA group. Oral fluids were started in 0.81 days in LA and in 1.5 days in OA patients.

Wound related complications [Table 3], were seen more in the OA group. Wound infection regarding skin was almost negligible in LA, as the appendix was pulled into the trocar before removing. This maneuver minimizes the chances of wound infection to the skin. The risk of wound infection is less in laparoscopic appendectomy compared to the open procedure. Incidence of 5.54% in the LA group as compared to 18.76% in OA group. Complications commonly seen were wound gaping, seroma, cellulites and fat necrosis.

As far as Scar size is concerned, it [Table 3] was more in patients who underwent OA as compared to LA. Regarding cosmetic benefit, most patients in the LA group were highly satisfied by their scar size (almost hidden) as compared to the OA group.

Post-operative recovery

Hospital stay [Table 4] was 1.55 days in LA group while it was 4.5 in the OA group. Thus, increase in length of hospital stay in OA was reduced significantly in LA.



Graph 1. Comparison of Laparoscopic Vs Open appendectomy

Table 1. Demographic details

Parameters	Laparoscopic Appendectomy group	Open Appendectomy group
Total no. of patients	20	20
Male (%)	11 (55%)	13 (65%)
Female (%)	9 (45%)	7 (35%)
Age (years)	30.55 (25-40)	32.45 (25-40)

Table 2. Analgesic use in Laparoscopic Vs Open appendectomy

	Laparoscopic appendectomy	Open appendectomy
Analgesic (no. of injections)	4	6.5

Table 3. Recovery of patients in Laparoscopic Vs Open appendectomy

	Laparoscopic appendectomy	Open appendectomy
Return of bowel activities	0.81 days	1.50 days
Starting of oral liquids	0.81 days	1.50 days
Wound related complications	5.54%	18.76%
Scar size (cm)	1.95	6.86

Table 4. Post-operative recovery

	Laparoscopic appendectomy	Open appendectomy
Hospital stay	1.55 days	4.5 days
Full recovery	5.45 days	9.2 days
Sick leave	6.45 (3-7) days	9.56 (9-15) days

DISCUSSION

Due to the advantages of LA over OA, LA has been the preferred choice for appendectomy. However, the role of laparoscopy for appendectomy, one of the commonest indications, remains controversial. Several controlled trials have been conducted, some are in favour of laparoscopy, others not.^[7]

The goal of this study was to ascertain that if the LA is superior to conventional, and if so what are the benefits and how it could it be instituted more widely. There is also diversity in the quality of the randomized controlled trials.

It is proved that laparoscopic procedures cause less post-operative pain than their conventional counterparts. Scores were significantly less in patients undergoing LA as compared to patients undergoing OA. Though different studies have not demonstrated such effect on post-operative pain, or the measure of pain was on the basis of the requirement of analgesics, a general opinion of less post-operative pain in LA as compared to OA was noted.^[8,9]

Another interesting observation has been the patient's perception of pain after appendectomy. Those who underwent laparoscopic appendectomy were more vocal of pain although it was of a lower intensity. However, after 48 h they had a better sense of wellbeing. This could have arisen from the expectation that laparoscopic procedures are painless, or a lower level of endorphins released or the peritoneal injury from the pneumoperitoneum. It is likely that laparoscopic technique causes less pain due to multiple (usually three) but ultimately smaller skin lesion.

Post-operative analgesia

Analgesic administered as per demand of the patient showed that requirement of post-operative analgesia was significantly less in LA group (mean 4 inj. doses) compared to the OA group (mean 6.5 inj. doses).

The reduced trauma to the abdominal wall is a very significant factor in post-surgical discomfort. The better mobility of the abdominal musculature and the earlier ambulation, reduce the requirement of analgesics and the

risk of the early post-operative complications of pneumonia and embolism; probably due to smaller wound and lesser retraction and handling of tissues.

Hospital Stay

LA has significant advantages over open appendectomy with respect to length of hospital stay, rate of routine discharge, and post-operative in-hospital morbidity. In the present study hospital stay was less for LA group (1.55 days) than OA (4.5 days) and this result is well matched when compared to other series.

Longer hospital stay in OA is because of late return of bowel activities and delay in starting of oral liquids. Also, greater chances of wound related complications in OA may prolong the hospital stay. Thus, hospital stay has decreased significantly in patients who underwent LA than open surgery.

Time to full recovery (days)

In the present study, full recovery on the basis of return to normal activity was seen earlier in LA group (5.45 days) as compared to OA group (9.56 days).

Appendectomy has been the treatment of choice for acute appendicitis. Though OA is considered as the gold standard, LA has gained lot of attention around the world. [10]

However, the role of laparoscopy for appendectomy, one of the commonest indications, remains controversial. Several controlled trials have been conducted, some are in favour of laparoscopy, others not.

Laparoscopic appendectomy is equally safe and can provide less post-operative morbidity in experienced hands, as open appendectomy. Most cases of appendicitis can be treated laparoscopically. Laparoscopic appendectomy is a useful method for reducing hospital stay, complications and return to normal activity. Since quality of life of the patients was an important aim of this study, monitoring the postoperative pain, postoperative requirement of analgesics showed laparoscopic procedures to have more advantage and give superior results.

CONCLUSION

Therefore, it can be concluded now that LA is associated with less post-operative pain and reduced analgesic requirement as compared to OA group. Also, LA is associated with faster recovery and early restart of oral intake than OA.

There is an early return to normal activities and work in patients with LA in contrast to OA.

Wounds of LA had better cosmetic benefit than OA wounds. Laparoscopic procedures hold promise by decreasing the loss of earning days by an early return of normal activity and shorter hospital stay. Therefore, LA becomes a choice for all unless contraindicated or in the conditions where LA can't be employed.

REFERENCES

1. Agarwal V. Randomized clinical trial of Laparoscopic versus Open Appendectomy in over weight patients. Dissertation carried out at Sir J.J Hospital and Grant Medical College, 2005.
2. Srivastav. Randomized clinical trial of laparoscopic versus open appendectomy. Dissertation carried out at Sir J.J. Hospital and Grant Medical College, 2003.
3. MAINGOT'S Abdominal Operations. 10 th ed., Vol. 2. 1997. p. 1191-92.
4. Bosch PF. Laparoskopische Sterilization. Schweizerische zeitschrift fur kranken haus and anstait Swensen, 1936.
5. Attwood SE, Hill AD, Murphy PG, Thornton J, Stephens RB. A prospective randomized trial of laparoscopic versus open appendectomy. Surgery 1992;112:497-501.
6. Semm K. Endoscopic appendectomy. Endoscopy 1983;15:59-64.

7. Enochsson L, Hellberg A, Rudberg C, Fenyö G, Gudbjartson T, Kullman E, et al. Laparoscopic vs open appendectomy in overweight patients. *Surg Endosc* 2001;15:387-92.
8. Kum CK, Ngoi SS, Goh PM, Tekant Y, Isaac JR. Randomized controlled trial comparing laparoscopic and open appendectomy. *Br J Surg* 1993;80:1599-600
9. Tarnoff M, Atabek U, Goodman M, Alexander JB, Chrzanowski F, Mortman K, et al. A comparison of laparoscopic and open appendectomy. *JLS* 1998;2:153-8.
10. Peiser JG, Greenberg D. Laparoscopic versus open appendectomy: Results of a retrospective comparison in an Israeli hospital. *Isr Med Assoc J* 2002;4:91-4.

