ORIGINAL RESEARCH

Assessment of Open and Laparoscopic Appendectomy in Terms of Operative Time, Post Operative Pain Relief and Post-Operative Complications

[1]Dr. Zakir Hussain, [2]Dr. Mudassir Ahmad Khan, [3]Dr. Amir Chauhan

[1]Associate Professor General Surgery, Government Medical College & Associated Hospital Rajouri, Jammu & Kashmir, India.
[2]Assistant Professor General Surgery, Government Medical College & Associated Hospital Rajouri, Jammu & Kashmir, India.
[3]Senior Resident, General Surgery, Government Medical College & Associated Hospital Rajouri, Jammu & Kashmir, India.

Corresponding Author
Dr. Zakir Hussain
Associate Professor, Department of General Surgery, Government Medical College & Associated Hospital Rajouri, Jammu & Kashmir, India.

Received: 19 February, 2023 Accepted: 15 March, 2023

ABSTRACT
Aim: To compare open and laparoscopic appendectomy cases. **Methodology:** Ninety cases of appendectomy of both genders were randomly divided into 2 groups of 45 each. Group I underwent open appendectomy and group II underwent laparoscopic appendectomy. In both groups, length of hospital stay, operative time, post operative pain relief and any complications were recorded. **Results:** Group I had 25 males and 20 females and group II had 18 males and 27 females. Operative time in group I was 48.2 min and in group II was 41.5 min. The hospital stay was 3.2 days in group I and 4.6 days in group II. The mean pain score in group I was 2.8 and in group II was 1.7. A significant difference was observed (P< 0.05). Common complications observed were wound infection 3 in group I and 0 in group II and abdominal abscess 5 in group I and 1 in group II. **Conclusion:** Laparoscopic appendectomy found to be better than open appendectomy. Operative time, hospital stay and post- operative complications were less with laparoscopic appendectomy.
Key words: Laparoscopic appendectomy, post- operative complications, wound infection

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

INTRODUCTION

Appendicitis constitutes a nosologie entity whose incidence is about 7%in industrialized countries; a USA report shows approximately 300,000 cases per year, with the greatest incidence falling in the 2nd and 3rd life decade and with a rate of 3-4:1 among men and women during puberty.[1] Even with a thorough clinical examination, it may be difficult to diagnose appendicitis. About 40% of cases of appendicitis are incorrectly diagnosed in women during their reproductive years, and approximately 20-30% of patients submitted to surgical interventions do not show any inflammatory alterations of the appendix.[2]

Appendectomy has also a complication rate ranging from 8% to 11%, depending on the surgical technique.[3] Several reports described spontaneousre solution of uncomplicated appendicitis without theneed of an operation and, since the high rate of negative appendectomy and the significative complications rate, some authors proposed and advised conservative management for uncomplicated appendicitis.[4]

Laparoscopic appendicectomy combines the advantages of diagnosis and treatment in one procedure with least morbidity.[5] Patients are likely to have less postoperative pain and to be discharged from hospital and return to activities of daily living sooner than those who have undergone open.[6]The laparoscopic appendectomy is increasingly employed, particularly in young women of child bearing age in

whom the differential diagnosis of right lower quadrant pain is extensive and includes gynaecologic pathology.[7,8,9] We performed this study to compare open and laparoscopic appendectomy cases.

METHODOLOGY

After considering the utility of the study and obtaining approval from ethical review committee, we selected ninety cases of appendectomy of both genders. Patients' consent was obtained before starting the study.

Data such as name, age, gender etc. was recorded. Patients were randomly divided into 2 groups of 45 each. Group I underwent open appendectomy and group II underwent laparoscopic appendectomy. Open appendectomy (OA), was performed through a Mcburney's or Lanz incision. Laparoscopic appendectomy (LA) was performed through 3 port technique, carbon dioxide used to create pneumoperitoneum. In both groups, length of hospital stay, operative time, post operative pain relief and any complications were recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Table I: Distribution of patients

Groups	Group I	Group II
Technique	Open	Laparoscopic
M:F	25:20	18:27

Group I had 25 males and 20 females and group II had 18 males and 27 females (Table I).

Table II: Parameters in both groups

Parameters	Group I	Group II	P value
Operative time (minutes)	48.2	41.5	0.05
Hospital stay (Days)	3.2	4.8	0.02
Pain score (mean)	2.8	1.7	0.04

Operative time in group I was 48.2 min and in group II was 41.5 years. The hospital stay was 3.2 days in group I and 4.6 days in group II. The mean pain score in group I was 2.8 and in group II was 1.7. A significant difference was observed (P< 0.05) (Table II).

Table III: Comparison of complications in both groups

Complications	Group I	Group II	P value
Wound infection	3	0	0.01
Abdominal abscess	5	1	0.02

Common complications observed were wound infection 3 in group I and 0 in group II and abdominal abscess 5 in group I and 1 in group II (Table III).

DISCUSSION

Acute appendicitis (AA) is the leading cause of surgical acute abdomen worldwide, with a prevalence of approximately 7% of the population. It has a peak incidence between 10-14 years in females and 15-19 in males.[10,11] Appendectomy is the treatment of choice. Besides allowing definitive diagnosis, it also significantly reduces the risk of complications such as perforation, sepsis anddeath.[12]As advantages of LA have been proposed a better wound healing, reduced postoperative pain, faster recovery, earlier resumption of diet, earlier discharge from hospital, and finally, a better cosmetic result. Disadvantages of LA compared to OA are considered the increased operative time, the cost of the operation and a higher incidence of intra-abdominal abscesses, especially in case of a perforated appendicitis.[13]We performed this study to compare open and laparoscopic appendectomy cases.

Our study showed that Group I had 25 males and 20 females and group II had 18 males and 27 females. Kirby et al[14] found that AA was more prevalent in young adults (19-44 years) and males (65.20%). The mean hospital stay was seven days and phase II was the most prevalent. Authors found the histopathological diagnosis of primary tumor of the appendix in six patients (0.94%), adenocarcinoma being the most common histologic type (66.7%). Regarding the use of antibiotics, 196 patients underwent antibiotic prophylaxis and 306received antibiotic therapy. Eighty-one patients used some kind of drain, for an average of 4.8 days. Seventeen patients died (2.67%), predominantly males (70.59%), with mean age of 38.47 years.

Our results showed that operative time in group I was 48.2 min and in group II was 41.5 min. The hospital stay was 3.2 days in group I and 4.6 days in group II. The mean pain score in group I was 2.8 and in group II was 1.7. Attwood et al[15]showed that, on average, 51 minutes were needed to complete an open procedure, while 61 minutes were needed to complete the laparoscopic approach. Our results demonstrated that traditional surgery was faster (59 minutes) when compared to video laparoscopy (84.4 minutes), with confirmation that a longer operative time is a disadvantage of the laparoscopic method. There is evidence in the literature suggesting that laparoscopic

appendicectomy reduces postoperative pain, since the trocar orifices are less traumatic than incisions with muscle division, and there is, therefore, a smaller amount of tissue trauma.

We observed that common complications observed were wound infection 3 in group I and 0 in group II and abdominal abscess 5 in group I and 1 in group II. Nariantran et al[16]compared open surgical technique of appendicectomy. In this study pain score was 2.7±0.9 for open group as compared to 1.3±0.5 in lap group because of longer incision stretch of muscles and wound infection. Post operative complications like vomiting was lower in laparoscopic group with 8% as compared with 36% in open group (P<0.05) and ileus was lower in lap group with 17.3±7.1 and for open group 30.8±8.9 with P<0.05 which were significant. There is significant reduction in incidence of post operative wound infection in lap group 4% as compared to open group 26% (P<0.05). Duration of post operative hospital stay was significantly low for lap group 2.8±0.9 as compared to open group 4±2.9. The return to normal activity was low for lap group 8±3.15 days as compared to open group 13.7±3.15 days. Duration of surgery for open appendicectomy was 48.2±12.4 and for lap appendicectomy was 68.5±20.3.

Sharma et al[17] found that 19 (63%) patients of open appendectomy and 19 (63%) patients of laparoscopic appendectomy were males. 11 (36%) patients of open appendectomy and 11 (36%) laparoscopic appendectomy were females. The mean age of the patients in two groups was 28.67 and 36.23 years, respectively. In open appendectomy, 14 cases (46.67%) had less than 7 days of stay, 13 cases (43.33%) had 8 to 14 days, 2 cases had 15 to 21 days and 1 case had more than 21 days of postoperative stay in the hospital with a mean of 8±4.24. In lap appendectomy 21 (70%) cases had less than 7 days, 5 cases had 8 to 14 (16.67%) days, 1(3.33%)case had 15 to 21 days and 3 (10%) cases had more than 21 days of post-operative hospital stay.

CONCLUSION

Laparoscopic appendectomy found to be better than open appendectomy. Operative time, hospital stay and post- operative complications were less with laparoscopic appendectomy.

REFERENCES

1. Shogilev DJ, Duus N, Odom SR, Shapiro NI. Diagnosing appendicitis: evidence-based review of the diagnostic approach in 2014. West J Emerg Med. 2014;15(7):859-71.
2. Jaschinski T, Mosch C, Eikermann M, Neugebauer EA. Laparoscopic versus open appendectomy in patients with suspected appendicitis: a systematic review of meta-analyses of randomised controlled trials. BMC Gastroenterol. 2015;15:48.
3. Sulu B, Günerhan Y, Palanci Y, Isler B, Cağlayan K. Epidemiological and demographic features of appendicitis and influences of several environmental factors. Ulus TravmaAcilCerrahiDerg. 2010;16(1):38-42.
4. Al-Omran M, Mamdani M, McLeod RS. Epidemiologic features of acute appendicitis in Ontario, Canada. Can J Surg. 2003;46(4):263-8.
5. Pages-Bouic E, Millet I, Curros-Doyon F, Faget C, Fontaine M, Taourel P. Acute pelvic pain in females in septic and aseptic contexts. DiagnInterv Imaging. 2015;96(10):985-95.
6. Pedersen AG, Petersen OB, Wara P, Ronnjng H, Qvist N, Laurberg S. Randomized clinical trial of laparoscopic versus open appendicectomy. Br J Surg. 2001;88:200-5.
7. Mehoff AM, Merhoff GC, Falls K, Oregon, Franklin ME, San Antonio. Laparoscopic versus open Appendicectomy. Am J Surg. 2000;179:375-8.
8. McAnena OJ, Austin O, O'Connell PR, Hederman WP, Gorey TF, Fitzpatrick J. Laparoscopic versus open appendicectomy: A prospective evaluation. Br J Surg. 1992;79(8):818-20.
9. Martin LC, Puente I, Sosa JL, Bassn A, Breslaw R, McKenney MC, et al. Open versus laparoscopic appendectomy. A Prospective randomized comparison. Ann Surg. 1995 Sep;222(3):256-62.
10. Palanivelu C. Laparoscopic appendiectomy. Chapter 53, text book of surgical laparoscopy, Shrinivas Fine Art Limited; 2002:411-24.
11. Britton J, Barr H. Endoscopic Surgery. Chapter 13 Oxford text book of Surgery, Morris PS, Malt RA Eds. Vol 1, 2nd Edition, Oxford Medical Publications; 1994:847-62.
12. Russell RCG, Williams NS, Bulstrode CJK. The vermiform appendix. Chapter 67, Short practice of surgery, Bailey and Love's 25th Edn, Arnold Publication; 2004;1204-18.
13. Apelgren KN, Cowan BND, Metcalf ANM and Carol EH. Laparoscopic appendicectomy and the management of gynaecologic pathologic conditions found at laparoscopy for presumed appendicitis. Surg Clin North Am. 1996;76:469-82.
14. Kirby A, Hobson RP, Burke D, Cleveland V, Ford G, West RM. Appendicectomy for suspected uncomplicated appendicitis is associated with fewer complications than conservative antibiotic management: a meta- analysis of post-intervention complications. J Infect. 2015;70(2):105-10.
15. Attwood SEA, Hill DK, Stephens RB. A prospective randomized trial of laparoscopic versus open appendectomy. Surgery. 1992;112:497–501.
16. Naraintran S, David SKS, Raveendran K, Pilla BKE. Comparative study on open appendicectomy versus laparoscopic appendicectomy in a tertiary care centre. Int Surg J 2018;5:1240-5.
17. Sharma N, Mishra M, Tripathi A, Rai V. Comparative study and outcome of open versus laparoscopic appendectomy: case series of 60 patients. Int Surg J 2017;4:3129-35.