



A COMPARATIVE STUDY BETWEEN LAPROSCOPIC VS OPEN APPENDECTOMY AT RIMS RANCHI

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ABSTRACT

Introduction: Although laparoscopic surgery has been available for a long time and laparoscopic cholecystectomy has been performed universally, it is still not clear whether open appendectomy (OA) or laparoscopic appendectomy (LA) is the most appropriate surgical approach for appendectomy.

Objectives: To compare results of open appendectomy with laparoscopic appendectomy in terms of following parameters:
Operating time

Duration of postoperative hospital stay

Methodology: The study was conducted in Rajendra institute of medical science, Ranchi involving 30 patient during period of april 2018 to march 2019 patients who were diagnosed to have appendicitis and requiring surgical intervention.

Result: After randomization, thirty patients each in LA group and OA group were analyzed. The mean age of patients undergoing LA and OA were 24.81 years and 24.98 years respectively. The mean duration of surgery in the laparoscopic group was 54.45 minutes compared to 42.74 minutes in the open group (p=0.042). Duration of postoperative hospital stay was 1.13 days in the laparoscopic group as compared to 3.26 days in the open group

KEYWORDS : appendectomy; laparoscopic appendectomy; open appendectomy

INTRODUCTION:

Appendicitis is one of the most common intra-abdominal inflammatory conditions requiring emergency surgery, with lifetime risk of six to seven percent¹ and appendectomy considered as the most frequently performed abdominal surgery². Appendicitis is commonly observed in patients in their second through fourth decades of life³ with a slight male: female preponderance (1.2 to 1.3: 1)^{4,5}.

The treatment of appendicitis remained essentially unchanged since it's initial description by Charles McBurney in 1889 before New York Surgical Society⁶. Open appendectomy performed by McBurney's gridiron incision⁷ remained the gold standard for nearly a century until 1983 when Kurt Semm, performed the first laparoscopic appendectomy⁸.

Laparoscopic cholecystectomy is now considered the gold standard for cholelithiasis & has virtually replaced open cholecystectomy. However this is not the scenario in appendicitis, the role of laparoscopic appendectomy being not clearly defined. This is perhaps due to the emergency nature of disease, often operated by junior staff in odd hours when laparoscopic equipment and expertise may not be available in all hospitals. And the cost of the equipment adds to the limiting factor.

In an era where patient comfort is a greater consideration and in an attempt to improve the diagnostic accuracy and outcome of patients with appendicitis, laparoscopic appendectomy has gained popularity in recent years and has become one of the most commonly performed procedures using the laparoscope⁹.

This study is aimed to compare the benefits of laparoscopic appendectomy over open appendectomy in proven cases of appendicitis

OBJECTIVES OF THE STUDY

To compare results of open appendectomy with laparoscopic appendectomy in terms of following parameters:

1. Operating time
2. Duration of postoperative hospital stay

The appendix was probably first noted as early as the Egyptian civilization (3000 B.C) .During the mummification process, abdominal parts were removed and placed in Coptic jars with inscriptions describing the contents. When these jars were uncovered, inscriptions referring to the "worm of the intestine" were discovered¹⁰.

In 1894, McBurney devised the muscle splitting incision which today bears his name. However McBurney later credited McArthur with first describing this incision

ANATOMY

The appendix is a narrow worm shaped (vermian) tube arising from posteromedial caecal wall 2cm or less below the end of ileum. The length of the appendix varies from 2cm to 20cm, and the average length being 9cm in adults⁴⁸. The base of the appendix is located at the convergence of taeniae along the inferior aspect of caecum, and this anatomic relationship facilitates identification of appendix at surgery.

The tip of the appendix may lie in a variety of locations and is named accordingly^{11,12}

- Retrocaecal-most common (74%)
- Pelvic (21%)
- Paracaecal (2%)
- Subcaecal (1.5%)
- Preileal (1%)
- Postileal (0.5%)

The appendix is connected to the lower part of the mesentery of the ileum by a triangular fold of peritoneum, named as the mesoappendix, which encloses the blood vessels ,nerves and lymphatics of the appendix.

Surface marking: - (popularly known as McBurney's point) most commonly used to locate the base of appendix is the junction of the lateral and middle thirds of spinoumbilical line.

VASCULAR SUPPLY AND LYMPHATIC DRAINAGE

Arterial supply: the lower division of the ileocolic artery gives

off a branch, the appendicular artery, which runs behind the terminal ileum and enters the mesoappendix a short distance from the appendicular base. It gives a recurrent branch which anastomoses with a branch of the posterior caecal artery. Accessory arteries (also known as Dr. Sheshachalam`s artery 49) are commonly observed and about 80% of subjects possess two or more accessory arteries.

Venous drainage: The appendix is drained via one or more appendicular veins into the posterior caecal or ileocolic vein and subsequently into the superior mesenteric vein.

Lymphatics: appendix is an integral part of gut associated lymphoid tissue and lymphoid tissue are first noted in the appendix about two weeks following birth. The amount of lymphoid tissue increases throughout puberty, remains steady for the next decade, and then begins a steady decrease. Virtually no lymphoid tissue remains after the age of sixty.

INCIDENCE OF ACUTE APPENDICITIS

Acute appendicitis is the most common cause of acute surgical abdomen. Six to seven percent of the population suffer from acute appendicitis during life time. Appendicitis is most frequently observed in patients in their second through fourth decades of life with a median age of 22 years and mean age of 31.3years³. There is a slight male to female preponderance (M: F 1.2 to 1.3:1)^{1, 4}.

ETIOLOGY AND PATHOGENESIS

The dominant causal factor in acute appendicitis is obstruction of the lumen. Faecoliths are the usual cause of appendiceal obstruction. Other causes include hypertrophy of lymphoid tissue, vegetable and fruit seeds, intestinal worms and inspissated barium from previous x-ray studies.

The occurrence of obstruction increases with the severity of inflammatory process. Faecoliths are found in 40% of simple acute appendicitis, about 65% of gangrenous appendicitis without rupture, and about 90% of cases of gangrenous appendicitis with rupture⁵. A closed loop obstruction is produced by the proximal block, and ongoing normal secretion of the appendiceal mucosa rapidly produces distension. 0.1ml being the luminal capacity of the normal appendix, secretion as little as 0.5ml distal to a block raises the intraluminal pressure to about 60cm of H₂O⁵. The human being is one of the few animals with an appendix competent of secreting at pressures high enough to lead to gangrene and perforation.

Nerve endings of visceral afferent pain fibres are stimulated by distension of the appendix, producing vague, dull, diffuse pain in midabdomen or lower epigastrium. Distension continues and rapid multiplication of the normal bacteria of the appendix occurs . As pressure in the organ exceeds the venous pressure, capillaries and venules are occluded but arteriolar inflow continues, resulting in engorgement and vascular congestion. Distension of this extent causes reflex nausea and vomiting and the diffuse visceral pain becomes more severe.

The inflammatory process rapidly involves the serosa of the appendix and consecutively the parietal peritoneum in the region producing the characteristic shift in pain to right lower quadrant⁵. Mucosa of the gastrointestinal tract, including the appendix, is very vulnerable to impairment of blood supply. As a result its integrity is compromised early in the process, allowing bacterial invasion of deeper coats. As progressive distension exceeds the arteriolar pressure, the area with poorest blood supply suffers most; ellipsoidal infarcts develop in the anti-mesentric border. Perforation usually occurs just distal to the point of obstruction rather than

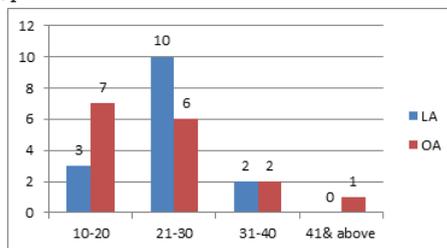
at the tip, because of the effect of diameter on intraluminal tension.

RESULT: fifteen patients were distributed in each group.

Table.2: Distribution of the sample by age

Age group	LAP APPENDECTOMY	OPEN APPENDECTOMY	TOTAL
10-20	3(20.0%)	7(46.6%)	10
21-30	10(66.67%)	6(40.0%)	16
31-40	2(13.34%)	2(13.3%)	2
41 & above	0(1(6.67%)	1

cc .319, p=0.071

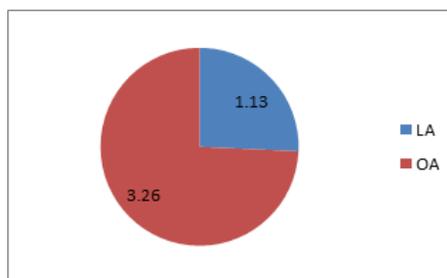


Graph showing age distribution

Table showing mean duration in hospital stay in day

Method	No. of pt.	Mean duration In day
LA	15	1.13
OA	15	3.26

Pi chart showing mean stay in hospital in day



After randomization, thirty patients each in LA group and OA group were analyzed. The mean age of patients undergoing LA and OA were 24.81 years and 24.98 years respectively. The mean duration of surgery in the laparoscopic group was 54.45 minutes compared to 42.74 minutes in the open group (p=0.042).

Duration of postoperative hospital stay was 1.13 days in the laparoscopic group as compared to 3.26 days in the open group (p<0.005).

CONCLUSION

The present study shows that laparoscopic appendectomy provides considerable benefits over open appendectomy including a shorter hospital stay, less postoperative pain, less parenteral analgesia requirement, earlier resumption of oral feeds and reduced wound infection rate.

Overall laparoscopic appendectomy can be safely recommended for appendicitis in hospitals where laparoscopic expertise and equipment are available unless laparoscopy itself is contraindicated.

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