

A STUDY ON OPEN VS. LAPAROSCOPIC APPROACH IN ACUTE APPENDICITIS

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ABSTRACT

Reginald Fitz in 1986, first described acute appendicitis. Since the acute appendicitis was first described, the pathology remains the most common intra-abdominal condition requiring emergency surgery. The life time risk of having acute appendicitis is about 8%. Traditionally, the treatment of choice has been surgery. Before the only option was the open laparotomical meaning opening the abdominal cavity was the mode of operation. Laparoscopic appendectomy was described by Semm in 1983. This method was new and had its own benefits but this particular procedure has struggled to prove its superiority over the open technique. This is contrast to laparoscopic cholecystectomy which has promptly become the gold standard for gallstone disease despite little scientific challenge. This peculiarity might be because of the fact that the Open Appendectomy was used for centuries with good effect. The particular procedure withstood the test of time for more than a century since its introduction by McBurney unlike cholecystectomy. Open surgery is typically completed using a small right lower quadrant incision between the point joining the lateral one-third and medial two-third of a line drawn from anterior-superior iliac spine and the umbilicus. The postoperative recovery is usually uneventful. The overall mortality of OA is around 0.3% and morbidity about 11%. Despite numerous randomised trials, several meta-analysis and systematic critical reviews, the clear cut winner is unannounced. A sincere effort has been put to understand the different pros and cons of the two methods so that the patient can be benefited.

METHODS

One Hundred cases were studied in the Department of Surgery, King George Hospital, Visakhapatnam, Andhra Pradesh from 01-09-2015 to 29-02-2016.

Out of these, fifty cases underwent open surgery and the rest through laparoscopic surgery.

The first group (Open Surgery) thus consisted of 50 cases and the second group (laparoscopic) consisted of fifty cases.

RESULTS

Except for the cost effectiveness, the laparoscopic technique has an upper hand in every aspect compared.

CONCLUSION

The best way that is available to operate is the laparoscopic. But the conventional open access surgery has to be used whenever the need arises especially when the cost-effectiveness is the topic of dispute especially in a developing country like ours. The cost effectiveness of the laparoscopic surgery has to be worked out for the better usage of the procedure.

KEYWORDS

Open Surgery, Laparoscopic Surgery, Acute Appendicitis.

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INTRODUCTION: Reginald Fitz in 1986,¹ first described acute appendicitis. Since the acute appendicitis was first described, the pathology remains the most common intra-abdominal condition requiring emergency surgery. The life time risk of having acute appendicitis is about 8%.² Traditionally, the treatment of choice has been surgery.

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recovery is usually uneventful. The overall mortality of OA is around 0.3% and morbidity, about 11%⁶. Despite numerous randomised trials,⁷⁻⁹ several meta-analysis¹⁰⁻¹³ and systematic critical reviews,¹⁴⁻¹⁵ the clear cut winner is unannounced. A sincere effort has been put to understand the different pros and cons of the two methods so that the patient can be benefited.

The vermiform appendix is considered as a vestigial organ; the scientific world also considers it to be a vestigial. Its importance in surgery results only from its propensity for inflammation, which results in the clinical syndrome known as 'acute appendicitis'. As such it is a useless organ and when present creates more problems than benefits. The most common cause of acute abdomen in young adults, children more than three years old is acute appendicitis and, as such, the associated symptoms and signs have become a paradigm for clinical teaching. Appendicitis is sufficiently common that appendicectomy is the most frequently performed urgent abdominal operation and is often the first major procedure performed by a surgeon in training. Even in India the first major procedure that a budding surgeon learns is conducting appendectomy. Advances in modern radiographic imaging especially MRI have improved diagnostic accuracy; however, the diagnosis of appendicitis remains essentially clinical. A well-trained clinician is all that is required to accurately diagnose the condition. The diagnosis requires a mixture of observation, clinical acumen and surgical science and as such it remains an enigmatic challenge and a reminder of the art of clinical and surgical diagnosis.

Not only the humans but also certain anthropoid apes and the wombat contain the vermiform appendix. It is a blind muscular tube like structure with the following layers from inside out: mucosal, submucosal, muscular and serosal layers. Morphologically, it is the undeveloped distal end of the large caecum found in many lower animals. At birth, the appendix is short and broad at its junction with the caecum, but differential growth of the caecum produces the typical tubular structure by about the age of two years. Anatomically, there are a lot of places where the appendix may be present around the caecum. During childhood, continued growth of the caecum commonly rotates the appendix into a retrocaecal but intraperitoneal position. In approximately one quarter of cases, rotation of the appendix does not occur, resulting in the following types: pelvic, subcaecal or paracaecal position. Occasionally, the tip of the appendix becomes extraperitoneal, lying behind the caecum or ascending colon. Rarely, the caecum does not migrate during development to its normal position in the right lower quadrant of the abdomen. In these circumstances, the appendix can be found near the gall bladder or, in the case of intestinal malrotation, in the left iliac fossa, causing diagnostic difficulty if appendicitis develops. No matter where is the situation of appendix, the position of the base of the appendix is constant, being found at the confluence of the three taenia coli of the caecum, which fuse to form the outer longitudinal muscle coat of the appendix. At operation, use can be made of this to find an elusive

appendix, as gentle traction on the Taenia coli, particularly the anterior Taenia, will lead the operator to the base of the appendix. The mesentery of the appendix or mesoappendix arises from the lower surface of the mesentery or the terminal ileum and is itself subject to great variation. Sometimes, as much as the distal one-third of the appendix is bereft of mesoappendix. Especially in childhood, the mesoappendix is so transparent that the contained blood vessels can be seen in many adults, it becomes laden with fat, which obscures these vessels. The appendicular artery, a branch of the lower division of the ileocolic artery, passes behind the terminal ileum to enter the mesoappendix a short distance from the base of the appendix. It then comes to lie in the free border of the mesoappendix. An accessory appendicular artery may be present but, in most people, the appendicular artery is an 'end-artery', thrombosis of which results in necrosis of the appendix. Four, six or more lymphatic channels traverse the mesoappendix to empty into the ileocaecal lymph nodes. The appendix varies considerably in length and circumference. The average length is between 7.5 and 10 cm. The lumen is irregular, being encroached upon by multiple longitudinal folds of mucous membrane lined by columnar cell intestinal mucosa of colonic type Crypts are present, but are not numerous. In the base of the crypts lie argentaffin cells¹⁶ which may give rise to carcinoid tumours, the appendix is the most frequent site for carcinoid tumours, which may present with appendicitis due to occlusion of the appendiceal lumen. The submucosa contains numerous lymphatic aggregations or follicles. While no discernible change in immune function results from appendicectomy, the prominence of lymphatic tissue in the appendix of young adults seems to be important in the aetiology of appendicitis.

Most of the clinical symptoms is due to peritoneal inflammation. While there are isolated reports of perityphlitis from the late 1500s, recognition of acute appendicitis as a clinical entity is attributed to Reginald Fitz, who presented a paper to the first meeting of the Association of American Physicians in 1886 entitled 'Perforating inflammation of the vermiform appendix'. Soon afterwards, Charles McBurney described the clinical manifestations of acute appendicitis including the point of maximum tenderness in the right iliac fossa that now bears his name. The incidence of appendicitis seems to have risen greatly in the first half of the twentieth century, particularly in Europe, America and Australasia, with up to 16 percent of the population undergoing appendicectomy. In the past 30 years, the incidence has fallen dramatically in these countries, such that the individual lifetime risk of appendicectomy is 8.6 and 6.7 per cent among males and females, respectively. Acute appendicitis is relatively rare in infants, and becomes increasingly common in childhood and early adult life, reaching a peak incidence in the teens and early 20s. After middle age, the risk of developing appendicitis is quite small.

The incidence of appendicitis is equal among males and females before puberty. In teenagers and young adults, the male-female ratio increases to 3:2 at age 25; thereafter, the greater incidence in males declines. Despite numerous

randomised trials, several meta-analysis and systematic critical reviews, the clear cut winner is unannounced. A sincere effort has been put to understand the different pros and cons of the two methods so that the patient can be benefited.

AIMS AND OBJECTIVES: The main aim of the study is to find out the pros and cons for each method used in appendicectomy. The following criteria will be studied to find out the pros and cons.

1. The operating time.
2. Intra-operative complications.
3. Post-operative complications.
4. Hospital stay.
5. Cost of the procedure.
6. Late complications.

MATERIALS AND METHODS: One Hundred cases were studied in the Department of Surgery, King George Hospital, Visakhapatnam, Andhra Pradesh From 01-09-2015 to 29-02-2016.

The patients were not divided into different sex.

Out of these, fifty cases underwent open surgery and the rest through laparoscopic surgery.

The first group (Open Surgery) thus consisted of 50 cases and the second group (laparoscopic) consisted of fifty cases.

Inclusion Criteria: Aged between 30 and 50 years. This was done to nullify the age related adjustments that was required.

Exclusion Criteria:

1. Patients with any other complications like diabetes and high blood pressure. Because these diseases are known to divert the course of natural healing processes.
2. Aged <30 and > 50 years.

RESULTS:

	Mean Operating Time	P test
Group 1	88.32 minutes	<0.05
Group 2	62.44 minutes	

Table 1: Mean operating time

	Intra-operative Complication
Group 1	The anesthesia had to be re-infused because of the abnormal position of appendix.
Group 2	NIL

Table 2: Intra-operative complications

	Post-operative complication
Group 1	Pain seen in all 50 patients
Group 2	Pain was very well tolerated in the post-op

Table 3: Post-Operative Complication

	Hospital Stay
Group 1	9 days
Group 2	2 days

Table 4: Hospital Stay

	Mean anaesthesia and analgesics "P Test"
Group 1	<0.05
Group 2	

Table 5: Comparison of Mean Anaesthesia and analgesics

	Cost of the procedure
Group 1	Mean Materials cost: 9200 Rs.
Group 2	Mean materials cost: 26400 Rs.

Table 5: Cost of the procedure

	Late Complications
Group 1	One patient had peritonitis because of slipping of knot.
Group 2	NIL

Table 6: Late Complications

DISCUSSION: There are so many benefits from the minimal invasive surgery or the commonly called laparoscopic procedure. To name a few are minimal surgical trauma, less post-operative pain, rapid post-operative recovery and exploration of entire abdominal cavity, management of unexpected finding and better cosmetic results, with rapid return of activities. Despite all proposed advantage and increasingly popular minimal invasive surgery, it has not yet been demonstrated to have clear advantages over its open counterpart over the past two decades. This may be because of higher cost. The cost may be triple that of the open surgery. On the other hand, in an inexperienced surgeon, this method can be a catastrophe.

In our study, the mean time and mean anaesthesia and analgesics used in laparoscopic procedure was significantly less than open surgery. The complications of anaesthesia and the agents used in anaesthesia will be lowered.

When compared to that of other studies similar results are seen since both the studies have been done in Indian population.¹⁶

Minimal invasive surgery also needs lower dose of anaesthesia and lesser requirement of analgesics with better post-operative outcome. Unlike open surgery, in a laparoscopic surgery a laparoscope is introduced through a port into the peritoneal cavity.

This is insufflated with a novel gas like carbon dioxide to produce a pneumoperitoneum like condition. Further ports are inserted to enable instrument access and their use for dissection. There is little doubt that laparoscopic appendicectomy has revolutionised the surgical

management of inflamed appendix and has become the mainstay of management of uncomplicated appendicitis disease. With improved instrumentation, advanced procedures, such as laparoscopic procedures, previously regarded as controversial, have also become fully accepted. There has been an increasing evidence base showing the short-term benefits of laparoscopic surgery over open surgery with regards to postoperative pain, length of stay, earlier return to normal activities.

CONCLUSION: The best way to operate is the laparoscopic. But the conventional open access surgery has to be used whenever the need arises. The cost effectiveness of the laparoscopic surgery has to be worked out for the better usage of the procedure.

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