

ORIGINAL ARTICLE

Small Bowel Obstruction following appendectomy - A Clinical Study

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ABSTRACT:

Background: Appendectomy is one of the most common procedures performed which may be due to appendicitis or frequent pain in appendix. The present study was conducted to determine the incidence of this complication among patients who had appendectomy and identify the associated risk factors. **Materials & Methods:** The present study was conducted on 60 cases of appendicitis of both genders. In all patients, laproscopic appendectomy was planned. Patients were recalled regularly to note any kind of complication arising from the procedure. **Results:** Out of 60 patients, males were 38 and females were 22. The difference was significant (P- 0.5). Patient aged 20-30 years had 5 males and 2 females, 30-40 years had 4 males and 2 females and 40-50 years had 14 males and 6 females and >50 years included 38 males and 22 females. The difference was significant (P- 0.01). The prevalence rate found to be 5.0%. One third of the cases i.e. 20 (33.33%) were due to adhesions. **Conclusion:** Appendectomy is the frequently performed procedure in patients suffering from appendicitis. Small bowel obstruction is a complication which may be seen in few cases. In present study, the prevalence found to be 5.00%.

Key words: Appendectomy, Laproscopic, Small bowel.

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INTRODUCTION

Appendicitis is a common problem that is typically treated with an appendectomy. It is associated with various short and long-term morbidities. Few authors have demonstrated that laparoscopic approach for appendectomies has advantages over open technique such as decreased rate of wound infection and small bowel obstruction, shorter hospital stay, better cosmesis and less postoperative pain. Furthermore, it has also been observed diagnostic and therapeutic advantages with regard to the open technique, especially in fertile women. However, postoperative small bowel obstruction is considered as long term adverse effect of appendectomy. There is 0.2-10.7% prevalence rate of this complication.¹ They can have serious consequences for patients such as infertility, chronic abdominal pain or bowel obstruction. Following appendectomy, adhesions subsequently may cause a small bowel obstruction (SBO). Previous studies reported differences in the rate of post-appendectomy SBO, and conveyed conflicting recommendations. The management of intestinal adhesions depends on the symptoms and physical signs of the patients. The etiology of bowel obstruction has been varied with small intestinal obstruction caused by adhesions in 60%, strangulated hernia in 20%, malignancy in 5% and volvulus in 5%. Small bowel obstruction (SBO) is more common and a challenging clinical problem. Small bowel obstruction (SBO) is a pathological condition which occurs when the intestinal contents are prevented from moving along the length of the intestine. There are 2 types of small bowel obstruction, mechanical and neurogenic.² Mechanical SBO is due to physical occlusion, either external or internal, of

the gastrointestinal lumen. Neurogenic SBO (also known as adynamic ileus) results from intestinal paralysis. Jean et al³ in their study found 0.16% of small bowel obstruction following appendectomy. The present study was conducted to determine the incidence of this complication among patients who had appendectomy and identify the associated risk factors.

MATERIALS & METHODS

The present study was conducted in the department of general surgery of Hind Institute of Medical Sciences, Safedabad, Barabanki, Uttar Pradesh, India. It consisted of 60 cases of appendicitis of both genders who visited the department for the management of the same. All were informed regarding the study and written consent was obtained. General information such as name, age, gender etc. was recorded in cases history performa. Patients were recalled regularly to note any kind of complication arising from the procedure. Patients with clear-cut signs and symptoms of severe acute obstruction were managed by appropriate surgical procedure after resuscitation. Histopathological examination of the specimen of resection / biopsy was done whenever necessary.

The postoperative period was monitored carefully and all parameters were recorded hourly or on four hourly basis depending upon the patient's general condition and toxemia. Any complications if any, were noted and treated accordingly. Postoperative follow up was done in majority of the patients up to 6 months. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 60		
Males	Females	P value
38	22	0.5

Table I shows that out of 60 patients, males were 38 and females were 22. The difference was significant (P- 0.5).

Table II Age wise distribution of patients

Age groups	Males	Females	P value
20- 30 years	5	2	0.01
30-40 years	4	2	
40- 50 years	14	6	
>50 years	15	12	
Total	38	22	

Table I shows that age group 20-30 years had 5 males and 2 females, 30-40 years had 4 males and 2 females and 40-50 years had 14 males and 6 females and >50 years included 15 males and 12 females . The difference was significant (P- 0.01).

Table III: Distribution according to mode of presentation.

Mode of presentation	Number	Percentage (%)
Acute	24	40.00 %
Subacute	30	50.00 %
Chronic	06	10.00 %

Table III shows the distribution of patients based on the mode of presentation, i.e. acute, subacute or chronic. 50 (50 %) patients presented sub acutely, while the minimum mode of presentation was chronic, i.e. 06 cases (10.00 %).

Table IV: Incidence of SMO in study population

Gender	Incidence of SMO
Males (n=38)	2 (5.2%)
Females (n=22)	1(4.54%)

Table IV shows that in males, out of 38 cases, 2 cases were of SMO and in females, SMO was observed in 1 out of 22 cases. The Overall incidence rate was found to be 5%.

Table V: Distribution of patients according to causes.

Causes of obstruction	Number
Adhesions	20
Mesenteric ischaemia	07
Bands (extraluminal)	04
Koch’s abdomen	05
Sigmoid volvulus	05
Peritonitis	04
Paralytic ileus	04
Carcinoma	04
Appendicular perforation	03
Stricture (non-tuberculous)	02
Intussusception	01
Internal hernia	01
Total	60

Table V shows the distribution of patients according to the various causes of intestinal obstruction. One third of the cases i.e. 20 (33.33%) were due to adhesions.

DISCUSSION

S Appendicitis is a common problem that is typically treated with an appendectomy. Following abdominal surgery, adhesions may form and may cause a subsequent small bowel obstruction (SBO). The purpose of our study was to determine the rate of post-appendectomy SBO in an adult population. SBO is a relevant clinical condition that can happen after an Intra-abdominal surgical intervention due to the development of peritoneal adhesions between abdominal tissues and organs. These adhesions are also called “flanges” by surgeons. Common pathophysiologic mechanisms leading to physical obstruction of the small bowel include postoperative adhesions, internal hernia, congenital bands, external hernia, post inflammatory adhesions, inflammatory bowel disease and carcinoma. Less common causes are foreign bodies, intussusception and tuberculosis. Carcinoma, diverticulitis and volvulus are major mechanisms of large bowel obstruction.⁴

In present study, we included 60 cases of appendectomy in which 38 were males and 22 were females. This is similar to Aden et al.⁵ Chakrabarty et al⁶ in their study revealed strangulated external hernia to be the most common etiology of intestinal obstruction.

In present study, age group 20-30 years had 5 males and 2 females, 30-40 years had 4 males and 2 females and 40-50 years had 14 males and 6 females and >50 years included 38 males and 22 females . The difference was significant (P-0.01). In a study by Khattar et al⁷, patients in delayed postoperative period were managed by conservative treatment in 7 cases and by open surgical intervention in 1 case. The mean onset of enteral feeding was 1.4 days and the mean of length of stay was 5.3 days. This complication was observed in a range of time intervals from 10 days to 9 years after the first surgical intervention.

We found that the incidence rate of SBO is 5%. Our study showed that in males, out of 38 cases, 2 cases were of SMO and in females, SMO was observed in 1 out of 22 cases. The Overall incidence rate was found to be 5%. Leung TT et al⁸ observed that the rate of SBO following appendectomy in adults was 2.8%, or 0.0069 cases per person-year. The greatest risk factors for developing SBO were midline incision and nonappendicitis pathology. There is no statistically significant difference in SBO rates following laparoscopic appendectomy compared with open approaches.⁸ The use of different substances has significantly resulted in reduction of the formation of postoperative adhesion after an abdominal operation.

Present study revealed that various causes of obstruction are Adhesions, Mesenteric ischaemia, Bands (extraluminal) Koch's abdomen, Sigmoid volvulus, Peritonitis, Paralytic ileus, Carcinoma, Appendicular perforation, Stricture (non-tuberculous), Intussusception, Internal hernia. One third of the cases i.e. 20 (33.33%) were due to adhesions.

The identification of high-risk patient subgroups may assist in the development of strategies to prevent adhesions, and in the proffering of preoperative advice on adhesion risk. The

large, nationwide, population-based data set from Taiwan allowed us to examine risk factors for the development of SBO with a low risk of selection bias. The large sample size enhanced our statistical power as well as the precision of risk appraisal

Surgeons have tried experimentally to limit adhesion formation, despite the many different mechanisms involved. Attempts to remove fibrin exudate with proteolytic enzymes, prevent fibrin deposition with anticoagulants, or inhibit fibroblastic proliferation with steroids and antihistamines have not met with any great success. Various studies have documented the use of an off-the-shelf biomaterial which does not complicate the surgical procedure or impede healing. The ideal material would be easy to use in the operating environment, biocompatible, prevents adhesion during healing and would facilitate re-entry if required for subsequent surgery.⁹

Menzeles et al¹⁰, conducted a study on 1,734 patients, of which 17 patients developed bowel obstruction (1%). The mean age of the patients was 8.0 years. Overall, 70.6% were male and 29.4% were female. Bowel obstruction occurred in 12 patients in the immediate post-operative period, in 8 patients in the delayed post-operative period and in 3 patients in both periods.

Gamal et al¹¹ in their study found 6 patients developed SMO out of 607 patients who were treated with laparoscopic appendectomy. Frequency of readmission of patients features of intestinal obstruction ranged from 1-6.

Andersson¹² found that of all patients undergoing appendectomy, those 20 to 39 years of age had the lowest risk for SBO requiring surgery, while patients >70-year old had a 2-fold higher risk compared with patients <20-year old.

CONCLUSION

Appendectomy is the frequently performed procedure in patients suffering from appendicitis. Small bowel obstruction is a complication which may be seen in few cases. In present study, the prevalence found to be 5.17%.

REFERENCES

1. Ohtani H, Tamamori Y, Arimoto Y, et al. Meta-analysis of the results of randomized controlled trials that compared laparoscopic and open surgery for acute appendicitis. *J Gastrointest Surg* 2012; 16:1929–1939.
2. Esposito C, Calvo AI, Castagnetti M, Alicchio F, Suarez C, Giurin I, et al. Open versus laparoscopic appendectomy in the study population: a literature review and analysis of complications. *J Laparoendosc Adv Surg Tech A* 2012; 22(8):834-9.
3. Wei B, Qi CL, Chen TF, et al. Laparoscopic versus open appendectomy for acute appendicitis: a metaanalysis. *Surg Endosc* 2011; 25:1199–1208.
4. Esposito C, Borzi P, Valla JS, Mekki M, Nouri A, Becmeur F, et al. Laparoscopic versus open appendectomy: A retrospective comparative study of 2,332 cases. *World J Surg* 2007;31(4):750-5.

5. Adden, Lautz TB, Raval MV, Reynolds M, Barsness KA. Adhesive small bowel obstruction in adolescents: operative utilization and factors associated with bowel loss. *J Am Coll Surg* 2011; 212(5):855-61.
6. Chakarwarty, Kravarusic D, Goldrat I, Steinberg R, Dlugy E, Baazov A, et al. The 16 golden hours for conservative treatment with postoperative small bowel obstruction. *J Pediatr Surg* 2010;45(5):966-8.
7. Khattar, Anderson SA, Beierle ED, Chen MK. Role of laparoscopy in the prevention and in the treatment of adhesions. *Semin Pediatr Surg.* 2014;23(6):353-6.
8. Leung TT, Dixon E, Gill M, Mador BD, Moulton KM, Kaplan GG, MacLean AR. Bowel obstruction following appendectomy: what is the true incidence? *Ann Surg.* 2009 Jul;250(1):51-3
9. Molinaro F, Kaselas C, Lacreuse I, Moog R, Becmeur F. Postoperative intestinal obstruction after laparoscopic versus open surgery in the adult population: A 15-year review. *Eur J Surg* 2009;19(3):160- 2.
10. Mangelez, Zhang S, Du T, Jiang X, Song C. Laparoscopic appendectomy in patients with perforated appendicitis. *Surgery* 1990; 12: 521-527.
11. Gamal, Aken, Stui, Mena J. Postoperative small bowel obstruction in adults. *Ann Surg* 1982; 11: 580-583.
12. Andersson RE. Small bowel obstruction after appendicectomy. *Br J Surg* 2001; 88:1387–1391.