Original Article

Perforated Appendicitis

Frequency of Perforated Appendicitis Among Patients Subjected to Appendectomy for Acute Appendicitis

Humera Sadaf Bugti, Mehwish Ali, Khushal Khan and Erum Bashir

ABSTRACT

Objective: To determine the frequency of perforated appendicitis among patients subjected to appendectomy for acute appendicitis.

Study Design: Cross sectional / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Surgery, Bolan Medical College, Quetta from June 2018 to December 2018.

Materials and Methods: In this study a total of 195 patients were observed. All patients were subjected to detailed history and examination. Standard pre-operative procedures were adopted. All the surgeries were conducted by single experienced general surgeon fellow of CPSP who was detected presence or absence of perforated appendix. All the above mentioned information including name, age, gender, height, weight, BMI were recorded in the proforma. Exclusion criteria was strictly followed to control effect modifiers and bias in study results.

Results: In this study mean age was 30 years with SD± 12.54. Sixty two percent patients were male and 38% patients were female. Nine percent patients had perforated appendicitis while 91% patients didn't had perforated appendicitis.

Conclusion: Our study concludes that the frequency of perforated appendicitis was 9% among patients subjected to appendectomy for acute appendicitis.

Key Words: Perforated appendicitis, acute, appendicitis.

Citation of article: Bugti HS, Ali M, Khan K, Bashir E. Frequency of Perforated Appendicitis Among Patients Subjected to Appendectomy for Acute Appendicitis. Med Forum 2020;31(1):50-53.

INTRODUCTION

Acute appendicitis is one of the most common emergency conditions in gastroenterology presenting to health care centers with about 250,000 cases in US[1] and 40,000 in England per year[2]. It is the most frequent cause of abdominal pain in all ages and about 10% of abdominal surgerie[3]. A male predominance exist with M:F 1.4:1 respectively[2].

Appendectomy is the surgical treatment for Appendicitis[4], an inflammation of the appendix which is one of the most common surgical emergencies with lifetime risk of 12% for men and 25% for women.[5] The very first appendectomy was performed in 1735 by a surgeon of the English army, Amyan. He performed it without anesthesia to remove a perforated appendix.[4, 6] The surgical procedure for complicated appendicitis (51%)[7]; which include perforated or gangrenous appendicitis with or without localized or disseminated peritonitis, is called the complicated appendectomy.[8]

Other complicated appendicitis includes empyema, abscess formation and fecal peritonitis.[9] The most common complicated appendicitis is perforation of inflamed appendix (31.3%[5] and 14.9%[10]) with high morbidity and mortality worldwide[5] and occurs between the ages of 10 and 30 years.[11]

Acute appendicular inflammation is associated with obstruction in 50-80% of cases, with mainly obstructive causes, but a significant minority of inflamed appendix has no demonstrable luminal obstruction and the pathogenesis remain unknown and the diameter will together interplay with thickness of the organ to determine the probable site or sites of obstruction of this organ[12]. According to the most favored theory, appendicitis is caused by mechanical obstruction of the appendix lumen, either because of fecal stasis, kinking, peritoneal adhesions or infection induced swelling of the mural lymphoid tissue[13].

Optimal management of children with perforated appendicitis continues to be a challenging problem. In patients presenting with long-standing symptoms, particularly with mass or abscess, interval appendectomy (interval AP)—antibiotics at diagnosis with operation delayed weeks or months—has frequently been used. The introduction of powerful broad-spectrum antibiotics made the interval pathway a

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Received: July, 2019
Accepted: November, 2019
Printed: January, 2020

more attractive option and has widened its application to larger groups of patients[14].

The present study is designed to determine the frequency of perforated appendicitis among patients subjected to appendectomy for acute appendicitis. As mentioned earlier, if not operated in time and if remains undiagnosed, the appendix can proceed to further inflammation and ultimately necrosis of the inflamed appendix which adds further gravity to the complications. Moreover, once perforated, the complications rate is even worse due to fecal peritonitis which may be life threatening. This study will provide us the latest and updated information about the local magnitude of perforated appendicitis among patients with acute appendicitis subjected to appendectomy. This updated information will be shared with other health professional and surgeons for up gradation of their knowledge and practice. furthermore this study will also help for future research on perforated appendicitis in patients with acute appendicitis and preventive strategies.

MATERIALS AND METHODS

Between June 2018 and December @018 a cross section (Descriptive) study was carried out in department of surgery, Bolan Medical College, Quetta, after approval from the ethical committee of the institution 195 patients of either 18-85 undergoing emergency open appendectomy were considered eligible for the study. Patient having diabetes on history or having fasting blood sugar more than 126mg (D) on admission and those on steroid for last month were excluded from study. In addition those patients who underwent interval appendectomy for appendicular mass were excluded as well.

All patients were subjected to detailed history and examination. Standard pre-operative procedures were adopted. All the surgeries were conducted by single experienced general surgeon fellow of CPSP who was detected presence or absence of perforated appendix.

All the information including name, age, gender, height, weight, BMI were recorded in the proforma. Exclusion criteria was strictly followed to control effect modifiers and bias in study results.

The data collected was analyzed in SPSS version 22. Mean ± SD were calculated for continuous variable like age, duration of appendicitis, Height, weight, BMI. Frequencies and percentages were calculated for categorical variable like gender and perforated appendix. Perforation was stratified with age, gender, duration of appendicitis, BMI to see the effect modification. Post stratification chi-square test was applied in which P value $\leq$ 0.05 was considered as significant.

RESULTS

In this study age distribution among 195 patients was analyzed as 14(7%) patients were in age range <20 years, 59(30%) patients were in age range 21-30 years, 62(32%) patients were in age range 31-40 years, 41(21%) patients were in age range 41-50 years and 19(10%) patients were in age range 51-65 years. Mean age was 30 years with SD± 12.54.

Gender distribution among 195 patients was analyzed as 121(62%) patients were male while 74(38%) patients were female.

Duration of appendicitis among 195 patients was analyzed as 113(58%) patients had appendicitis <24 hours while 82(42%) patients had appendicitis >24 hours. Mean duration of appendicitis was 24 hours with SD ± 3.95.)

Status of BMI among 195 patients was analyzed as 88(45%) patients had BMI <25 Kg/m^2 while 107(55%) patients had BMI >25 Kg/m^2. Mean BMI was 25 Kg/m^2 with SD ± 5.31.

Perforated appendix among 195 patients was analyzed as 18(9%) patients had perforated appendix while 177(91%) patients didn't had perforated appendix.

DISCUSSION

Acute appendicitis remains a common abdominal emergency throughout the world. The diagnosis of acute appendicitis continues to be difficult due to the variable presentation of the disease and the lack of reliable diagnostic test. Though there are lots of advances in the diagnostic field with the invention of sophisticated investigations diagnosis of acute appendicitis remains an enigma for the attendant surgeon.[15] None of the investigations like USG, CT, NMR can conclusively diagnose appendicitis. Time and again, it has proved that some of the investigations already discussed are costly, time consuming; require more sophisticated equipment and expertise, while some are not feasible and not readily available.[16,17]

So, even today, a thorough clinical examination with basic investigations like WBC count remains cornerstone in the diagnosis of acute appendicitis. With this background many eminent surgeons and physicians have been adopting different scoring systems in order to decrease negative appendectomy. Although there has been some improvement in the diagnosis of acute appendicitis over the past several decades, the percentage of normal appendices reported in various series varies from 8 to 33%.[18,19]

Our study shows that mean age was 30 years with SD± 12.54. Sixty two percent patients were male and 38% patients were female. Nine percent patients had perforated appendicitis while 91% patients didn't had perforated appendicitis.

Similar results were observed in another study conducted by Manan F et al[20] in which A descriptive case series comprised of 200 patients presented with acute appendicitis were studied for observing frequency of perforated appendicitis. Out of 200 patients (sample size), 16 (8%) cases were diagnosed as perforated

appendicitis, gangrenous were found to be 16 (8%) cases, appendicular mass was recorded in 6 (3%) cases and remaining 162 (81%) cases were found to be acutely inflamed.

In another study conducted by Balogun OS et al[21] had reported that The perforation rate in the study was 28.5%. The peak age of presentation was between 21-30 years. Forty-two (71.1%) of the patients under study were males. Only 3 (5.1%) of the cohorts had history of recurrent abdominal pain. Majority of the patients were in the American Society of Anesthesiologists (ASA) II (44.1%) and III (42.4%) categories. Surgical site infections (SSI) (18.6%), wound dehiscence (15.2%) and pelvic abscess (13.5%) were the most common complications. The Incidence of SSI was found to correlate with male gender, (P = 0.041), co-morbidity (P = 0.037) and ASA score (0.03) at 95% confidence interval. Routine use of intraperitoneal drain after surgery for perforated appendicitis did not appear to reduce the incidence of pelvic abscess. No mortality in the studied population.

A retrospective study by Njokuet al[22] on 655 appendectomies revealed 29 cases of perforation giving a perforation rate of 4.4%. Adeyanju and Adebiyi[23] reported perforation rate of 13 (7.2%) of 180 appendectomies. Another retrospective study by Edinoet al.[24] on 142 appendectomies reported 33 cases of appendiceal perforation with a perforation rate of 23.2%. Yeboa[25] in Ghana found 249 cases of appendiceal perforation in 638 appendectomies with a perforation rate of 39%. In another study, the perforation rate was 28.5%.[19]. This is far higher than observed by some researchers in Nigeria and less than the quoted figure from Ghana. This difference may reflect varying pattern of referral and these studies are retrospective.

CONCLUSION

Our study concludes that the frequency of perforated appendicitis was 9% among patients subjected to appendectomy for acute appendicitis.

Author's Contribution:

Concept & Design of Study:	Humera Sadaf Bugti
Drafting:	Mehwish Ali
Data Analysis:	Khushal Khan, Erum Bashir
Revisiting Critically:	Humera Sadaf Bugti, Mehwish Ali
Final Approval of version:	Humera Sadaf Bugti

Conflict of Interest: The study has no conflict of interest to declare by any author.

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