

A tertiary hospital's approach to appendicectomies: the illness picture and surgical techniques at Grey's Hospital in Pietermaritzburg.

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ABSTRACT

Introduction : Acute appendicitis most likely has multiple causes, and if the illness worsens, perforation could happen. The preferred course of treatment is appendicectomy, which is increasingly being carried out laparoscopically.

Objectives : To ascertain the demographic and clinical characteristics of the patients, the most often used surgical technique, the frequency of inaccurate diagnoses, and the relationship between age and gender and perforated appendicitis.

Methods : 196 patients at Grey's Hospital who had an appendix diagnosis within an 18-month period had their medical records reviewed retrospectively. Information was gathered regarding histological results, problems, surgical technique, and demographics.

Results : The mean age of the 196 patients was 21.1 years, with 54% having perforations, and the frequency of severe appendicitis peaked at the oldest ages. There were three different surgical techniques used: laparoscopy (10.7%), Lanz incision (27.6%), and midline laparotomy (61.7%). In 1.5% and 0.84% of instances, respectively, bowel resection with primary anastomosis and stoma creation was performed; in 3.6% of cases, the abdomen was left open. While laparotomy was performed for suspected perforated appendicitis, non-perforated appendicitis was discovered intraoperatively in a limited number of patients who underwent midline laparotomy. In a small number of carefully chosen patients of non-perforated appendicitis, laparoscopic surgery was employed. 9.7% was the total rate of post-operative ICU hospitalization.

Conclusion : Appendicitis with a perforation was present in most instances. Despite the accompanying morbidities, midline laparotomy was the most recommended surgical method. In this tertiary healthcare facility, laparoscopy was the least used technique.

Keywords

Appendicectomy; Appendicitis; Perforated appendix; Surgical approach; Tertiary Hospital.

INTRODUCTION

One of the most frequent causes of stomach pain in both sexes is appendicitis, which often affects younger individuals [1], with regional variations in the gender predominance [1, 2]. The etiology of this illness remains unclear despite the proposal of multiple pathophysiological theories. According to the dietary fiber hypothesis, eating a low-fiber diet may be the cause of the illness. According to the hygiene explanation, the late 19th-century improvements in the water supply and sewage disposal system in Britain increased the number of instances of appendicitis because they reduced children's exposure to intestinal microbes, which changed their immune system's reaction to viral infections.

Appendicitis is diagnosed when there is a temporal progression of acute central abdominal pain that moves to the right lower quadrant, is accompanied by vomiting, a slight temperature that follows, and symptoms of peritoneal irritation [3]. The diagnostic tools are complemented by laboratory inflammatory makers; relying solely on clinical signs leads to a negative appendicectomy rate of 15% or more, particularly in women. Differential diagnosis encompasses a range of gynecological and non-surgical disorders that need to be carefully considered. Delays in diagnosis can lead to increased morbidity, including perforation, and fatality.

The Alvarado scoring system was created using six clinical and two laboratory variables in an effort to increase diagnostic accuracy. The likelihood, possibility, probability, and certainty of the diagnosis of appendicitis are indicated by scores ranging from 0 to 4, 5 to 6, 7 to 8, and 9 to 10 [5]. Computed Tomography (CT) scans and ultrasound are important tools in lowering the greater rate of unsuccessful appendicectomies. The most sensitive and reliable diagnostic technique is the CT scan, yet its specificity is comparable to that of an ultrasound

[6]. A reasonable course of action in situations when there is diagnostic doubt and a low suspicion index of appendicitis is cautious care, which entails hospitalization and active clinical and laboratory observation. In a different study, Kong et al. assessed the expenses associated with treating appendicitis patients in Pietermaritzburg, South Africa's Edendale Hospital, a regional public hospital. They also validated the Alvarado score. Unfortunately, not enough research has been done on the characteristics of appendicitis patients at Grey's Hospital or the surgical treatments they received there. The use of minimally invasive surgery is on the rise, particularly among women, for both therapeutic and diagnostic objectives. The surgical management strategy and result are influenced by the clinical characteristics and patient profile. Furthermore, not much is known about the surgical techniques used in Grey's Hospital. This study is relevant because the data will aid in enhancing patient care and comparing the facility to industry standards and emerging trends.

OBJECTIVES

The study's objectives were to ascertain the age and gender of patients presenting with acute appendicitis at Grey's Hospital, the prevalence of post-operative complications, the prevalence of incorrect diagnosis as indicated by the rate of histologically normal appendices, the demographic and clinical profile of patients treated for appendicitis, and the most common surgical techniques used for appendicectomy.

METHODS

We examined the medical records of 196 patients who underwent appendicitis surgery at Grey's Hospital, a tertiary hospital in Pietermaritzburg, South Africa, between January 2011 and June 2012, as part of a retrospective cross-sectional survey. To verify the accuracy and completeness of the data, registrations from theaters and laboratories were also examined. Demographic information, surgical access, the surgical procedure carried out, complications, histology results, and admission to the intensive care unit (ICU) were among the variables gathered. Before patients at this hospital undergo surgery, a more experienced physician confirms the diagnosis of appendicitis established by junior doctors.

A surgeon, registrar, or skilled medical officer performs an appendicectomy, and postoperative care and monitoring are handled in accordance with established clinical standards that are customized based on each patient's unique clinical presentation. IBM-SPSS version 21 software was used for data analysis after organized data collection sheets were used to gather the data. To ascertain the frequency of particular traits and establish a relationship between the variables, frequency tables, the Chi-square test of independence, and logistic

regression were performed. Relevant Pietermaritzburg Hospitals Complex agencies granted ethical approval for the study and consent to utilize hospital records. Because this was a review of medical records that was done retrospectively, the requirement to acquire informed permission from individual patients was waived. All of the patients had either been released from the hospital.

RESULTS

Upon reviewing the records of 106 patients, 53.1% of them were male patients. Participants ranged in age from 2 to 67 years, with the majority (57.7%) being younger than 20. The mean age of the group was 21.1 years (SD: 12.6 years). The majority of patients had histology results that supported the diagnosis of acute appendicitis, based on the prevalence of the clinical characteristics. The lower midline incision was the most often used surgical technique. The majority of patients were released alive, although three needed colon resection, one died, and 19 were admitted to the intensive care unit. Of the fifteen individuals whose histology report showed a normal appendix,

DISCUSSION

Participants in our study had a mean age that matched findings from other South African studies [2,8,9]. Despite being consistent with the results of previous studies [2,10–13], the sample's male preponderance was not statistically significant ($p = 0.054$). Since 57.7% of the sample consisted of individuals under the age of 20, it appears that appendicitis is more common in younger patients [2,10,12–14]. The large number of younger patients poses a variety of difficulties for the medical staff because it is thought that children's appendices have thin walls and are more likely to perforate, increasing morbidity and/or mortality. Additionally, children are not able to provide a trustworthy history or to comply completely during a physical examination [15, 16]. Other comorbidities including otitis media and upper respiratory infections are frequently present in them media or gastroenteritis, which complicates their clinical picture and delays diagnosis. In older patients, appendicitis causes substantial morbidity and mortality, similar to what happens to children under three years old [17,18]. This study's 54.1% perforation incidence is consistent with the Eastern Cape findings of Roger et al. [19]. As opposed to 6.1% of patients at Prince Mshiyeni Memorial Hospital in Durban, 9.7% of our patients needed to be admitted to the intensive care unit after surgery [12]. The significant incidence of perforated appendicitis (54.1%) provides strong justification for the midline incision preference in 61.7% of cases. As recommended by Ogbonna et al. [20], laparoscopic appendicectomy was performed sparingly in non-perforated

appendices and in situations where a diagnosis was unclear. At Prince Mshiyeni Memorial Hospital, lower midline laparotomies (47.2%) were the most frequently performed incisions gridiron incision (37.3%), laparoscopic surgery or lengthy midline or Lanz incision (5.5%), and the combination of lower midline and football incisions (5.6%) [12]. These findings can point to a high prevalence of complex appendicitis or delayed presentation. Although these numbers align with the findings of this investigation, a research conducted in the United Kingdom found that only 10% of laparotomies were performed openly.

Since the histology discovery of a normal appendix was more common in women, women should be urged to make liberal use of imaging modalities, especially laparoscopic exploration and ultrasound. Larsson et al. [22] demonstrated in a randomized study that using laparoscopy beforehand could lower the negative appendectomy rate from 34% with open appendectomy to 7%. Compared to just 17% of patients who underwent open appendectomy alone, 73% of patients without appendicitis had a conclusive gynecologic diagnosis [22]. According to a study by Blisard et al. [23], there was a noticeable decrease in the rate of negative appendectomy in women, from 31% to 23%, following the implementation of a clinical guideline suggesting laparoscopic usage prior to open laparotomy. Laparotomy is gradually being supplanted by laparoscopic surgery and diagnosis.

The appendix can be located wherever it may be thanks to laparoscopy. Similar to an open procedure, a laparoscopic appendectomy allows for visualization of the appendix and, in the event that it is aberrant, allows for an appendectomy. A laparoscopic appendectomy is a more technically complex procedure, but it has a reduced rate of wound infection and may enable a faster return to normal activities [24]. A low skin [12] and 2, 12, 13 crease incision (Lanz incision) is preferred nowadays over the higher and more oblique one centered on McBurney's point because it provides a superior cosmetic result in the absence of perforation and laparoscopic equipment. However, not everyone agrees that laparoscopic appendectomy is superior than open surgery. According to a Cochrane systematic review, persons who undergo laparoscopic appendectomy instead of open surgery had shorter hospital stays, less wound infections, less pain following surgery, and a quicker return to work. Following laparoscopic surgery, there were more intra-abdominal abscesses, according to the same review [25]. A recent assessment, however, found no discernible differences between the two treatments, with the exception of the laparoscopic group's superior quality of life scores at two weeks. In their evaluation of post-operative complications following laparoscopic surgery for difficult appendicitis, Kiriakopoulos et al. could not find any cases of wound sepsis or intra-abdominal abscesses.

Given that the conversion rate to open surgery was just 4.8%, Appendicitis can be classified as normal, uncomplicated acute, or complex (perforated and/or gangrenous appendicitis and/or peri-appendicular abscess) during surgery [24]. 4.1% were gangrenous, 3.6% had symptoms of peri-appendicitis, 7.7% were normal, and 59.7% had features of acute appendicitis out of the 196 specimens submitted for histology. Even though histological results were unavailable for 20.4% of the cases, the negative appendectomy rate (7.7%) was in line with comparable African studies [2,12,13]. Eleven patients (73.3%) out of the 15 with normal appendices were female. This emphasizes the significance of gynecological causes of localized or widespread stomach aches being ruled out with a pre-surgical laparoscopic diagnostic in women. A study conducted in Nigeria discovered that women were more likely to receive the wrong diagnosis.

The majority of patients (94.9%) underwent an appendectomy alone; the remaining 3.6% and 1.5% underwent an appendectomy together with intestinal resection or with the abdomen left open, respectively. These numbers show that the inflammation was mostly contained to the appendix in most cases, indicating that laparoscopic surgery would have been beneficial in the majority of these patients. The decision to choose laparoscopic surgery may have been influenced by the preferences and/or incompetence of the surgeon. 26 patients (13.7%) experienced post-operative problems; 21 (10.7%) required a re-laparotomy, four (2%) had wound sepsis, two (1%) needed a re-laparotomy, and one (0.5%) passed away. 1.2% of patients at Prince Mshiyeni Memorial Hospital were deceased. In this investigation, the rate of post-operative infections (2%) was considerably lower than the results found in a rural hospital in Kenya (25.3%) and a Durban hospital.

Limitations of the study

Similar to any retrospective chart review, the results might have been impacted by inadequate data in certain medical records. For instance, in 20.4% of the cases, the histology results were not available. Cases that were sent to the operating room for a gynecologic diagnosis but were later diagnosed with appendicitis were excluded from the study because they may have had a Pfannenstiel incision.

CONCLUSION

Midline laparotomy is the recommended surgical access since most of the patients under consideration present late with perforated appendicitis, even if there is a risk of increased morbidity. In cases of probable appendicitis, this tertiary institution's surgeons need to be encouraged to do minimally invasive surgery and their skills in this area need to be developed. With 73.3% of patients having a normal

appendix, the study has confirmed the challenges in correctly diagnosing women. The incidence of negative laparotomy, particularly in women, may be decreased by the prudent use of laparoscopy as a diagnostic and therapeutic technique.

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