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Interval Appendectomy Operative vs. Non-Operative Management of Appendicitis in Saudi Arabia

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ABSTRACT

The goal of this review is to analyze the perfect mechanism for managing acute appendicitis. Both surgical and non-operative approaches are in contention as the best remedies for the appendix complications. To draw a better comparative analysis, the strengths and weaknesses of each proposed mechanism are analyzed. In the Kingdom of Saudi Arabia (KSA), both immediate and interval surgical procedure remain debatable as best remedies for acute appendicitis. To determine the suitability of both immediate and interval appendectomy against non-operative management in KSA, vast literature is analyzed to portray the strengths of each medical maneuver.

Background: The primary objective of appendicitis management is to ensure early diagnosis and prevent operative management, which is risky and costly [1]. However, this goal has remained elusive due to delayed diagnosis, a characteristic that is prevalent for most people. In an analysis concerning the changing trends of appendicitis management over the past 30 years, surgery is not the only remedy for appendicitis patients [2]. Some individuals, as exhibited by numerous studies, have been able to recover without the need for surgical procedures, currently conceptualized as appendectomy. However, concentrating on the analysis by a number of scholars, it becomes evident that some delayed attention to symptoms, mainly due to patient's ignorance, makes appendectomy inevitable. As such, the most common cause of abdominal surgical emergency is appendicitis [3]. Narrowing down to the ground situation in America, not much difference is exhibited. Appendectomy remains the most significant tool at the physicians disposal when faced with relatable appendicitis dilemmas. By the time patients seek medical attention, it is already late, an aspect that motivates physicians to put into use prompt surgical procedures.

The growing attention to appendicitis management is proportional to its prevalence rate. Appendicitis accounts for approximately 40,000 hospital admissions each year in England [2]. Similarly, early studies performed by English medical scholars indicated that close to 150 people from England and Wales die from acute appendicitis [4]. The prevalence rate of appendix complications is approximately seven to eight percent of the global population. Regardless of the advanced diagnostic and surgical technology, morbidity of the complication is 10%, and the mortality rate is between 1% and 5%. Despite its high prevalence, acute appendicitis is decreasing the in the US and the European region while proportionally increasing in the developing countries, mainly due to changing lifestyles [5,6,7].Consequently, a histopathological study on KSA in 2015 revealed that diagnosis rate of acute appendicitis was 52% while acute suppurative, acute gangrenous appendicitis and acute perforated appendicitis remained at 28%, 12.5% and 2% respectively [8]. However, it is important to acknowledge that the study was limited to one geographical area, but scientifically, the figures represent a consistent pattern. Significantly, the prevalence rate of subhepatic acute appendicitis accounted for 0.054% of Saudi Arabia's hospital population [9]. With much research being carried on the best way of handling appendicitis, this next segment of the review covers a summary of current research's perception concerning the effective medical procedure (operative vs. non-operative). The summary section is not conclusive but rather shows a sample of analyses approaching the best way of handling appendix complications in the general population.

Methods:A review of the literature was made using the most common electronic sources including: electronic database, EMBASE, MEDLINE search using

Keywords: Appenedectomy interval, Appendicitis, Appendiceal mass, Phlegmon and Saudi Arabia. The major outcomes gained were related with the different approaches associated with appendicitis

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surgeries to find out possible predictive factors for the comparing between the medical and the surgical approach.

INTRODUCTION

A number of scholars analyze whether it is safe to delay appendectomy in adults with acute appendicitis [10]. Prompt surgical approach by physicians when visited by patients with the complication in question has remained a highly debatable topic. Should physicians perform prompt appendectomy despite the current evidence establishing that not all cases need such an invasive approach? The coverage by the scholars shows that it is not safe to do so. Based on the available pool of research, especially in cases of acute appendicitis in adults; the risk of appendix disease advancing into dangerous pathological and postoperative complications increases proportionally with time. To avoid such chronic development, experts root for a prompt appendectomy. The justification for this is because controlling delayed diagnosis or seeking of medical help from the general population is almost impossible. Most victims often ignore symptoms and by the time they visit a hospital; it is already late making appendectomy a necessary evil.

DISCUSSION

According to Bristow [4], the best way to manage appendicitis is an appendectomy (p.35). This surgical procedure has always been favored because of its ability to reduce morbidity and mortality rates. However, using the support of the vast research already carried out on the issue, it is advisable that each situation should be treated according to its severity. There are cases (approximately 20%) where patients have undergone prompt appendectomy only to be found that they have normal appendices. This is regardless of the fact that technological diagnostic tools are used. As such, experts do not rule out antibiotic therapy as an effective replacement of the operative procedure (which is not always accurate).

In a recent study carried out in 2015, management of acute appendicitis remains a significant issue regardless of the ever advancing technology [11]. The only technological advantage manifested is the ease of diagnosis. Currently, complicated appendicitis can be distinguished from non-complicated appendicitis using computed tomography (CT) and ultrasound (US). However, the debate between operative and operative treatment continues to rage on. Using definitive studies accomplished by some scholars, research shows that antibiotic therapy has proven to be effective showing, only a dismal fair rate, contrary to the traditional conceptualization. The antibiotic therapy is only used for acute non-complicated appendicitis, and its high success rate eliminates the costly need of appendectomy. However, it is still relevant in cases where recurrence happens after the antibiotic therapy. As such, for managing all acute complicated appendicitis cases, some medical experts show that it is inevitable to avoid appendectomy.

In a study further conceptualization of the existing appendix complications, appendiceal mass is regarded as an acute appendicitis. As such, its management also remains a subject of the debate whether non-operative management is efficient compared to the appendectomy. According to a group of certain researchers, the analysis of various appendicitis management techniques left them to conclude that non-operative management is effective, only to be supplemented by interval appendectomy when failure is exhibited [11]. Significantly, further exploration of the subject issue indicates that appendiceal mass accounts for only 10 percent of patients with acute appendicitis [13]. Based on the identified research, the use of surgery in management of the appendix complication is still controversial given the rate of negative appendectomy. This became evident when in 2011; further analysis by the same scholar set out to determine whether interval appendectomy in the management of appendiceal mass is an outdated medical technique [14]. The same issue is also appreciated by a vast majority of researchers who acknowledged that the efficiency of the conservative non-operative methods is displacing the need of subsequent appendectomy after the initial therapy. The underlying notion is that after an antibiotic therapy has been administered and success determined, there is no need of physicians to continue with surgical

procedures as it has performed traditionally [15]. In a relatable study concerning perforated appendicitis and Phlegmon, more evidence points towards the use of conservative antibiotic therapy [16]. While this continues to be the case, the pace of appendectomy in the traditional management of appendicitis continues to generate debate from a number of scholars.

Conceptualizing arguments presented by numerous studies [17], it is significant that both operative and non-operative procedures matter in the topic of appendicitis management. While non-operative management is only limited to acute non-complicated appendicitis, an appendectomy can be useful in both situations, but is it worth the risk? The summary of the above studies has synoptically tackled the effectiveness of each procedure. As such, the subsequent review puts into perspective the suitability of each management mode, putting into perspective the quality of patient outcome.

Operative Management of Appendicitis

Prompt and interval appendectomy represent the available operative means of managing acute appendicitis in both children and adults. Based on the current literature covering appendicitis management, interval appendectomy is mostly preferred in case of appendiceal mass [18]. This because after the antibiotic therapy, interval appendectomy has been traditionally performed as a procedure to ensure that there is no chance for further pathological complications. In addition to this, appendiceal mass is proven to be acute complicated appendicitis, meaning that it is less likely to be managed effectively through non-operative therapy. However, one aspect that has been presented by the vast majority of scholars is the credibility of interval appendectomy, especially after the patient has been subjected through the conservative (non-invasive) therapy method. To widen the scope of the issue, analysts showed that it's not only interval appendectomy that raises controversies but also prompt surgery, procedures that have become a familiar occurrence in most emergency rooms. The agenda of one of the scholars was to determine the rate of negative appendectomy carried out at King Khalid University Hospital, Riyadh, Saudi Arabia. The study only concentrated on the risks of immediate appendectomy, and after a scrutiny of 585 patients, 9.2% were found to have their normal appendices removed. This is regardless of the fact that, of the 54 patients who underwent negative appendectomy, only 5.5% had undergone CT and 3.7% had diagnostic laparoscopy [19].

In a relatable analysis, the agenda was to scrutinize the rate of appendectomies in the period from January 2003 to January 2004 at King Abdul-Aziz University Hospital, Jeddah, Saudi Arabia. Out of the total study sample of 124 females, results showed that the negative appendectomy rate was at 27.2% [20]. The blame was pointed to the current diagnostic tools, which apparently were not effective in showing the appropriate condition of the appendix. Similarly, a study carried out in 2006 analyzed 2660 appendectomy specimens obtained from 1997 to 2003. Of the total study sample, negative appendectomy rate was found to be 28.8%, with women being more affected [21]. In addition to these studies that were limited to certain geographical regions, more so in Saudi Arabia, the high rate of negative appendectomy exhibited in women is also confirmed to a global issue [22]. Despite all these scholars showing evidence of the high rate of negative appendectomy, the blame as previously acknowledged is pointed towards the inefficiency of the available diagnostic tools, mainly CT and ultrasound. A specific study dedicated in examining the issue exhibits that the prevalence of CT as a diagnostic tool is subsequently increasing. However, its viability in accomplishing accurate diagnosis, as exhibited by the high rate of negative appendectomies, remains questionable [23]. To expand further on the existing controversy, another group of researchers indicated that CT scans may prove to be of less help in reducing the negative appendectomy rate in children [24]. Therefore, after a number of studies pointing out the existing gaps, does this mean that appendectomy is valid in the management of appendicitis, more than the antibiotic therapy?

A perfect response to the prevailing discrepancy concerning the effectiveness of appendectomy is given by an early group of pro-appendectomy scholars [25]. Based on their advanced analysis, appendectomy remains

relatively significant as it is effective in the same capacity the non-operative management approach is. With no major cost differences between the two methods, evidence shows that appendectomy remains superior because it's the only option 'to complete the job' after a non-operative procedure has failed. However, for the scholars who are not in favor of the surgical procedure, there is no need for selective or interval appendectomy once the traditional mode of management has proven to be effective in treating appendiceal mass [26]. The controversy of interval appendectomy, unlike prompt surgery, stems from the fact that it is mandated to sequentially follow a procedure that has proven to be effective in certain circumstances. As such, the avoidance of negative perceptions concerning interval operative management of appendicitis as reflected by vast research evidence is to make sure that it is only used when non-operative management has failed. The failure of the conservative management is exhibited through appendicitis recurrence.

In comparing the effectiveness of the two variations of surgical procedures, the perfect choice is interval appendectomy over a prompt surgery, more so in the treatment of perforated appendix with abscess [27]. The choice for interval appendectomy, which is performed within the first four months of diagnosis, is to allocate time for the non-operative management. Regardless of this conceptualization and other relatable controversies surrounding the surgical medical maneuver, other scholars still indicate that neither immediate nor interval appendectomy can be ignored completely. In subsequent studies of appendiceal mass management in children, available evidence shows that despite antibiotic therapy being performed first, it is still necessary that interval appendectomy is performed [28,29]. Similar thoughts are held by some early scholars who indicate that the management of perforated appendicitis cannot be effectively completed without interval appendicitis [30]. To prove wrong skeptics, a number of scholars performed a histopathologic analysis of interval appendectomy specimens. Their main conclusion was that after antibiotic therapy showing incidents of recurrence, interval appendectomy remains relevant in appendicitis management [31].

Non-operative Management of Appendicitis

One of the pressing questions for most medical scholars is whether acute appendicitis can be effectively treated with the sole use of antibiotics. Amidst emergency appendectomy and interval surgical incisions being the standard care of acute appendicitis, evidence showed that non-operative procedures such as antibiotic therapy still have a place in the cure of relatable appendix complications. Evidence from a study performed in 2009 showed that besides antibiotic therapy being effective, it is presumably safe and cost effective. In response to the pro-appendectomy medical scholars, the comparative study carried out proved that by eliminating appendicitis recurrence through effective antibiotic therapy, non-operative management safety remains a surety while antibiotics account for only minimal medical expenses that are required [32]. By reflecting on the conceptualization of the previous studies covered above, antibiotic therapy is gaining popularity, against the performance discrepancy linked to the operative procedures.

To prove that feasibility of non-operative management of acute appendicitis without resorting to the surgical procedures, there exists a pool of studies that provide strong evidence of its success. One of the studies achieved a comparative scrutiny of appendectomy against antibiotic therapy. Although the study was limited by its low quality generally, the aspect of significance shows non-operative management to be effective in the cure of complicated cases of appendicitis [33]. To contribute to the existing literature, some of the scholars who support non-operative management move forward to determine the effectiveness of antibiotics as the sole remedy of acute appendicitis. Through examining a number of patients that were solely treated by antibiotics, it is clear that antibiotic therapy showed efficiency on the same level with appendectomy but with lower risks [34]. By eliminating the factor of recurrence, the non-operative management remains the best option to handle acute appendicitis. In subsequent studies, it is evident that antibiotics in

appendicitis management continue to be needed during both pre and post-operation [35]. In furthering their argument, pro-conservative scholars move ahead to acknowledge that there are instances where antibiotics alone are effective in treating perforated appendices. However, they also acknowledge the fact that non-operative procedures confer a high rate of recurrence. As such, appendectomy should be used only as an alternative when the conservative approach has failed. Consequently, several studies exhibited that antibiotics are only efficient if they are used in the primary treatment of acute non-complicated appendicitis [36].

CONCLUSION

Given the significant amount of literature reviewed initially, it is evident that no medical management procedure can be preferred over the other. The only trick into eliminating controversies, with appendectomy is to make sure that each style is used appropriately. The vast amount of diagnostic tools does not help much in the diagnosis of appendicitis. As such, doctors need not to rely solely on technological tools but also make use of clinical diagnosis. When it comes down to selecting the perfect mode of appendicitis management, the most recommended action is for either prompt or interval appendectomy for acute complicated appendicitis and antibiotic therapy for acute non-complicated therapy. Regardless of exhibiting a significant rate of negative appendectomies, the non-operative management also shares the same risk through the recurrence of appendicitis. However, the risks of the latter are less and insignificant when compared to the surgical procedure. For instance, a 2012 study concerning the management of appendiceal abscess in Central Saudi Arabia shows that non-operative management is preferred because of fewer complications and shorter hospital stays [37]. However, this does not eliminate the need for interval appendectomy in KSA. With the possibility of recurrence remaining high after antibiotic therapy, medical practitioners still need to practice interval appendectomy for effective appendicitis management. To eliminate the current controversy of which management technique is effective, extensive literature approves that non-operative management should only be limited to acute non-complicated appendicitis while the operative management should be limited to acute complicated cases. In adhering to these postulations, KSA will limit the downsides of each management technique while minimizing morbidity and mortality rates.

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