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Chapter 11

Incidental Appendectomy: An Update on Current Management - Review

Kumar Hari Rajah[1*]

[1]*Department of Surgery, School of Medicine, Faculty of Health and Medical Science, Taylor University, 47500 Subang Jaya, Malaysia.*

Abstract

The practice of incidental appendectomy has long been a subject of debate regarding its necessity. The procedure is associated with low morbidity and mortality rates, and it facilitates histological examination to identify any pathological abnormalities. The advent of laparoscopic surgery has further prompted surgeons to reconsider the advisability of performing an incidental appendectomy. In this chapter, we examine the current indications, patient demographics, and types of surgeries in which incidental appendectomy is undertaken.

Keywords: Incidental Appendectomy, Prophylactic Appendectomy, Normal Appendix, Laparoscopic Appendectomy.

1. Introduction

Incidental appendectomy refers to the surgical removal of a normal appendix during an operation for an unrelated condition, distinct from acute appendicitis. This procedure is frequently performed in women undergoing gynecological surgeries, such as abdominal hysterectomy and salpingo-oophorectomy. The incidence of incidental appendectomy is 12 times higher in women aged 33 to 48 years compared to men. Some surgeons advocate for this procedure due to its ease of execution, low complication rates, and the elimination of future risk of acute appendicitis. It is important to differentiate an incidental appendectomy from a prophylactic appendectomy, where a normal appendix is removed in the absence of any other intra-abdominal pathology [1, 2].

The World Society of Emergency Surgeons (WSES) advocates for the excision of an appendix that appears normal during surgical procedures when no other abdominal pathology is identified. Similarly, the European Association of Endoscopic Surgeons (EAES) endorses the removal of a normal-appearing appendix during surgery [3, 4]. The decision to perform an incidental appendectomy remains a subject of debate, with some proponents advocating for its implementation in young patients undergoing specific gynecological and pediatric surgical procedures. Factors influencing this decision include the lifetime risk of developing acute appendicitis, the functional role and utility of the appendix, and the histological characteristics of the excised appendix. It is reported to be cost-effective in young patients; however, the indication for incidental appendectomy requires careful evaluation [5]. The advent of laparoscopic surgery has facilitated the performance of incidental appendectomies. This procedure is associated with reduced postoperative complications and shorter hospital stays. Additionally, it is cost-effective in mitigating the risk of future appendicitis [6].

At present, there is no standardized consensus regarding the management of appendicular mass. In this chapter, we explore the various management strategies available. We conducted a comprehensive literature review utilizing PUBMED, the Cochrane Database of Clinical Reviews, and Google Scholar, focusing on clinical trials, observational studies, cohort studies, systematic reviews, and meta-analyses published between 1990 and 2025. The search employed the following keywords: “Incidental appendectomy,” “Prophylactic appendectomy,” “White appendix,” and “Laparoscopic appendectomy.” All selected articles were in the English language. Additional articles were identified through manual cross-referencing of the literature. We excluded case reports, studies with fewer than 10 patients, and editorials from our review.

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2. Discussion

2.1. Incidental Appendectomy during gynecological surgeries

Benoit et al. conducted a retrospective evaluation of the feasibility of interval appendectomy performed during gynecological surgeries [7]. In total, 1,876 appendectomies were carried out on patients undergoing gynecological procedures, with 82% of these cases executed laparoscopically. Appendiceal pathology was observed in 11.8% of the cases. The study reported no complications attributable to the appendectomy, concluding that incidental appendectomy is a safe and feasible option in complex gynecological surgeries [7]. Similarly, a retrospective series by [8] examined 71 appendectomies performed on patients presenting with endometriosis, pelvic mass, or pain. Abnormal pathology was identified in 59% of the appendiceal specimens, with endometriosis being the most prevalent condition among the patients. No complications related to the appendectomy were reported, supporting the role of incidental appendectomy in such clinical scenarios [8].

A retrospective analysis was conducted on 257 incidental appendectomies performed in patients undergoing total laparoscopic hysterectomies. The findings indicated an absence of complications attributable to the appendectomy, with only 9% of the appendectomy specimens exhibiting abnormal pathology. The study concluded that incidental appendectomy is a safe procedure and should be considered for patients undergoing elective gynecological surgeries [7]. In a separate study by [9] involving 772 patients who underwent laparoscopic appendectomy for incidental appendectomy, the postoperative complication rate was low, and there was no observed increase in hospital stay duration or associated costs. This study also concluded that an incidental appendectomy should be performed in female patients [9].

The effectiveness of incidental appendectomy was assessed by [10]. In patients undergoing laparoscopic surgery for ovarian endometrioma. Among the 106 patients who underwent incidental appendectomy, histological analysis revealed lymphoid hyperplasia in 34.9% and endometriosis in 11.3% of cases. The study concluded that patients scheduled for endometriosis surgery should be counseled regarding appendectomy, even in the absence of clinical symptoms or when the appendix appears grossly normal [10]. A review by [11] on appendiceal endometriosis found that this condition was present in 7.23% of incidental appendectomy specimens from patients who underwent laparoscopy for gynecological surgery.

This review concluded that incidental appendectomy is safe and not associated with complications [11]. The role of diagnostic laparoscopy in managing gynecological conditions in women was evaluated by [12] who conducted a prospective study involving 235 patients. The study reported low postoperative morbidity and mortality, confirming the significance of incidental appendectomy in preventing recurrence [12].

Badiner et al. conducted a retrospective analysis involving 513 patients who underwent laparotomy for gynecological conditions. Among these, 196 patients received an appendectomy, while 344 did not. The study found no significant differences between the groups in terms of postoperative complications, analgesic usage, or length of hospital stay. Notably, histological evaluation revealed that 70% of the 196 patients who underwent incidental appendectomy exhibited abnormalities in the appendix specimen. This study underscores the potential significance of performing an incidental appendectomy during laparotomy for gynecological surgeries [13].

2.2. Incidental appendectomy during other surgeries

The role of interval appendectomy in the surgical management of ileocolic intussusception was retrospectively analyzed by [14] in a cohort of 101 patients who underwent bowel resection. Of these, 77 patients received an incidental appendectomy, while 24 did not. The study found no significant differences in postoperative complications, recurrence rates, or duration of hospital stay between the two groups. The findings suggest that incidental appendectomy is a safe procedure and effectively mitigates the lifetime risk of acute appendicitis [14, 15] conducted a retrospective study examining the practice of incidental appendectomy during the surgical management of intussusception in pediatric patients. The study involved 30 patients who underwent interval appendectomy, resulting in prolonged operative times and increased costs. Consequently, the study concluded that further research is necessary to evaluate the efficacy of this practice [15].

A systematic review conducted by [16]. on the clinical outcomes of incidental appendectomy concluded that the procedure is generally safe; however, it may be associated with long-term complications such as adhesions. Patients must be thoroughly informed of all potential risks and benefits associated with undergoing an incidental appendectomy [16]. Additionally, a systematic review by [17] regarding the indication for incidental appendectomy during pediatric surgical procedures revealed that such procedures are often unnecessary. The decision to perform an incidental appendectomy should be meticulously evaluated in the context of the patient's diagnosis, medical history, and the risk of developing acute appendicitis [17].

Wang et al. conducted a retrospective study examining the efficacy of prophylactic appendectomy in obese patients undergoing abdominal surgeries. The study included a total of 121 patients and found no significant increase in operating time. Postoperative infection rates were low, suggesting that prophylactic appendectomy may be performed to prevent recurrence [18]. Incidental appendectomy has been recommended during transplant surgeries, such as pancreatic transplants, as it mitigates the risk of acute appendicitis and reduces the likelihood of graft loss and mortality. This is particularly important given the surgical challenges and the heightened risk of graft infection in transplant patients who develop acute appendicitis [19].

Gupta et al. conducted a prospective assessment of the role of incidental appendectomy during radical cystectomy, concluding that it is unnecessary. This finding was corroborated by a survey conducted by [20] among urologists in the United States, which revealed that the majority did not perform incidental appendectomy during radical cystectomy. Additionally, a retrospective study by [21]. on the indications for incidental appendectomy in the context of radical cystectomy demonstrated no benefit from the procedure. Collectively, the results from these three studies indicate that incidental appendectomy is not warranted during radical cystectomy [20–22].

Several studies advocate for the performance of an incidental appendectomy. [23] evaluated this procedure during robotic-assisted laparoscopic prostatectomy, concluding that incidental appendectomy may be considered due to its association with reduced complications and the elimination of future appendicitis risk [23]. Similarly, [24] investigated the role of incidental appendectomy in colorectal cancer surgery through a retrospective study involving 380 patients. The findings indicated that an incidental appendectomy was performed without complications and incurred negligible costs, suggesting its safety and efficacy in preventing future complications [24].

2.3. Histopathological examination of the incidental appendectomy specimen

Birua et al. conducted an observational study examining the histopathological characteristics of incidental appendectomy specimens in patients who had undergone laparotomy. The findings revealed that 74% of the specimens exhibited normal macroscopic appearances, while 82% were normal upon microscopic examination. Conversely, 26% of the cases demonstrated macroscopic features indicative of inflammation, fibrosis, luminal obstruction, and the presence of fecaliths. These results substantiate the recommendation for performing incidental appendectomies in patients undergoing surgery for other conditions, such as gynecological, urological, and various other procedures [25].

Akbulut et al. conducted a retrospective analysis of histopathological specimens from 72 patients who underwent incidental appendectomy during liver transplant surgery. The results indicated that 72.2% of the specimens were normal, 9.7% exhibited fibrous obstruction, and 6.9% showed acute appendicitis. These findings were contrasted with those from patients diagnosed with acute appendicitis, where only 6.3% of the histological findings were normal. The study suggests that performing an incidental appendectomy during major surgical procedures may be advisable [26].

A retrospective study conducted by [27] assessed the histopathological findings in patients who had undergone appendectomies. Among the 190 appendectomy specimens analyzed, 58.2% of female patients exhibited a macroscopically normal appendix, in contrast to 28.8% of male patients. Further examination of the specimens from female patients revealed that up to 50% presented with additional pathologies, such as serositis, luminal inflammation, and lymphoid hyperplasia. The study concluded that an incidental appendectomy should be considered for female patients undergoing other surgical procedures [27].

Jones et al. underscored the significance of histological evaluation of appendectomy specimens in their retrospective study, which assessed 1,225 specimens. The findings revealed that 77% exhibited characteristics of acute appendicitis, while 23% were deemed normal. Notably, 16% of the normal specimens displayed atypical histological features, such as endometriosis, luminal obstruction, and chronic inflammation. This study emphasizes the critical role of histological examination in the assessment of appendectomy specimens [28].

Tartaglia et al. conducted a retrospective evaluation of the microscopic characteristics of incidental appendectomy specimens in patients who had undergone diagnostic laparoscopy for abdominal pain, where the appendix appeared normal. The study found that 76% of the appendix specimens exhibited microscopic signs of inflammation, while a normal appearance was observed in only 24% of the cases. Given that morbidity was present in only 2% of the cases, the authors suggest that an incidental appendectomy should be performed during diagnostic laparoscopy [29, 30] also retrospectively assessed the histopathology of incidental appendectomy specimens. In their study, 129 specimens were evaluated, revealing that up to 58.1% showed abnormal pathology, with acute inflammation being the most prevalent pathology identified. This study underscores the significance of performing an incidental appendectomy [30].

2.4. The use of the appendix during reconstructive surgery

There is a rationale for refraining from performing an incidental appendectomy, as the appendix can be utilized in specific surgical procedures. Notably, the Mitrofanoff procedure involves tunneling the appendix subcutaneously to the bladder and exteriorizing it onto the anterior abdominal wall. This procedure is commonly performed on pediatric patients with neuropathic bladders and represents one of the primary clinical applications of the appendix. Additionally, the histological assessment of the appendix specimen is crucial when undertaking this procedure [31, 32]. Furthermore, the appendix may serve as a graft for ureteral interposition in both the upper and lower ureter in pediatric patients, particularly in cases where ureteroureterostomy is not feasible. Additionally, in pediatric patients with a neurogenic bladder, an appendicovesicostomy can be performed to facilitate urinary catheterization [33, 34].

2.5. The cost-effectiveness of interval appendectomy

Albright et al. conducted a retrospective analysis to evaluate the cost-effectiveness of interval appendectomy during various abdominal surgeries. The study encompassed 341 patients who underwent interval appendectomy. The findings indicated a cost-benefit for patients over the age of 45 years with benign disease and for those over 50 years with malignant disease. It was determined that an interval appendectomy can be performed safely without incurring additional cost reimbursement for the surgeon [35–37] reviewed the incidence and cost of incidental appendectomy as a preventive measure against future acute appendicitis. Both studies concluded that incidental appendectomy is cost-effective in younger patients [36, 37].

3. Conclusion

Current evidence suggests that the practice of incidental appendectomy is gradually being discontinued, with an increasing number of surgeons choosing not to perform this procedure. Although the risk of developing acute appendicitis and postoperative infections is low, it has been proposed that incidental appendectomy may be considered for patients aged 30 to 50 years. It is not recommended to routinely perform an incidental appendectomy in all patients undergoing laparotomy. The decision to undertake an incidental appendectomy should be informed by the patient's age, diagnosis, and comorbidities. The advent of laparoscopy has facilitated the visualization of the appendix, allowing for a more informed decision regarding the necessity of an incidental appendectomy. The reduced morbidity, shorter hospital stay and decreased postoperative pain associated with laparoscopic incidental appendectomy have made it a preferred option among surgeons. In the case of young female patients, performing an incidental appendectomy is advisable to prevent future episodes of appendicitis.

Article Information

Conflict of interest: There is no conflict of interest.

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