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Original Research Article

Clinical Profile and Surgical Outcomes of Children with Post-Appendicectomy Right Iliac Fossa Pain

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Abstract

Background: Post-Appendicectomy abdominal pain in right iliac fossa can be due to multiple causes including adhesive intestinal obstruction and Stump appendicitis. The predisposing factors include perforated appendicitis, a previous incomplete Appendicectomy with subsequent infection and inflammation of the appendicular stump.

Methods: A retrospective review of the medical records of the children admitted with post- Appendicectomy abdominal pain and operated for causes including intestinal obstruction stump appendicitis at our institution between January 2016 and December 2022 was performed.

Results: A total of 28 patients were admitted with post-Appendicectomy abdominal pain and 14 patients underwent surgery. Five patients underwent surgery for stump appendicitis and nine children underwent surgery for adhesive intestinal obstruction. The remaining 14 patients were managed conservatively. All the patients underwent a preoperative CT abdomen. Out of the five patients operated for stump appendicitis, four of them had previous laparoscopic Appendicectomy and one child had undergone open surgery.

Conclusion: Post-Appendicectomy abdominal pain in children presents a diagnostic challenge. Postoperative adhesion causing intestinal obstruction and stump appendicitis are the most common indications for resurgery. CT abdomen is the investigation of choice. Prompt diagnosis and appropriate treatment are required to ensure prevention of complications due to delayed diagnosis.

Keywords: Stump Appendicitis, Post-Appendicectomy Abdominal Pain, Adhesive Intestinal Obstruction.

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Introduction

Post-Appendicectomy abdominal pain in children often presents a diagnostic challenge for the treating surgeon and causes considerable anxiety for the patient and family. Postoperative adhesions cause recurrent abdominal pain and sometimes frank intestinal obstruction. Although most cases of adhesive colic are managed conservatively, progression to frank intestinal obstruction requires urgent re-exploration.

Stump appendicitis is one of the uncommon causes of acute or chronic abdominal pain in right iliac fossa after a laparoscopic or open Appendicectomy procedure. Timing of presentation varies depending on the length of the remnant appendix left behind inadvertently during the prior Appendicectomy procedure [1, 2] and it may present in the immediate postoperative period or occur months or years after the initial surgery. Stump appendicitis is often unsuspected due to the history of prior surgery resulting in delay in treatment. In this study, we analyzed the clinical presentation and management of cases of children presenting with post-Appendicectomy right iliac fossa pain at our institute.

Materials and Methods

A retrospective study of medical records of all the children who were readmitted to the Institute of Child Health and Hospital for Children, Madras Medical College, and Chennai with recurrent abdominal pain after prior Appendicectomy was performed. The study duration was between January 2016 and December 2022. All the patients admitted with significant right iliac fossa pain were included in the study. Children with pain at other sites of abdomen and other causes unrelated to previous Appendicectomy procedure were excluded from the study.

The parameters analyzed included age, sex, duration of symptoms at presentation, prior surgical procedure, and complications. The patients were evaluated with X-ray abdomen, ultrasound abdomen, CT abdomen, and contrast follow-through depending on the clinical presentation. While CT abdomen identified stump appendicitis, X-ray abdomen and contrast follow-through were performed for management of adhesive intestinal obstruction. The patients underwent either a repeat laparoscopy or an open surgical exploration depending on the clinical presentation.

Results

During the study period, a total of 28 patients were admitted with post-Appendicectomy abdominal pain. A total of 14 patients underwent re-exploration. Indications included adhesive intestinal obstruction in nine patients and stump appendicitis in five patients. Adhesive colic was the most common working diagnosis in most patients.

All patients underwent plain X-ray abdomen and dilated small bowel loops were identified in 15 patients suggesting the diagnosis of adhesive intestinal obstruction. Out of the 15 patients, six had features of partial intestinal obstruction and were managed conservatively. However, nine patients progressed to complete intestinal obstruction and underwent re-surgery. Diagnostic laparoscopy was performed in five patients and laparoscopic adhesiolysis was performed. Four patients underwent laparotomy and two required resection and anastomosis of the small bowel. Of the five patients with stump appendicitis, three were operated in our institution previously and two children had undergone appendicectomy at a different center (Table 1). Four children had prior laparoscopic Appendicectomy and one patient had undergone an open Appendicectomy procedure. Two children had severe tenderness without peritonitis. Two children developed features of peritonitis and appendicular phlegmon was present in one child. One child presented in the immediate postoperative period with a localized abscess due to the ongoing infection of the residual stump after a previous laparoscopic appendicectomy for a complicated appendicitis. Overall, three children presented with complicated stump appendicitis and two children presented without evidence of perforation of the appendicular stump. All patients with suspected stump appendicitis underwent an initial ultrasound abdomen and CT abdomen when the initial ultrasound abdomen was inconclusive. The CT abdomen definitively identified the stump appendicitis in three children and identified the abscess and mass in the right iliac fossa in the other two children. The children with features of peritonitis, abscess, and mass were subjected to open procedure. One child was subjected to a re-laparoscopy. However, the procedure was converted to an open procedure due to the presence of dense adhesions.

The average length of the residual stump was 2.8 cm with the minimal length at 2 cm and maximal length at 4 cm. Redo Appendicectomy was performed in all the patients. All the children who underwent surgery recovered well and were discharged between seven to ten days from the operative procedure. Wound infection developed in four patients and was managed with antibiotics and wound dressing.

Table 1: Clinical features of patients with stump appendicectomy

S. no	Age/Sex	Symptom	Duration	Prior /current Appendicectomy	Length of stump
1.	7/ M	Pain RIF, no fever	2 days	Laparoscopic/open	2.5 cm
2.	8/F	Pin RIF, abscess.	3 days	Laparoscopic/open	2 cm
3.	10/F	Pain RIF, RIF mass	6 days	Laparoscopic/open	2 cm
4.	6/M	Pain Rt lumbar region	4 days	Laparoscopic/open	4 cm
5.	9/M	Peritonitis, fever	4 days	Open/open	3.5 cm

Figure 1: Identification of appendicular stump during surgery

Discussion

While adhesive intestinal obstruction remains a common complication after complicated appendicitis, Stump appendicitis is a relatively rare complication [3,4] and only a few case reports have been published in the literature till date [5]. In our study, all the children who required re-surgery for adhesive intestinal obstruction had undergone prior laparoscopic or open surgery for complicated appendicitis highlighting the morbidity of complicated appendicitis.

In the stump appendicitis group, out of the five children, four had undergone a previous laparoscopic Appendicectomy procedure. The retrocecal buried location of the appendicular stump suggests that surgeons could have mistaken the proximal appendix as the base of the appendix during the laparoscopic procedure. This may be due to limited visual access to the right lower aspect of the fixed cecum during the conventional laparoscopic procedure.

In one patient, immediately after laparoscopic management of complicated appendicitis, the patient developed an abscess due to the progression of infection of the long appendicular stump with a fecolith in situ (Figure 1). Leaving behind an inadvertently long appendicular stump with a fecolith is a predisposing factor for the development of stump appendicitis in most of the patients.

While the indication for surgery for adhesive intestinal obstruction remains straightforward in most cases, diagnosis of stump appendicitis requires a high degree of suspicion. A contrast CT abdomen is mandatory in a child with recurrent abdominal pain following a previous complicated appendicitis. Early identification and appropriate treatment will prevent complications due to delayed diagnosis. Formation of appendico-cutaneous fistula due to incomplete Appendicectomy had been reported [6]. Redo completion Appendicectomy is recommended in patients with significant symptoms and in those with CT identified stump appendicitis with fecolith. Laparoscopic approach is feasible for the re-exploration in selected cases of adhesiolysis and stump appendicitis. However, when there are significant adhesions with inflammation, the surgeon should not hesitate to convert to open approach to prevent or identify an inadvertent bowel injury.

Conclusion

Post-appendicectomy right iliac fossa pain requiring readmission should be evaluated in a systematic manner. Although most patients are managed conservatively, a significant proportion of patients who underwent surgery for complicated Appendicitis require resurgery for adhesive intestinal obstruction and stump appendicitis. During laparoscopic Appendicectomy, Surgeons should be aware of the possibility of a hidden proximal appendix that can cause significant postoperative morbidity.

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