

Acute Uncomplicated Appendicitis and Umbilical Hernia in Children: Open Umbilical Appendectomy an Alternative to the Laparoscopic Approach

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Abstract

Introduction: Due to the lack of popularization of laparoscopy in our context, we performed umbilical appendectomies, when the diagnosis of acute appendicitis was done on patients presenting an umbilical hernia. The aim of our study was to describe this umbilical approach and to report treatment outcomes in comparison with laparoscopic appendectomy in the literature.

Patients and method: This was a prospective and analytical study taking place over 18 months. The study took place in two private hospitals in Abidjan (Côte d'Ivoire). Studied parameters were: the size of the umbilical hernia collar, the localization of the appendix, the duration of the intervention, the food recovery, the hospital stay, and the postoperative complications.

Results: Mean collar size was 24.2 ± 16.9 mm [extreme 5-65 mm]. The appendix was in the iliac position in (n=57; 80.2%) patients. Umbilical appendectomy (UA) was performed in all patients. All patients had an umbilical hernia cure. The mean duration of the procedure was 46 ± 9.7 minutes [range 34-72 minutes]. Food recovery occurred on day one postoperative in (n=68, 95%). Mean hospital stay was 2 ± 0.2 days [range 1-3 days].

Conclusion: Umbilical appendectomy has many advantages. It could thus be an alternative to laparoscopy in our context.

Keywords: Appendectomy; Child; Umbilical hernia; Laparoscopy

Materials and Methods

Introduction

Acute appendicitis is the leading surgical cause of abdominal pain in children. Appendectomy can be performed by laparotomy either by the Mc Burney or Jalaguier pathway [1] or more recently by laparoscopy [2,3]. An umbilical hernia, a common congenital disorder in black African children [4], can be complicated by strangulation. These two affections of different pathogeny can be associated with the same patient. Acute appendicitis, whose functional manifestation is often an abdominal pain localized around the umbilical region of the child, may simulate umbilical hernia-like pain if the child also has an umbilical hernia. Thus, in our experience, some children followed for painful umbilical hernia had their diagnosis altered in favor of appendicitis. Classically, appendectomy is done by the Mc Burney a pathway and the umbilical hernia is repaired. The lack of popularization of laparoscopy in our context has led us to perform umbilical appendectomy (UA) and hernia cure at the same time. This procedure allowed us to treat these two conditions by a single path. The aim of this study was to describe in this preliminary study umbilical approach and report the results in comparison with laparoscopic appendectomy described in the literature.

Patients and method

We conducted a prospective, descriptive and analytical study from January 2016 to June 2017. The study was conducted in two private hospitals in Abidjan (Ivory Coast). Were included in our study patients of both sexes, aged from 5 to 15 years, in whom the diagnosis of acute non- suppurated appendicitis associated to an umbilical hernia was strongly suspected after a physical exam and confirmed by abdominal ultrasonography. All patients were operated on by two senior surgeons. These patients had an umbilical appendectomy and had a postoperative follow-up of at least 6 months. Patients with complicated appendicitis with or without an umbilical hernia were excluded from the study. We analyzed the size of the collar of an umbilical hernia, the localization of the appendix, the duration of the intervention, the food recovery, the hospital stay, and the postoperative complications.

Surgical technique

We did an inverted "T" incision in the lower umbilical fold in the lower umbilical fold (Figure 1) on a supine patient under general anesthesia; we dissect the fibro-peritoneal sac (Figure 2).

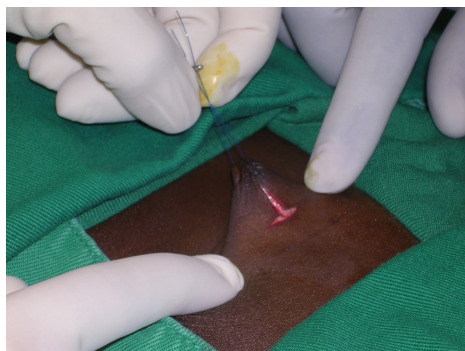


Figure 1: Inverted "T" incision in the lower umbilical fold.

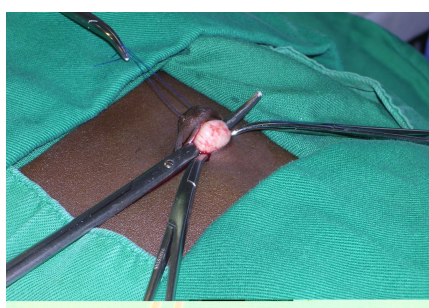


Figure 2: Fibro peritoneal canal dissection with fine scissors.

Then we open the collar, located at the base of the fibro-peritoneal sac with electrocautery. When the collar is narrow we practice one or two median splits incisions (upper and/or lower). With the help of a Farabeuf, the operator assistant lowers the abdominal wall towards the right iliac fossa, while the surgeon looks for the caecum, using a Pean's forceps or a small heart forceps, following the strips to locate the appendix. The appendix is exteriorized through the umbilical collar (Figure 3), then we proceed to a classic antegrade appendectomy, by a section-ligation of the mesoappendix and a ligation section of the appendix at its base.

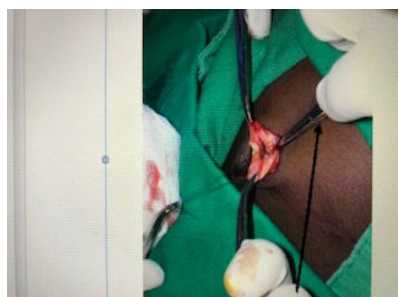


Figure 3: Opening of the collar.

After an appendectomy, the abdominal cavity is cleaned with a dry compress to appreciate the hemostasis. The closure of the collar is done by separate points (2-0 nylon thread) and a reinforcement suture (2/0

absorbable thread). Indeed, in addition to the treatment of an umbilical hernia, we were also interested in the aesthetic aspect by performing an umbilical plastic repair depending on the importance of excess skin. It is performed by an excision of two triangular flaps of excess ventral skin, associated with tubulisation of the umbilical ventral face on a maximum of 2 cm, by intradermal overlock (Figure 4).

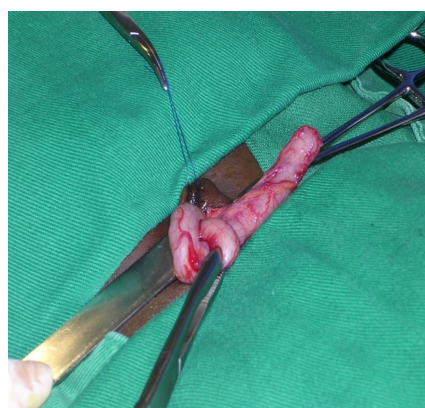


Figure 4: Externalization of the appendix.

We invert the umbilical fundus represented by the top of the tube, at the fascia of the uterus, then the cutaneous closure by intradermal overlock.

Results and Discussion

During the study period, we collected 71 patients. The mean age was 9.6 ± 3.4 years [range 5-18 years] with a sex ratio of 0.9 (34 boys/37 girls). Mean collar size of an umbilical hernia was 24.2 ± 16.9 mm [extreme 5-65 mm]. In 64.8% of the cases, we had recourse to a median split of neck extension. The appendix was in the iliac position in (n=57; 80.2%) patients, later-canal in (n=3; 4.3%) patients, mesothelial in (n=6); retro-caecal (n=5; 7%) patients. The appendix was inflammatory and erectile in all cases. Umbilical appendectomy (UA) was performed in all patients. A cure for an umbilical hernia was performed in all our patients [5]. The umbilical plastic repair was done in 63.4%. The mean duration of the procedure was 46 ± 9.7 minutes [range 34-72 minutes]. Food resumption occurred at day 1 postoperative day in (n=68; 95%) patients and in (n=3) patients at day 2. The hospital stay was in average 2 ± 0.2 days [range 1-3 days]. Complications were (n=2) cases of intraoperative hemorrhage and immediate postoperative vomiting (n=5) cases. We performed the conversion in 3 patients.

The umbilical approach has already been used in laparoscopic appendectomies [3,6,7]. Initially, in our study, UA was used for acute appendicitis associated with large umbilical hernias, or wide collar (≥ 50 mm). When we mastered the technique, we started using it in small collar hernia. For this purpose, when the umbilical hernia collar was small, we used an artifice which was to do a slit at the superior and or inferior part of the collar in order to enlarge the collar, making it easy to search for the appendix. UA has some aesthetic and financial advantages. Hospital stay is shorter than in open surgery by Mc Burney which conventionally requires three days of hospitalization but it also has its limits. The aesthetic advantage is that it saves from two incisions

and allows treating surgically two affection of different pathogenesis and whose occurrence is independent in time. It shares substantially the same advantages as conventional laparoscopic [2,8] or modified appendectomy using 2 or 3 trocar [9] or laparoscopy by trans-umbilical trocar [6] in terms of duration of intervention, hospital stay, and food resumption. Its disadvantage lies in the fact that this approach in our study showed its limits in obese patients, who led us to convert appendectomy by doing the Mc Burney pathway; we did it on two obese patients who respectively had Body Mass Index (BMI) of 32 and 33.5. This conversion was indicated in front of a large adipose panicle interfering with the research of the appendix through the collar of an umbilical hernia. Some authors [10] performed 3 conversions on 70 laparoscopic appendectomies in obese children, while others [11] reported in their study that laparoscopic appendectomy was the treatment of choice in obese children. In our study, two patients had intraoperative bleeding, and hemostasis was done only after conversion in one patient. A study carried out in Italy in 2015 on 300 laparoscopic appendectomies with a trans-umbilical trocar, the authors reported 48 conversion cases including 47 cases that were due to the impossibility of exposure of the appendix and a case of bleeding [12]. In our study, this umbilical approach has also shown its limits in complicated appendicitis, especially in localized or generalized appendicular peritonitis that requires abdominal cavity cleaning. Also, the parieto-colic aligners are almost inaccessible with this pathway. No secondary complication was observed in our study, on a mean follow-up of 12 months. While several complications has been listed in the literature. Thus Amar et al. [4] in a similar study had found 2.3% of parietal infections and 0.8% of deep suppurations. A case of parietal infection was observed in 33 acute laparoscopic, single trans-umbilical trocar appendicitis in the Vahda et al. study [7]. In 2016 a study in Sweden comparing conventional appendectomy with the laparoscopic approach, the authors observed respectively 1.2% and 2.5% parietal infection and 4.8% and 3.6%, respectively abscess formation [13]. From an aesthetic point of view, a general satisfaction of the patients and their parents, related to an umbilical plastic repair after an appendectomy, was observed in our study and also in that of Amar et al. [4].

Conclusion

The many advantages of this approach comfort us in our position which is the one of the popularizations of umbilical appendectomy in uncomplicated acute appendicitis associated with an umbilical hernia.

It could thus be an alternative to laparoscopy in our context of developing countries.

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