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Laparoscopy-Assisted Appendectomy via the patent umbilical ring (Umbilical hernia): A Case Report

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Abstract

Umbilical hernia as well as acute appendicitis are two of the most common problems seen by paediatric surgeons, although rarely simultaneously. When detected the operative approach is adjusted. We perform the a laparoscopically assisted appendectomy trough through the an excised umbilical hernia sac opening. The operative technique is presented. The most important advantages are single general anesthesia for the two surgical procedures and the use of present openingpatent umbilical ring as an access to inflamed appendix, what is the essence of a minimally invasive surgery,. Evaluating the results of the appendectomy superior cosmetic end result, minimal scaring and lower stress index are the advantages in comparisoncompared to the conventional open surgery. Shorter procedure and reduced costs are the advantages in comparison to the three port laparoscopic appendectomy. Efficacy and safety are the same as in single umbilical hernia repair.

Key words: Umbilical hernia, appendicitis, laparoscopically assisted appendectomy.

Introduction

Umbilical hernia as well as acute appendicitis are two common problems seen by paediatric surgeons, although rarely simultaneously. Most umbilical defects close spontaneously with time. Our policy is 24 month observation time for spontaneous closure and delayed repair at the age of 2. Having in mind that umbilical hernias rarely produce symptoms in paediatric age[1,2], parents' attitude is crucial for the decision for timing of an operative repair. Therefore, umbilical hernias could often be seen in older children. Our operative procedure of choice is transverse fascial closure - Mayo procedure[1].

The conventional open appendectomy for inflamed appendix has been used as a treatment for decades. A minimal invasive surgery, especially laparo-scopic appendectomy in infancy and childhood, has been proved to be a reliable and an effective method[3-8]. The new approach has been published merging advantages of laparoscopy and the open surgery and results published so far are encouraging[7-10]. A relatively high cost of the disposable materials, automatic staplers and endoloops and consequently a constant pressure on us to reduce the cost of surgery was a reason why we initiated a new technique the single port laparoscopically assisted appendectomy (LAA). So far we have performed 24 LAA through supraumbilically created opening in linea alba. The initial results are encouraging. We report on the first case of laparoscopically assisted extracorporeal appendectomy through umbilical hernia, which enables a safe and simultaneous appendectomy and umbilical hernia repair.

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Case Report

A girl, aged 14, was admitted to our hospital with the history of progressive abdominal pain and the advanced clinical signs of acute appendicitis. She had an umbilical opening hernia which admitted the tip of the index finger tip as a co-finding. The laboratory findings were typical with elevated white blood cell count (WBC) of 15.3 (Normal values <10,0x 106) and C- reactive protein (CRP) 81 (Normal values < 0.6 mg/dL). Ultrasound confirmed the diagnosis of appendicitis, with appendix more then 6 mm in

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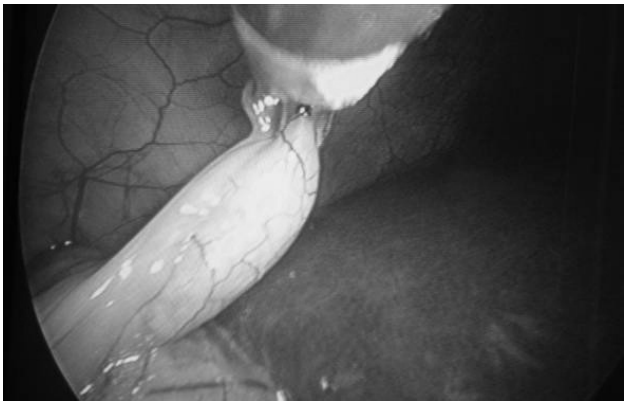


Fig. 1: Endoscopic mobilization of the appendix



Fig. 2: Appendix brought to the outside through umbilical hernia opening and dissected

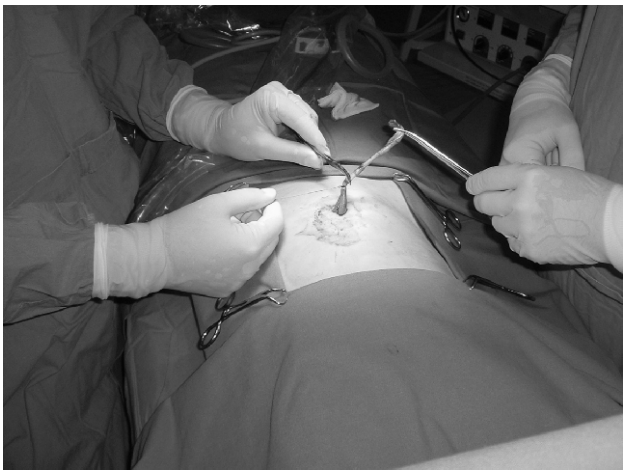


Fig. 3: Appendectomy being performed

diameter and periappendicular fat tissue indurations, lymph node proliferation, and some paracolic fluid collection.

Operative Technique:

The non-standard, long shift 430mm set of instruments was used; a 5 mm endoforceps for fine grasping-preparation and 5 mm endohook. Single 12 mm port, for 10mm zero-degree telescope model , with 5mm working channel was applied. The procedure was performed under general endotracheal anesthesia with standard monitoring.

The umbilical hernia was assessed and mobilized through a supra umbilical semicircular skin incision. The neck of the sac is was incised circumferentially and the fascia opening presented held with two traction sutures. The 12 mm working port was introduced through the fascia opening and purse string suture was placed around the working channel to provide pneumoperitoneum. The pneumoperitoneum was maintained at the pressure of 13 mmHg. A 10 mm zero-degree operating laparoscope with 5 mm working channel is inserted through working port. On inspection, a mobile hyperaemic appendix was found. An atraumatic grasper which passed through working port of telescope was used to localize and mobilize appendix.

Loose adhesions to colon in right iliac fosse were divided by a preparation hook and coagulation. When the appendix was mobilized to the point that liver edge could be reached without tension (Figure 1), the insufflation was released. The appendix was brought out of the abdomen via the umbilical opening until the cecal base could be grasped with a Babcock clamp (Figure 2). Finally appendectomy was performed according to standard procedure (Fig. 3). By using the grasper the cecum, together with the appendix stump, was finally placed in its position in the peritoneal cavity. The working channel was reestablished. Instead of pneumoperitoneum simple abdominal wall lifting was done to provide working space and the control inspection was performed by the use of camera. After the port removal, the fascia was closed by interrupted 3.o Vycril sutures and a single anchorage skin suture umbilicoplasty was performed to restore the shape of umbilicus. The procedure time was 37 minutes.

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Spontaneous bowel movements returned at the end of the procedure. No additional analgesia was necessary and the patient was discharged after 48 hours. Histology confirmed acute suppurative appendicitis.

Discussion

Open appendectomy, as described by Mc Burney[11] in 1894, was standard over century. Laparoscopic era, started by Semm[12], gave a promising alternative. In 1992, Gilchrist[13] described first series of laparoscopic appendectomy in pediatric patients. Meta analysis[14] of 23 studies, that included 6477 pediatric patients and compared operative data and outcomes of open and laparoscopic method, gave some evidence about validity of procedures[14]. Reduced incidence of wound infection and ileus rate are major advantages of laparoscopy. Shorter postoperative hospital stay after laparoscopy was recorded too. None of the other compared parameters; pyrexia, abscess rate, and operative time showed statistically significant advantage in favor of one of analyzed procedures. Abscess rate was slightly higher in laparoscopic group but not statistically significant. Some studies included in meta-analysis showed less need for postoperative analgesia[15-17] and better cosmetic effect[18] as additional advantages of laparoscopy, so main unfavorable feature of laparoscopic appendectomy remains higher price of surgery[19]. For that reason, an idea to apply principles and strategies of both procedures and thus compile advantages, resulted in development of laparoscopically assisted techniques in paediatric[9] as well as in adult patients[10]. It could be done through the umbilical port[9] or right iliac fossa port[20]. The procedure is equally safe and effective as in the conventional open technique[21] and intracorporeally performed laparo-scopic appendectomy, although with a slightly increased complication rate[22]. Since 1999, in Children's hospital Zagreb, we performed 172 laparoscopic appendectomy in children, with 6 conversions (3.5%) and 11 complications (6.3%), and since 2004 we started with laparoscopically assisted appendectomy[23]. This Laparoscopically-assisted appendectomy via the umbilicusprocedure should be thea method of choice for acute appendicitis if there is a co-existing umbilical hernia, having in mind the fact that umbilical hernia is an indication for elective surgery. Single general anesthesia will enable the performance of the two surgical procedures simultaneously, avoiding additional scaring and possible wound infection sites, and eliminating the source of postoperative pain.

Hernia sac resection is a procedure very much alike to an open insertion of the first port, and the consumption time is almost the same. The well known advantage of the open insertion is safety[24]. Excellent exposure of fascia by traction sutures reduces fascia closure time.

Laparoscopic delivery of appendix extracorpo-really in comparison to conventional laparotomy; reduces the risk of wound infection, reduces operative stress and lasts shorter. The abdominal wall scaring is minimal and cosmetically satisfactory. The cosmetic effect emphasizes the fact that the same incision is sufficient to perform both procedures, and the final scar is acceptable.

Extracorporeal preparation and ligation of appendix reduces the need for automatic stapler devices, cartridges, clips or endoloops and, therefore reduces cost of procedure significantly, proportionally to quantity and purchase price of used supplies.

The time to spontaneous bowel movement, hospital stay and administered analgesics are same as in laparoscopy.

The risk of wound infection is week point of simultaneous umbilical hernia repair and appendec-

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L'appendicectomie à l'aide de la laparoscopie à travers le cordon ombilical

Résumé

L'hernie ombilicale et l'appendicite aiguë sont deux des problèmes les plus répandus rencontrés par les chirurgiens pédiatriques, bien que rarement simultanément. Les avantages les plus importants sont, d'une part, l'anesthésie générale unique pour les deux procédures chirurgicales et, d'autre part, l'utilisation du cordon ombilical comme voie d'accès à l'appendice enflammé. Par rapport à la chirurgie conventionnelle, il y avait un meilleur résultat cosmétique, moins de cicatrisation et moins de stress. L'abrègement de la durée et la réduction des coûts constituent les avantages par rapport à l'appendicectomie laparoscopique à trois orifices. L'efficacité et la sécurité sont les mêmes que dans la réparation clinique de l'hernie ombilicale. ***Mots-clés:*** Hernie ombilicale, appendicite, l'appendicectomie à l'aide de la laparoscopie à travers l'ouverture de l'hernie ombilicale.

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