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ORIGINAL ARTICLE

Immediate operation versus percutaneous drainage for treatment of appendicular abscess

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KEYWORDS

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Abstract *Aim:* This study aims to compare the outcomes, morbidity and hospital stay in patients who underwent emergency surgery, and those who underwent percutaneous drainage for treatment of appendicular abscess.
Patients and methods: From April 2013 to October 2014, we recruited 40 patients with appendicular abscesses for this study. These patients were randomized into two groups: group 1 (20 patients) for emergency surgery and group 2 (20 patients) for percutaneous drainage. Preoperative data, hospital stay, functional recovery and postoperative complications were analyzed.
Results: Functional recovery was 2.2 ± 1 days in group 1 and 1 ± 0 day in group 2. Hospital stay in group 1 was 7.7 ± 3.5 days and in group 2 was 4 ± 1 days. Postoperative complications in group 1 were noted in 8 (40%) patients. No complications were recorded in group 2.
Conclusions: Appendicular abscesses may be safely and effectively treated by US-guided percutaneous drainage with high technical and clinical success rates, low incidence of complications and shorter hospital stay.

1. Introduction

Appendicitis is the most common cause of pain requiring surgery. Appendicitis manifests itself with complex features such as an abscess or mass in 2–7% of the patients (1–3). Emergency surgery is not preferred on such cases because it carries out risk of, inflammation spread in a wide area within the abdominal cavity, adhesion of the intestines, sepsis after surgery, and delayed healing of surgical wounds (4,5). Some authors advocated performing conservative treatments such as, ultrasound-guided percutaneous drainage and antibiotic treatments first, followed by interval appendectomy after a certain time (3,6). In addition, it was reported that the recurrence rate of appendicitis after conservative treatment about 7%, thus, after successful conservative treatments, an interval appendectomy is not always necessary (7,8). We conducted this study to compare the outcomes, morbidity and hospital stay in

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patients who underwent emergency surgery, and those who underwent percutaneous drainage for treatment of appendicular abscess.

2. Patients and methods

This prospective randomized study was carried out throughout the period from April 2013 to October 2014 at the Department of General Surgery and the Department of Radiology, in Assiut University Hospital. It included 40 patients with appendicular abscess. The study was approved by the Medical Research Ethics Committee of the Faculty of Medicine, Assiut University and informed consent was taken from all participants.

On admission detailed history and abdominal examination were performed. Ultrasound examination was enough to diagnose appendicular abscess in all except two patients: those last two patients; the diagnosis was confirmed by Computerized tomography. After diagnosis, all patients were given intravenous antibiotics and analgesics during the period of hospital stay till the result of culture and sensitivity was obtained, then antibiotics were continued accordingly. Various combinations were used to cover both gram negative and gram positive pathogens plus added cover for anaerobes. Various antibiotic combinations were used; cefuroxime, and metronidazole combination; penicillin, gentamicin and metronidazole combination; or amoxicillin–clavulanate and metronidazole combination. On discharge, we shift to oral antibiotics for two weeks.

We divide the patients into two groups: Patients who underwent emergency surgery (group 1) which composed of 20 patients (12 males and 8 females) with their ages ranged from 9 to 59 years; and patients treated with conservative management through ultrasound-guided percutaneous drainage (group 2) which composed of 20 patients, (12 males and 8 females) with their ages ranged from 5 to 50 years.

2.1. Surgical drainage of group 1

All patients of this group were admitted and treated in the Department of General Surgery. Physical fitness assessment included CBC, random blood glucose, blood urea and creatinine, prothrombin time and concentration, liver function, hepatitis markers, and ECG. Surgical steps included appendectomy, evacuation of all gross pus and exudates, and thorough lavage with warm saline until the effluent was clear of contamination and the operation bed was clean. A tube drain was fixed into the appendectomy site through a separate incision, anchored with a stitch and connected to a sterile bag. Another drain was inserted and exited separately from the main incision. The main incision wound was closed in layers with interrupted stitches up to the fascia and the skin. Then, we used dressing soaked in povidone 10% solution to cover the wound. A patient's progress questionnaire, and the consistency and amount of fluid in the drain reservoir were estimated and recorded daily during the follow-up period. The wounds were inspected and their status was noted with daily dressing by povidone iodine. Abdominal ultrasonographic examination was performed every other day or on demand. The drains were extracted after stoppage of pus discharge and US revealed no residual collection. All patients were discharged when fever subsided, white blood cell count normalized and oral feeding started.

2.2. Drainage procedure for group 2

All patients of this group were treated in the interventional unite of the Radiology Department. All procedures were performed under local anesthesia (lignocaine hydrochloride). Sedation with valium or midazolam was required in 4 patients. We used a spinal needle 22G for injection of the local anesthetics. The needle was placed in the capsule of the abscess under US guidance, and then the local anesthetics were injected while the needle was being withdrawn up to the subcutaneous tissues and also intradermal. We used Seldinger technique for abscess drainage. A puncture needle 18G was introduced under sonographic guidance into the abscess cavity, followed by aspiration of 10 cc of abscess contents for culture and sensitivity study. A J-shaped guide wire was introduced and the needle was then removed. After sequential dilatation to 7 French using Teflon dilators, a pigtail drainage catheter 8 French was introduced over the wire. The contents of the abscess were evacuated manually then the catheter was fixed to skin using -0- silk suture, and was connected to an evacuation bag. The catheter was left in-place and daily washout with sodium chloride 10 ml was routinely performed. We removed the catheter when the clinical manifestations (especially fever) subsided, the bag stopped drainage of pus or drained < 5 cc serous fluid for 3 consecutive days, and ultrasound examinations showed no residual fluid in the abscess cavity.

The follow-up observation period was from the day of the first visit to the most recent visit to our outpatient clinic. The clinical characteristics of patients, the type of surgery, and the follow-up observation were analyzed based on electronic medical records. For statistical analysis, the SPSS ver. 20 was used. For statistical validation, the Student's t-test, Pearson's chi-square test, and Fisher's exact test were used. $P < 0.05$ was determined to be statistically significant. The clinical characteristics; patients gender, age, major symptoms, duration of pain prior to admission, body temperature at the time of admission, heart rate, leukocytic counts, size of abscess; the hospital stay, the functional recovery, and the postoperative complications were analyzed.

For group 1, technical success was defined as the ability for complete evacuation of the abscess and doing appendicectomy. Clinical success meant cure of all symptoms, and absence of complications or the need for new surgery.

For group 2, technical success was defined as the ability to insert a drainage catheter into the abscess cavity and complete evacuation of the abscess cavity. Clinical success meant subsidence of all symptoms, and absence of major complication or the need for surgical evacuation.

3. Results

This study included 40 patients. The mean age of the patients was 26.3 years. The emergency surgery group (group 1) included 20 patients and the conservative treatment group (group 2) included 20 patients. Right iliac fossa pain was the main symptom in both groups, which was noted in all patients. Other symptoms such as nausea, vomiting, fever, and anorexia were also noted (Table 1).