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A clinical case of surgical treatment of appendiceal stump abscess

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In Ukraine, the share of patients with acute appendicitis is 89.1 % of the total number of patients with acute surgical pathology. In modern surgical practice, early and late complications occupy the first place in the structure of acute surgical diseases of the abdominal organs, regardless of the age and gender of the patients, and the postoperative mortality is on average 0.15 %. In the remote period after an appendectomy, despite the progress of modern surgery, a very rare complication known as inflammation of the stump of the appendix can occur.

The patient, 25 years old, turned to the department of purulent surgery with complaints of a «small wound» at the site of the postoperative scar in the right inguinal area and minor purulent discharge from it. Four months ago, in July, he was operated on for acute phlegmonous appendicitis. On November 1, after physical exertion, the wound reappeared, and on November 3, the patient independently sought a consultation at the reception department of the Clinical City Hospital No. 3. He was examined by a surgeon and hospitalized. During the revision of the wound, a tumor-like formation measuring 2.5 × 3.0 × 2.5 cm, as well as the parietal peritoneum, was revealed. Appendectomy was performed by the method of pouch ligation with drainage of the abdominal cavity through a separate contraperture with polyvinyl chloride drainage. After the operation, a diagnosis was established: abscess of the stump of the appendix, and external fistula of the anterior abdominal wall. The postoperative wound healed with primary tension, and the sutures were removed.

The diagnosis of appendicitis may be mistakenly excluded from the clinical search due to the presence of a postoperative scar after appendectomy. A clear clinical picture of acute appendicitis or the opening of a fistula at the site of a postoperative scar in the right iliac region indicates the need for a computer tomography of the abdominal organs with contrast to establish an accurate diagnosis and choose the correct treatment tactics. The only treatment for inflammation of the appendiceal stump is a complete appendectomy with appendix removal either by open or laparoscopic surgery, which should be performed urgently to avoid further complications.

Keywords
appendectomy, stump appendicitis, intra-abdominal abscess, surgical treatment, diagnostics.

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In Ukraine, acute appendicitis (AP) accounts for 89.1 % of the total number of patients with acute surgical pathology. In modern surgical practice, early and late complications take the first place in the structure of acute surgical diseases of the abdominal cavity, regardless of the age and gender of the patients, and the postoperative mortality rate is 0.15 % on average [1, 2]. In the long run, following an appendectomy, despite the advancements in modern surgery rare and infrequent complication known as inflammation of the appendiceal stump might occur. Few surgeons have ever encountered this in their practice. Even at the dawn of surgical treatment for acute appendicitis, surgeons of that time wrote about this pathology in their works. 48 clinical cases of this pathology have been reported in the contemporary medical research literature [3, 5, 6].

Postoperative complications present a challenge in abdominal surgery as they interfere with predicting the course and the surgical treatment of

abdominal emergencies. According to O. S. Balogun et al. (2019) [4], their number is 28.5 %, with such complications as suppuration of the surgical wound in 18.6 %, wound dehiscence in 15.2 %, and intra-abdominal abscess in 13.5 % of patients.

Clinical case

A 25 y.o. male patient presented to the Department of Purulent Surgery complaining of a «small wound» at the site of the postoperative scar in the right inguinal area and minor purulent discharge from it.

According to the anamnesis, he underwent surgery for acute phlegmonous appendicitis four months ago. The early postoperative period was uneventful. On the fifth day, he was discharged in satisfactory condition. The postoperative wound healed with primary tension, and the sutures were removed on the seventh day. The patient reported that two months after the surgical treatment, a «small wound» «opened» for no apparent reason at the site of the postoperative scar, and there was also minor purulent discharge from it. That was the cause of his appointment with the surgeon at the polyclinic. The ligature was removed during a wound revision procedure. A ligature fistula at the site of the postoperative scar was diagnosed. The application of dressings, drainage of the wound with an antiseptic Decametoxinum, and oral administration of Lefloxacin 500 mg promoted wound healing by secondary tension. On November 1, after physical exertion (playing football), the wound appeared again, and on November 3, the patient independently sought consultation with the Department of Purulent Surgery at Kyiv City Clinical Hospital No. 3, where he was examined by a surgeon and hospitalized.

On examination, from the side of the digestive organs, there is no pathology. Auscultation and percussion are unchanged. A digital rectal examination shows no pathology

The right inguinal area has a postoperative scar but no signs of perifocal inflammation. In the lower third, there is a fistula tract up to 0.1 cm with a minor purulent discharge. Skin hyperemia and edema is absent, as is pain syndrome during palpation, and there are no signs of peritoneal irritation. A ligature fistula at the site of the postoperative scar is initially diagnosed.

To prepare for the surgical procedure, the patient underwent clinical and laboratory examinations. CDC on November 3: HB — 148 g/l, glucose — 5.2 mmol/l, leukocytes — $6{,}7 \cdot 10^9$/l, rod cells — 4 %, segment cells — 70 %, eosinophils — 1 %, lymphocytes — 24 %, monocytes — 1 %.

According to the ultrasound of the abdominal cavity, in the right iliac region, in the projection of the postoperative scar at a depth of up to 3.5 cm, a hyperechoic formation measuring 1 × 1.5 cm with clear contours is visualized. Free fluid is not detected. X-ray of the organs of the abdominal cavity with identification of the fistula tract with sodium amidotrizoate contrast: free gas and Kloiber's cups are not detected; an accumulation of contrast in the form of a «mace» is noted, with a high probability in the abdominal cavity in the right iliac fossa (Fig. 1).

Based on the results of the instrumental research methods, the patient was prescribed a CT scan with contrast enhancement to confirm or exclude the localization of the pathological process in the abdominal cavity and to determine the extent of the surgical treatment (Fig. 2).

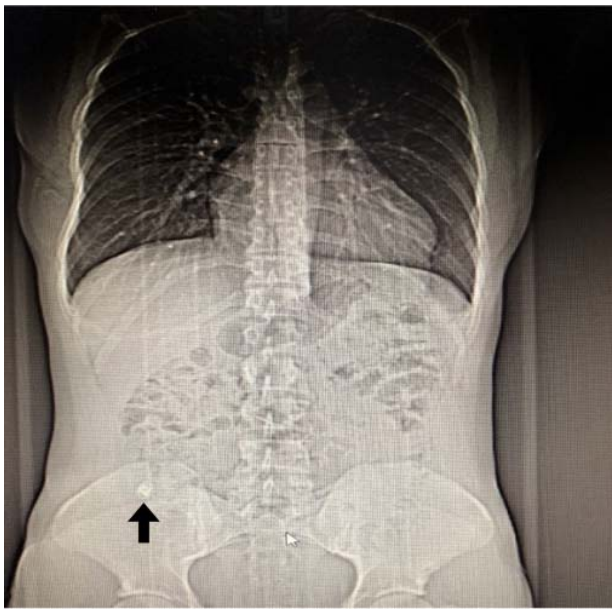

Figure 1. **X-ray of the abdominal organs with fistula contrast with an iodine-containing radiopaque agent**

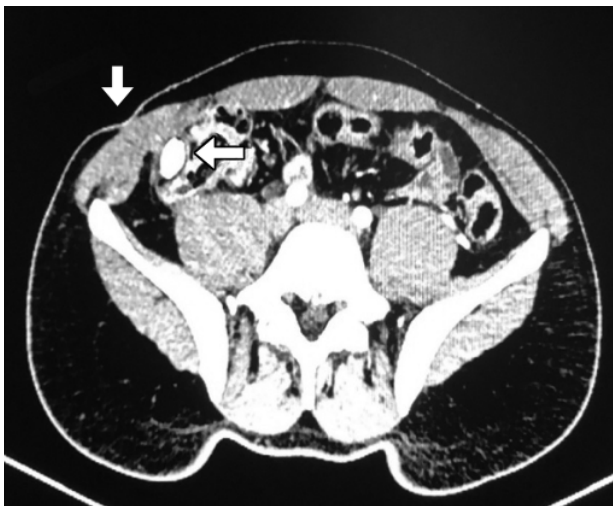

Figure 2. **CT of the organs of the abdominal cavity with contrast enhancement**

The blue arrow in the photo indicates the skin defect and the external opening of the fistula. The red arrow in the photo indicates the accumulation of contrast in the right iliac fossa, and the radiologist's conclusion led the diagnosis of an abdominal abscess.

On November 4, the patient underwent surgical treatment following diagnostic procedures. After treatment of the operative field, the postoperative scar was excised together with the fistula tract to the aponeurosis. The abdominal cavity was opened in layers. The wound revision showed a tumor like formation measuring 2.5 × 3.0 × 2.5 cm with even margins of a dense consistency fused with the dome of the cecum, and the parietal peritoneum was revealed too. As a result of the separation of the formation up to 3.5—4.0 cm, the appendiceal stump, which was located subserosally in the wall of the cecum, was found (Fig. 3).

Removal of the appendiceal stump was performed by the purse-string ligation method abdominal cavity drainage through a separate contraperture with polyvinyl chloride tube drainage.

After the surgery, a diagnosis was determined: an abscess of the appendiceal stump and an external fistula of the anterior abdominal wall.

Therapy was prescribed in the postoperative period for 3 days: Moxifloxacin 400 mg intravenously once a day; Enoxaparin sodium 0.3 subcutaneously once a day; Pantoprazole 40 mg intravenously once a day; and Dexketoprofen 50 mg IV 3 times a day. The drain was removed on the second day.

Treatment outcomes

The patient was discharged for outpatient treatment on the fifth day after the operation. On the eighth day, he was examined in the hospital; the postoperative wound healed with primary tension, and the stitches were removed. The patient had follow-up exams at 6 and 12 months post-surgery, including an abdominal cavity ultrasound (no pathology).

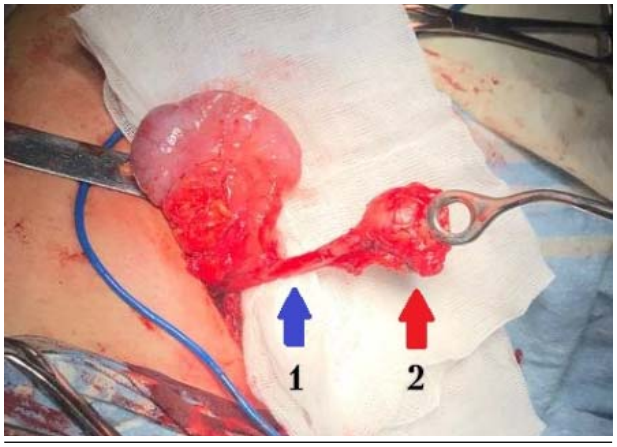

Figure 3. **Immobilized «long» appendiceal stump:** 1 — stump itself, 2 — stump abscess

Discussion

Although appendectomy is the most used and frequent surgical operation in the world, it still does not exclude the possibility of complications in the postoperative period [1, 2]. One of the rarest complications of this operation is the formation of an abscess of the appendix stump. According to Truty MJ, [8] the condition is accompanied by clinical appendicitis in patients with a history of appendectomy. This can lead the surgeon to make the wrong decision. After all, he is sure that the patient's appendix has already been removed. In the scientific medical literature, there is no clear definition of the etiology of the formation of an abscess in the stump of the appendix. According to Kurt E. Roberts [7], there are two main intraoperative factors for the occurrence of stump appendicitis: 1) incorrect identification of the appendix; 2) incomplete removal of the appendix, that is its resection. In general, the main hypotheses for the occurrence of this pathology are: less often — poor surgical technique (ignorance of the basic aspects of appendectomy), more often — the choice of incorrect patient management tactics (dense appendicular infiltrate, in which it is technically impossible to perform a full appendectomy). It is these two aspects, in our opinion, that encourage surgeons to perform resection of the appendix, which subsequently creates the risk of an abscess of the appendix stump. In most cases, patients have an acute appendicitis clinic, which allows for a better diagnosis of the patient's condition and a diagnosis of appendix stump abscess.

Authors such as Kurt E. Roberts et al. [7] suggest performing a CT scan of the abdominal wall and cavity to determine the exact size and location of the appendix or its stump.

The diagnosis of AP can be mistakenly excluded due to the presence of a postoperative scar after an appendectomy. A clear clinical pattern of acute appendicitis or a fistula opening at the site of the postoperative scar in the right iliac region directly indicates the need for a contrast-enhanced CT of the abdominal cavity. A full-scale appendectomy by open or laparoscopic surgery is the only method for managing an inflamed appendiceal stump.

Compliance with the basics of deontology, such as accurate medical recording and informing patients about intraoperative issues or difficulties, is also important for facilitating diagnosis and further treatment.

Conclusions

Inflammation of the «long» appendiceal stump remains a potential complication in the long run after appendectomy.

The diagnosis of AP can be mistakenly excluded due to the presence of a postoperative scar after an appendectomy. A clear clinical pattern of acute appendicitis or a fistula opening at the site of the postoperative scar in the right iliac region directly indicates the need for a contrast-enhanced CT of the abdominal cavity.

A full-scale appendectomy by open or laparoscopic surgery is the only method for managing an inflamed appendiceal stump.

Declaration of interests

The authors declare no conflicts of interest.

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Authors contributions

Conception and design — O. P. Stetsenko; data collection, critical revision of the article — Y. P. Tsyura; analysis and interpretation of data — S. L. Kindzer, M. S. Kryvopustov, Y. P. Tsyura, Y. S. Prykhodko; drafting the article — S. L. Kindzer, M. S. Kryvopustov, Y. S. Prykhodko.

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Опис клінічного випадку хірургічного лікування запалення кукси червоподібного відростка

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В Україні на частку пацієнтів з гострим апендицитом припадає 89,1 % від загальної кількості хворих із гострою хірургічною патологією. У сучасній хірургічній практиці ранні та пізні ускладнення посідають перше місце в структурі гострих хірургічних захворювань органів черевної порожнини незалежно від віку та статі хворих, а післяопераційна летальність становить у середньому 0,15 %. У віддалений період після апендектомії, незважаючи на прогрес сучасної хірургії, може виникнути дуже рідкісне ускладнення, відоме як запалення кукси червоподібного відростка.

Хворий, 25 років, звернувся до відділення гнійної хірургії зі скаргами на «дрібну ранку» на місці післяопераційного рубця в правій пахвинній ділянці та незначні гнійні виділення з неї. Чотири місяці тому, в липні, прооперований з приводу гострого флегмонозного апендициту. Першого листопада після фізичного навантаження рана виникла повторно, а 3 листопада пацієнт самостійно звернувся на консультацію до приймального відділення клінічної міської лікарні № 3. Оглянутий хірургом і госпіталізований. При ревізії рани виявлено пухлиноподібне утворення розміром 2,5 × 3,0 × 2,5 см, а також пристінкову очеревину. Апендектомію виконано методом кисетної перев'язки з дренуванням черевної порожнини окремою контрапертурою з полівінілхлоридним дренажем. Після операції встановлено діагноз: абсцес кукси червоподібного відростка, зовнішня нориця передньої черевної стінки. Післяопераційна рана зажила первинним натягом, шви знято.

Діагноз апендициту може бути помилково вилучений з клінічного пошуку через наявність післяопераційного рубця після апендектомії. Чітка клінічна картина гострого апендициту або відкриття нориці на місці післяопераційного рубця в правій здухвинній ділянці вказує на необхідність проведення комп'ютерної томографії органів черевної порожнини з контрастуванням для встановлення точного діагнозу та обрання правильної лікувальної тактики. Повноцінна, апендектомія з видаленням червоподібного відростка, апендектомія відкритим хірургічним шляхом або лапароскопічно є єдиним методом лікування запалення кукси червоподібного відростка та має проводитись в ургентному порядку для уникнення подальших ускладнень.

Ключові слова: апендектомія, абсцес кукси апендикса, внутрішньочеревний абсцес, хірургічне лікування, діагностика.

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