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## MODERN METHOD OF SURGICAL TREATMENT OF EPITHELIAL COCCYGEAL TRACT

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There are several theories of the origin of epithelial coccygeal diseases: empirical, neurogenic, ectodermal and acquired. Most Russian scientists consider this pathology to be congenital, while foreign colleagues tend to believe that it is a consequence of injuries to the sacrococcygeal area. This disease occurs quite often, affecting more than 5% of the adult population, including children and adolescents, significantly impairing the quality of life, which affects all aspects of their life.

Conservative methods of treatment include sclerotherapy and obliteration of the cavity with silver nitrate or hydrochloric acid, which is not used today, since a positive result of treatment of the epithelial - coccygeal course is not achieved, because the cause of the disease is not eliminated.

Surgical treatment is the most effective method of treating epithelial coccygeal stroke. Surgical treatment, despite the simplicity of its execution, is quite scrupulous. The high incidence of complications after surgery and the long period of disability often disappoint surgeons. The resulting rough scar has an undesirable cosmetic effect, and the probability of recurrence remains quite high. The problem of creating and implementing new methods of treating pilonidal disease remains relevant in our time.

**Keywords:** epithelial coccygeal tract, pilonidal cyst, surgical treatment methods.

The epithelial-coccygeal passage (ECC), epithelial-coccygeal cyst (ECC) is located in the subcutaneous adipose tissue in the area of the interstitial space. The ECC cavity communicates with the environment through the fistula passages, both primary and secondary. [1,5]. Infection in the primary fistula passages causes ECC inflammation and abscess formation [2, 10]. This disease most often develops in young, able-bodied males, whose age ranges from 16 to 45 years. The ratio between men and women is 4:1[5, 10]. According to statistics, the incidence of ECC reaches 2% of all surgical pathology [18]. At the same time, ECC inflammation reaches 15% of the total number of surgical purulent-septic diseases [5, 8, 6]. The most effective method of treating this pathology is surgical.

In the middle of the 19th century, A.

Anderson first described the technique of radical excision of the ECC within healthy tissues in a letter to the Boston Medical Journal [6]. However, when a cyst or ECC is excised, a rough and deep postoperative wound is formed, and therefore surgeons' disputes about wound closure do not subside. In turn, this leads to the search for new ways of surgical treatment of ECC [10].

All surgical aids in the treatment of ECC are divided into three main groups: the first group is open: with the use of various dressings and vacuum therapy by secondary tension, the postoperative wound regenerates [2]. The second group is closed: the postoperative wound is sutured tightly (using nodular sutures or Donatti sutures), partial suturing of the postoperative wound using various plastic surgery techniques (according to Karydakos or Bask) [10,11,3].

The third group is semi-open: a drainage tube is installed into the cavity of the postoperative wound or a drainage channel is formed, after which the postoperative wound is sutured (excision of the epithelial coccygeal passage with sutures along the Moshkovich) [6].

One of the methods of treating epithelial coccygeal stroke using vacuum therapy is described by Benderwald F.P. [11]. After excision of the fistula passage, a removable drainage bandage is applied, and round-the-clock vacuum therapy with a negative pressure of 125 mmHg is carried out in a constant mode. The dressing is changed every two days. The course of vacuum therapy lasts from 4 to 9 weeks. Vacuum therapy is discontinued after complete granulation of the wound, and

complete wound healing occurs within 9-22 weeks.

Healing of an infected postoperative wound takes quite a long time and, as a result, a rough postoperative scar forms after healing. As a result, most surgeons use two-stage surgical treatment for ECC inflammation in the acute phase. At the first stage, the abscess is opened, then the abscess cavity is sanitized (consisting of daily rinses, ointments on a water-soluble basis are injected into the abscess cavity). After these manipulations, the inflammatory process is stopped and the patient undergoes radical surgical treatment [3, 11].

In Russia, the technique of marsupialization and plastic surgery of a wound defect using a skin flap transplant will be widely used [4]. The marsupialization method was first proposed by L. Buie in 1937, and this technique was subsequently modified several times. [16]. One of the commonly used methods of marsupialization is excision of the ECC and further suturing of the postoperative wound with Moshkovich sutures [6].

According to A.V. Kibalcic, the incidence of true relapses after radical excision of the ECC is no more than 6% [12], and 94% are false relapses caused by infectious complications - hair entering the wound cavity, the healing of which is complicated by the development of a purulent process. Basically, ECC recurs in the area of the interdigital fold along the midline. The cause of relapses, according to many authors, is the high position of the buttocks, deep interdigital fold, obesity, as well as thick hair in this area. Due to the extensive and deep postoper-

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ative wound and uneven healing, cavities are formed that contribute to the development of infection and the formation of rough postoperative scars in 10-40% of patients [11,3].

Recently, new technologies have been sought and developed using various physical factors that affect inflammatory processes in the sacrococcygeal region. In recent years, special attention has been paid to laser therapy, which is actively being introduced into the treatment of various pathologies. This becomes possible thanks to the development of high-energy lasers that deliver radiation directly to the pathological focus through flexible light guides, which makes it possible to actively use them for conducting intracranial and intracavitary therapeutic manipulations [5]. However, during these operations, the cavity of the fistula does not decrease, which can lead to a relapse in the future.

Based on the above, the search for the most effective methods of surgical treatment of ECC is an urgent problem of both coloproctology and surgery in general.

The aim of the study was to improve the results of treatment of patients with ECC by developing and implementing a minimally invasive method of laser obliteration of the epithelial coccygeal passage.

**Material and methods.** The paper describes the results of treatment of 52 patients with ECC who were in the surgical department of the CHUZ CB "RZD-Medicine" in Astrakhan from 2021 to 2023. The age of the patients ranged from 25 to 45 years. The average age of patients was 35 years - the working-age population. There were certain criteria for including patients in the ongoing study. First of all: clinically and diagnostically confirmed diagnosis of ECC, recurrence of ECC, the presence of primary and secondary fistula openings. Patients with ECC abscess were not included in the study.

Pronounced thick hair in the coccygeal region was observed in 36 (69.2%) patients, overweight in 16 (30.8%) patients. As a percentage, 49 (94.2%) men and 3 (5.8%) women participated in the study.

All patients were hospitalized as planned. Before hospitalization, outpatients were examined: General blood test, general urine test, biochemical blood test, coagulogram, chest X-ray and blood test for hepatitis HBsAg and HCV. The patients underwent ultrasound examination of soft tissues in order to exclude hidden foci of inflammation and determine the size of the ECC (Fig.1). All the subjects underwent preoperative preparation, including shaving of the sur-

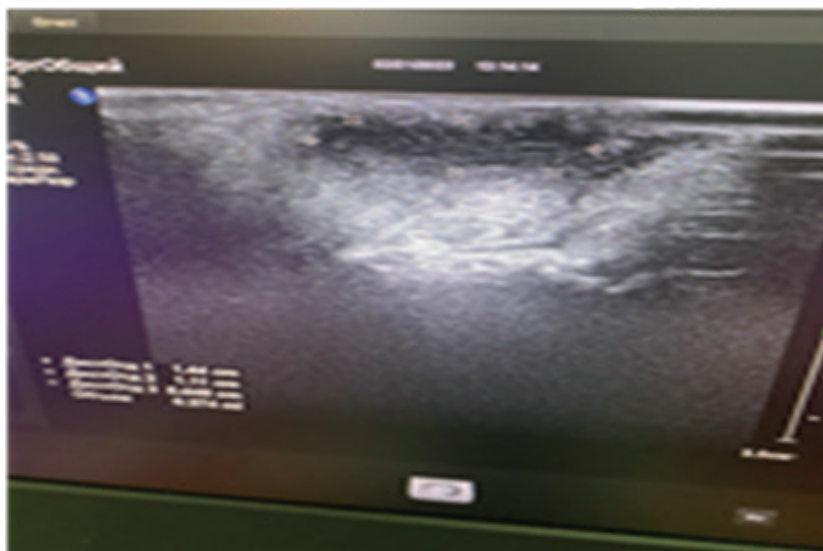


Fig. 1. Sonogram of the epithelial coccygeal passage before surgery



Fig. 2. Revision of the fistula passage with a button probe



Fig. 3. Creation of a "coupling" that reduces the cavity of the fistula

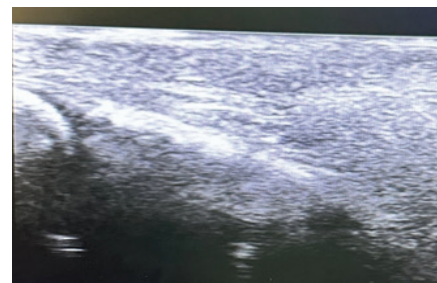


Fig. 4. Sonogram of the intervertebral region one year after surgery



Fig. 5. Postoperative area 1 year after surgery

gical intervention zone and preoperative antibacterial therapy. The criteria for the effectiveness of treatment were: the duration of the operation, the duration of the pain syndrome in the postoperative period, the severity of the pain syndrome, which we determined using a 5-point International Visual Analog Scale (VAS) of pain; the duration of hospitalization, the time of recovery, the frequency of relapses and patient satisfaction with the results of the operation, which were revealed using a questionnaire.

The main stages of the minimally invasive method of treatment of the epithelial coccygeal course proposed by us (patent No. 2767889 dated 03/22/2012) are presented below. The operation begins with local anesthesia. After excision of the primary fistula opening, a button probe is used to inspect the fistula passage with the removal of a contraperture at the upper point of the fistula (Fig. 2). Then, with a Volkmann spoon, the contents of the fistula passage with granulations are processed and removed. Next, the cavity is

washed with a solution of aqueous chlorhexidine. The next step, under ultrasound control using tumescent (infiltration) anesthesia, is to create a "coupling" that reduces the fistula cavity (Fig. 3). Next, the fistula cavity is coagulated with a laser in continuous mode with a wavelength of 1470 nm, with a power of 9 W, at a speed of 1 mm/s (Fig. 4.5).

**Results and discussion.** The duration of the operation was 10-12 minutes, the severity of pain on the VAS scale was no more than 2 points. In patients, tension and swelling of soft tissues in the surgical area decreased on 2-3 days, and fistulas closed on the 4th-5th day. During ultrasound examination, a connective tissue scar formed at the ECC site after 2 months. The average duration of inpatient treatment was 3 days. Recovery of working capacity was noted on 5-6 days.

Of the 52 patients, a relapse occurred in 2 (3.8%) patients 3 months after surgery, which was associated with the period of mastering and implementing this technique, which required repeated laser obliteration. Long-term results a year after surgery were studied in 47 patients, there were no relapses.

**Conclusions.** A portable compact laser with a wavelength of 1470 nm was used to treat epithelial coccygeal stroke. Laser radiation with a long wavelength of 1470 nm, due to its physical properties, has a pronounced sanitizing and coagulating effect on epithelial coccygeal passages.

The main advantage of the proposed method is:

1. Our use of a tumescent coupling to reduce the cavity of the fistula passage, increases the area of tissue contact with the working surface of the laser, which allows a single and radical procedure for laser ablation of the cavity without repeated interventions.

2. This technique can be applied in all

forms of ECC, since the operation is performed directly under the control of ultrasound, which eliminates the possibility of leaving additional or false strokes, brush congestion.

3. Non-intense pain syndrome, good cosmetic effect, reduced inpatient treatment and reduced disability, minimally invasive this technique makes it more promising in the treatment of this pathology.

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