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COMPARATIVE STUDY OF TREATMENT METHODS OF PILONIDAL SINUS

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Abstract

The aim of present study is the comparison of surgical treatment methods of pilonidal sinus.

Totally 59 patients with pilonidal sinus were included in the study. Patients are divided into 3 groups: in 22 patients aged from 17 till 57 years (middle age 25.5±4.7, Me=22) primary closing of a wound with Donati seams was performed after excision of pilonidal sinus, in 18 patients aged from 17 till 50 years (middle age 24.8±3.8, Me=21) radical excision of pilonidal sinus with leaving of a wound open and aftertreatment by standard wound dressing was carried out, in 19 patients aged from 21 till 57 years (middle age 32.4±5.6, Me=22) the open wound was treated with vacuum therapy.

In the group with primary closing of a wound the duration of hospitalization was 11±1.9 days (from 3 to 20, Me=11), time of full healing – 14.9±4.9 days (from 8 to 49, Me=12.5). Intensity of pains (visual analogue scale) on the first and 14th day after operation was 3.5 and 2 points, respectively. Complications in the next postoperative period appeared in 5 (22.7%) patients, recurrence of the disease was noted in 3 (13.6%). In the group with radical excision of pilonidal sinus and open maintaining of a wound with standard wound dressing the period of hospitalization was 13.7±2.6 days (from 3 to 25, Me=15), the time of full wound healing – 74±5.7 days (from 35 to112, Me=57.0), intensity of pains – 2.8 and 1.8 points. Complications in the postoperative period were noted in 2 (11.7%) patients and recurrence of the disease – in 1 (5.6%). In the group with radical excision of pilonidal sinus and open maintaining of a wound with vacuum therapy the duration of hospitalization was 13.9±2.3 days (from 5 to 24, Me=15), the time of full wound healing – 31.1±2.7 days (from 15 to 39, Me=31.0), intensity of a pain syndrome – 2.2 and 1.5 points. No complications and recurrence of the disease were noted.

Thus, primary closing of a wound promotes fast healing, but increases the number of complications and recurrence. Open maintaining of a wound leads to the complete recovery, and its combination with vacuum therapy reduces the time of wound healing, reduces the frequency of complications and recurrence of pilonidal sinus.

Keywords:*pilonidal sinus, surgical treatment, open maintaining of a wound, primary wound closure, vacuum therapy, negative pressure wound therapy.*

Introduction

Pilonidal sinus is widely spread and occurs from 16 to 26 cases of 100.000 population, thus, middle age is 21 years in men and 19 years in women. Men suffer four times more often than women [*Khanna A, Rombeau J, 2011*]. In the practice of proctologists the number of patients with pilonidal sinus is not less than 10-12% [*Rivkin V et al., 2011*].

A large number of patients with this pathology occurs among young people from 15 to 30 years [*Shelygin Yu, Blagodarny L, 2014*]. Pilonidal sinus and its treatment can become the reason of considerable discomfort, pains, losses of daily activity, and in addi-

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tion, burdensome bandagings promote disability.

Pilonidal sinus as independent disease was described for the first time in 1847 [*Dultsev Yu, Rivkin V, 1988*]. So far, coloproctologists are discussing which method of surgical treatment of pilonidal sinus is the best. Various surgical treatments have been worked out for 150 years: from simple excision of pilonidal sinus with open maintaining of a wound to difficult plastic surgeries. However none of the existing methods of surgical treatment is deprived of shortcomings [*Titov A et al., 2015*].

In literary reviews on the treatment of pilonidal sinus, recommendations about the use of vacuum therapy (VAC™, NPWT) as an option of basic or additional method of treatment began to appear more often. However, it is considered that vacuum therapy for pilonidal sinus is rare and methodologically unexplored method of treatment [*Cherkasov M et al., 2015*].

The aim of present study is the comparison of surgical treatment methods of pilonidal sinus.

Material and methods

Present study is based on the analysis of treatment results in 59 patients with pilonidal sinus, who were exposed to radical operation – excision of the pilonidal sinus and pathologically changed tissues from January 2013 till December 2015 in office surgical clinics of RostSMU. They were 51 (86.4%) men and 8 (13.6%) women. Disease duration varied from one month to 4 years.The study was approved by Institutional Committee on Bioethics and corresponds to the principles designated in the Helsinki declaration [*Declaration of Helsinki 1964*].

In all patients radical excision of pilonidal sinus was performed according to a standard technique [*Dultsev Yu, Rivkin V, 1988*]. Patients were divided into 3 groups: in 22 patients aged from 17 till 57 years (middle age 25.5±4.7, Me=22) primary closing of a wound with Donati seams was performed after excision of pilonidal sinus, in 18 patients aged from 17 till 50 years (middle age 24.8±3.8, Me=21) radical excision of pilonidal sinus with leaving of a wound open and aftertreatment by standard wound dressing was carried out, in 19 patients aged from 21 till 57 years (middle age 32.4±5.6, Me=22) the open wound was treated with vacuum therapy.

Among 59 patients 17 had the chronic inflammation of pilonidal sinus in the stage of purulent fistulas, 8 had recurrent abscess, 6 – chronic inflammation in an infiltrative stage, 15 – remission of an inflammation, 7 – uncomplicated pilonidal sinus, 2 patients were treated while they were having an acute inflammation in an infiltrative stage, 4 patients were hospitalized with recurrent pilonidal sinus.

In the preoperative period standard methods of the study were conducted in all patients (history taking, survey, palpation, manual research of a rectum, rectoromanoscopy), as well as additional methods of disease diagnosis – probing of pilonidal sinuses, introduction of contrast to the sinuses (solution of diamond green), fistulography (patients with a complicated pilonidal sinus). Prevention of purulent complications was carried out (intramuscular introduction of antibiotics in a dose of 1 *g* in 30 minute prior to operation and each 6 hours within the first days after operation).

It should be noted that 19 patients were treated according to our method [*Cherkasov M et al., 2014*]. Pilonidal sinuses were marked by diamond green under spinal anesthesia in the position of the patient on the surgical table by Depage (on stomach, with elevated pelvis, lowered and separated legs) after processing of an operational field with the solution of antiseptics. Pilonidal sinus with pathologically changed tissues was excised within healthy ones with 2 semi-lunar skin cuts. The careful hemostasis was carried out. Operation was finished with a careful hemostasis electrocoagulation and a wound dressing with “Levomekol” ointment.

Bandaging was carried out in 24 hours after the operation of pilonidal sinus excision: tampons with “Levomekol” ointment were taken from a wound and a replaceable drainage bandage was used. A bandage sponge was stacked in a wound, drainage was established, and a sterile bandage was applied, then a film covering was pasted (Fig. 1), if needed the edges of a wound were reduced. The drainage tube was connected to the portable device for therapy by controlled negative pressure. Immediately after that the 24 hour vacuum therapy was carried out according to the scheme: within the first 8 days with an initial negative pressure of

Figure 1. *Stages of vacuum bandage imposing:* ***a)*** *laying of a bandage sponge,* ***b)*** *installation of wound drainage,* ***c)*** *final form after laying sterile bandages and sticking a film coat*

50 *mm Hg* with an interval of 2 minutes and final negative pressure of 125 *mm Hg* with an interval of 5 minutes. Within the next 12 days vacuum therapy was carried out according to the scheme: with an initial negative pressure of 75 *mm Hg* with an interval of 7 minutes and final negative pressure of 125 *mm Hg* with an interval of 2 minutes. Changes of a drainage bandage and bandage with an antiseptic was performed every 4 days after the beginning of vacuum therapy.

Following findings of surgical treatment of pilonidal sinus were estimated: age, sex, treatment method, hospitalization duration, time of a wound healing, intensity of pain (using visual analogue scale), frequency of complications, recurrence of the disease. The obtained data are processed with the use of Microsoft Office Excel and STATISTICA v. 6.0 software packages by methods of descriptive statistics and multiple-factor dispersive analysis, statistical significant differences of $p<0.05$.

Results

Follow-up period of patients after the operation lasted from 4 to 35 months.

The period of hospitalization of patients with excision of pilonidal sinus with primary closing of a wound with Donati seams averaged 11.0±1.9 days (from 3 to 20 Me=11), and time of full healing of a wound – 14.9±4.9 days (from 8 to 49, Me=12.5). Intensity of pains, according to questionnaires of the visual analogue scale, on the first and 14th day after operation was 3.5 and 2 points, respectively. In this study group complications occurred in the earliest postoperative period in 5 (22.7%) patients: in 1 patient seams were cut through with a divergence of edges of a wound, in 2 patients an ischemic necrosis of the sewed tissues appeared due to a strong tension, and in 2 cases suppuration of hematoma of a postoperative wound was noted. Recurrence of the disease was noted in 3 (13.6%) patients.

Figure 2. *Type of the wound* ***a)*** *after operation,* ***b)*** *on the 14th day of treatment by vacuum therapy,* ***c)*** *on the 27th day, a full epithelization*

In group of patients with radical excision of pilonidal sinus and open maintaining of a wound using bandages, the duration of hospitalization lasted 13.7±2.6 days (from 3 to 25, Me=15), time of full healing of a wound – 74±5.7 days (from 35 to112, Me=57.0), and intensity of pains on the first day and on the 14th day after the operation was 2.8 and 1.8 points. In this group, complications in the earliest postoperative period appeared in 2 (11.7%) patients: in 1 patient wound suppuration was noted, and in 1 case – sluggish healing of a postoperative wound in connection with the considerable extent of wound defect. Recurrence of the disease was noted in 1 (5.6%) patient.

In the group of patients with radical excision of pilonidal sinus and open maintaining a wound with vacuum therapy the duration of hospitalization lasted 13.9±2.3 days (from 5 to 24, Me=15), time of full healing of a wound – 31.1±2.7 days (from 15 to 39, Me=31.0), intensity of a pain syndrome – 2.2 and 1.5 points. Thus, no complications in the earliest postoperative period and recurrence of the disease were noted in the study group (Fig. 2).

Discussion

In scientific literature a large number of discussions is devoted to a question of closing or leaving of a wound open after the excision of pilonidal sinus.

It is considered that primary closing of a wound is a more convenient way of treatment for patients [*McCallum I et al., 2008; Al-Khamis A et al., 2010*]. As a result of the present study it is confirmed that this way promotes faster healing of a wound (14.9±4.9 days), but increases the frequency of recurrence (by 41% against open maintaining with secondary healing) and is characterized by the bigger frequency of suppuration complications of a wound (twice more often than at open maintaining).

The method of excision of pilonidal sinus with subsequent open maintaining of a wound leads to a complete recovery of patients and rather small amount of recurrence of the disease for 5.6%. However, the period of healing of a wound defect can last about several months (74±5.7 days).

The developed original way of pilonidal sinus treatment using vacuum therapy is more effective in comparison with the previous techniques. The way allows to reduce the period of full healing of a wound in sacral and coccygeal area (31.1±2.7 days) in comparison with open maintaining of a wound standard bandages, and also reduces the frequency of complications and recurrence of the disease (0% relative to comparison groups of the study).

It should be noted that in groups with open maintaining of a wound statistically significant decrease was noted (3.5/2 points) in intensity of a pain syndrome (2.8/1.8 and 2.2/1.5 points) compared to primary closing with Donati seams. Hospitalization duration in all study groups had no statistically significant distinction (p=0.11).

However, the method of vacuum therapy also has shortcomings: noise from work of pomp, an air leakage at depressurization of a bandage, inconvenience of daily carrying vacuum of the device. Difficulties of using vacuum in sacral and coccygeal area are connected with anatomic features of this area: existence of a natal cleft, expressed hypodermic and fatty cellulose, proximity of an anus, mobility. It's possible to eliminate those defects and difficulties, by using modern portable devices for vacuum therapy, excluding from therapy patients with a low position of a postoperative wound, good profiling of all components of the drainage vacuum bandage, which is well shaved, and clean skin, rapprochement of wound edges while gluing a vacuum bandage and its dense application in the field of a postoperative wound.

Thus, primary closing of a wound promotes fast healing, but increases the number of complications and recurrence. Open maintaining of a wound leads to the complete recovery, and its combination with vacuum therapy reduces the time of wound healing, reduces the frequency of complications and recurrence of pilonidal sinus.

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