

HIP JOINT DEGENERATION DURING DEGENERATIVE DYSTROPHIC LESIONS WITH PAINFUL CIDER

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✓ *Resume,*

Worldwide, one in seven men and one in four women over 45 suffer from diseases of the hip joint. Often, due to pronounced destructive changes in the joint, the pain becomes unbearable, and then the patient inevitably takes the path of joint replacement surgery, the proposed method is an innovative method of pain relief for the joints, which consists in "turning off" the painful nerve endings surrounding the joint: radiofrequency denervation (ablation).

Key words: Hip joint, denervation, aseptic necrosis of the femoral head, pain.

ДЕНЕВРАЦИЯ ТАЗОБЕДРЕННОГО СУСТАВА ПРИ ДЕГЕНЕРАТИВНО ДИСТРОФИЧЕСКИХ ЗАБОЛЕВАНИЯХ С БОЛЕВЫМ СИДРОМОМ

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Во всем мире каждый седьмой мужчина и каждая четвертая женщина старше 45 лет страдают заболеваниями тазобедренного сустава. Часто, за счет выраженных деструктивных изменений в суставе, боли становятся нестерпимыми, и тогда неизбежно пациент встает на путь операции по замене сустава, нами предложенный способ - это инновационный метод обезболивания суставов, который заключается в "выключении" болевых нервных окончаний, оплетающих сустав: радиочастотная денервация (абляция).

Ключевые слова: Тазобедренный сустав, денервация, асептический некроз головки бедренной кости, болевой синдром.

СОН ЧАНОҚ БЎЎМИНИНГ ОЎРИҚ БИЛАН КУЗАТИЛАДИГАН ДИСТРОФИК ДЕГЕНЕРАТИВ КАСАЛИКЛАРИДА ДЕНЕВРАЦИЯ ҚИЛИШ

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✓ *Резюме,*

Дунё бўйлаб ҳар еттига эркадан бири ва 45 ёшдан ошган ҳар тўртта аёлдан бири сон чаноқ бўғими касалликларидан азият чекади. Кўпинча, бўғимдаги яққол деструктив ўзгаришлар туфайли, оғриқ чидаб бўлмас ҳолга келади ва шунда бемор олдида бўғим алмаштиришдан ўзга чора қолмайди. Биз томондан таклиф этилган усул - бу бўғимни оғриқсизлантиришнинг инновацион усули бўлиб, бўғимни ўраб турган нерв охиралини блоклашдан иборат: радиочастотали денервация (абляция).

Калит сўзлар: Сон чаноқ бўғими, денервация, сон суяги бошчаси асептик некрози, оғриқли синдром.

Relevance

Degenerative dystrophic diseases are one of the most urgent problems of modern orthopedics, which leads to severe pain syndromes, limitation of joint function, significant economic costs and increased mortality (1,2). Depending on the age, coxarthrosis appears radiologically in 30-43% of the population and symptomatically in 11-17% (3). The number of cases of coxarthrosis is constantly growing, which is associated with an aging population and an increase in cases of overweight (4). The parasympathetic nervous system may be involved in the formation or maintenance of a focus of necrosis of the femoral head. Pathological impulse from the lesion leads to reflex spasm of the vessels of the hip joint, which may be either the root cause or a concomitant factor in the development of aseptic necrosis of the femoral head. In various countries of the world, in such cases, an innovative method of joint

anesthesia is used, which consists in "turning off" the painful nerve endings surrounding the joint: radio-frequency denervation (ablation). The proposed conservative methods for treating osteoarthritis have varying levels of evidence and effectiveness, including modification as a lifestyle (weight loss and exercise 10, physiotherapy orthopedics, orthopedic shoes, acupuncture balneotherapy and mud therapy), pharmacological drugs (non-steroidal anti-inflammatory drugs, chondroprotectors) and intra-articular injections (corticosteroids, hyaluronic acid, prolotherapy, autologous injections of blood products), (8,9,10). Radiofrequency denervation of the sensitive nerves of the hip joint is a new, effective method of treating the combat syndrome. For the first time, the method used for the denervation of facet joints for more than 30 years of use has proven to be effective and long-term in the treatment of facet syndrome in various parts of the spine (5,6). The targeted thermal effect on the fibers of

the nervous tissue causes local denaturation, leading to their Waller degeneration with subsequent regeneration (7). The procedure itself is safe for the patient and as delicate as possible: by bringing a thin electrode to the nerve, a point thermal effect occurs only on the painful nerve ending, while the joint capsule is not affected. Due to this, radio-frequency denervation is not an obstacle to further surgery, if it is nevertheless necessary, and can also be performed after surgery, if the pain persists. For this, you do not need to make incisions and perform general anesthesia. The most attractive is that when performing denervation there is no need to inject steroid hormones, which makes this procedure ideal for patients with high blood pressure or diabetes.

This procedure is performed in two stages:

— Diagnostic blockade of the nerves of the hip joint. Before performing radiofrequency denervation, the physician will first perform a diagnostic blockade to verify that the radiofrequency denervation method is appropriate for the patient.

— The main stage of treatment, during which the doctor performs the procedure of "disconnecting" the nerves to eliminate pain and improve the function of the hip joint.

Objective: To evaluate the results of treatment of pain with degenerative diseases of the hip joint by denervation of the femoral and obturator nerves.

Material and methods

Since 2018, we have analyzed data from 44 patients (67 joints) undergoing inpatient treatment at the StarOrthomed Clinic. The average age of the patients was 57.2 ± 1.5 years (age range from 36 to 74 years). The average duration of pain before treatment was 3.33 ± 1.52 years. Prior to going to the clinic, all patients received complex conservative treatment: non-steroidal anti-inflammatory drugs - 40 (90%) patients, physiotherapy - 35 (79.5%) patients, physiotherapy - 18 (40.9%) patients, intra-articular injections of corticosteroids - 27 (61.3%), hyaluronic acid preparations - 25 (56.8%), autologous injections of blood preparations - 7 (15.89%) patients. Systematic administration of painkillers was performed by 38 (86.3%) patients. All patients underwent denervation of the articular branch of the femoral and obturator nerve. All patients were examined clinically and radiologically.

The main complaint of the patients was pain in the hip area. An X-ray stage evaluation was performed according to the classification of J. Kellgren and J. Lawrence. So, coxarthrosis of the 1st degree was detected in 8 (18.2%) patients, II degree 12 (27.2%), III degree 15 (34%), IV degree 9 (20.6%). Quantitative and qualitative assessment of pain was carried out on the basis of a visual analogue scale (VAS) of pain. Joint functional limitations were measured using Harris Hip Score (HHS). Assessment of the patient's condition was carried out before the denervation procedure, after 2 weeks, 1, 3.6 and 12 months. after the procedure. Criteria for inclusion in the study: patients with pain from 5 cm according to yours on the background of osteoarthritis of the hip joint, ineffective conservative methods of treatment, the systematic use of non-steroidal anti-inflammatory drugs to relieve pain. Criteria for exclusion from the study: the presence of a chronic systemic inflammatory process, local inflammation in the area of the procedure, coagulopathy, inability to take the correct body position for the procedure, mental illness.

Procedure: We put the patient on a multifunctional orthopedic table strictly on his back. We perform local anesthesia with novocaine 2% - 2.0 lateral to 1.5-2.0 cm from the femoral artery. After that, under control of the Electron-optical transducer, a G18 needle is inserted at a distance of 45 cm from an optical angle of 150-200 to the upper lip of the joint capsule to stimulate and negative aspiration 2.0 ml of 5% Novocaine is injected. After the active end of the electrode 22 G of the apparatus (COSMAN) is inserted, a 100 mm needle at an angle of 450 moves to n.femorale at the level of the upper lip of the joint capsule, exactly the same method reaches n.obturatoris at an angle of 600. The impedance is from 400 to 500 Ohm. Sensory testing up to 0.40 Mv, 50 Hz, is described as a patient as a sensation of pressure, which corresponds to the usual spread of patient pain. After we get a motor response of up to 3 MV at 2 Hz, which should be negative. After denervation (TRF) at 700C for 90 seconds.

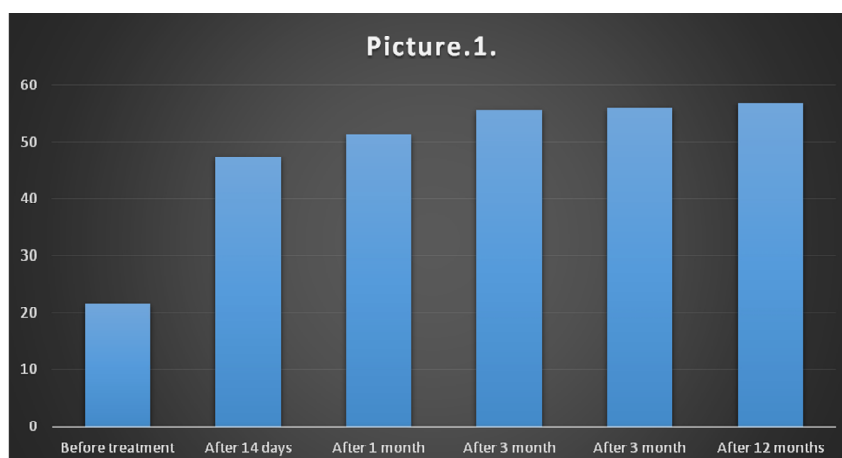
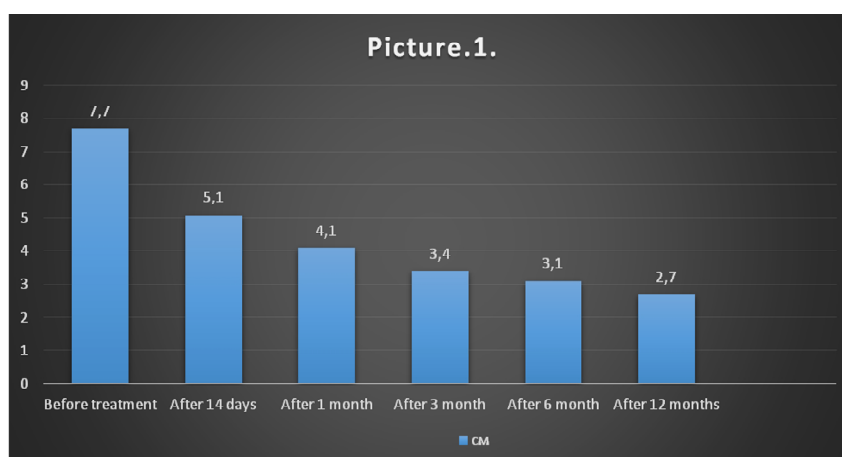
Results: The dynamics of subjective pain sensations before and after treatment, reflected in the results of a VAS survey, as well as an assessment of the functional limitations of HHS are presented in Table. 1 and in fig. 1,2.



Table 1.

Dynamics of subjective indicators for VAS and HHS index.

Stages of observation	VAS, sec	HHS, score
	Group 1	Group 1
Before treatment	7.7 \pm 0,15	21.6 \pm 0,67
After 14 days	5.1 \pm 0,21	47.4 \pm 1,21
After 1 month	4.4 \pm 0,25	51.3 \pm 1,44
After 3 month	3.4 \pm 0,27	55.7 \pm 2,03
After 6 month	3.1 \pm 0,29	55.9 \pm 2,67
After 12 months	2.7 \pm 0,31	56.9 \pm 2,98

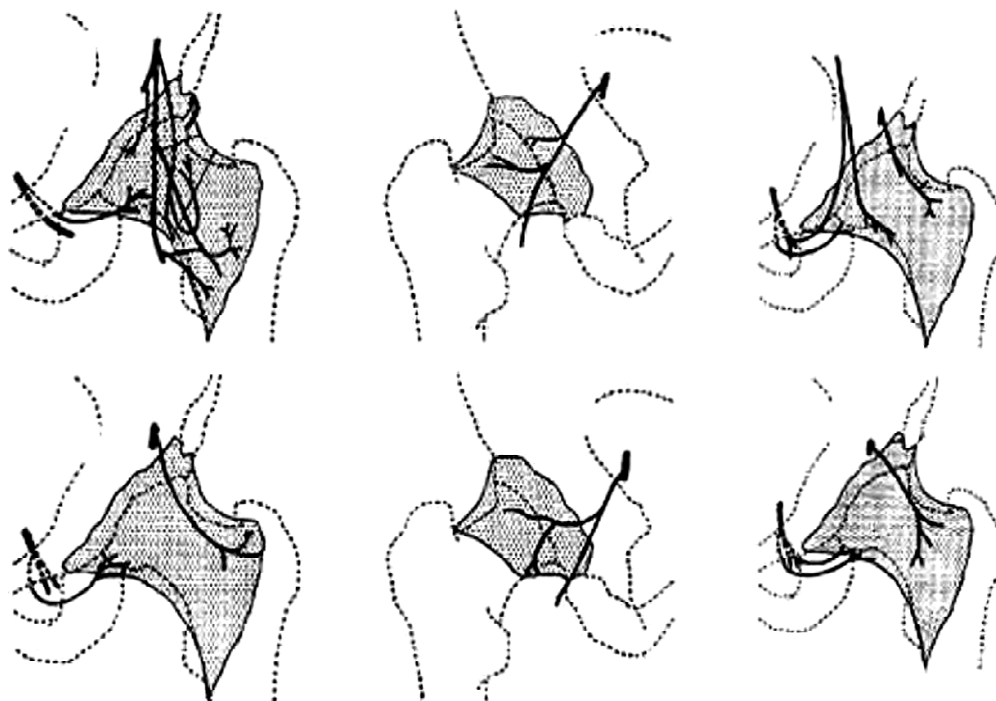


Discussions: Worldwide, one in seven men and one in four women over 45 suffer from arthrosis of the hip joint (coxarthrosis). Often, due to pronounced destructive changes in the joint, the pain becomes unbearable, and then the patient inevitably takes the path of joint replacement surgery, the proposed method is an innovative method of pain relief of the joints, which consists in "turning off" the painful nerve endings surrounding the joint: radiofrequency denervation (ablation). Radiofrequency denervation of the hip joint is performed with intense pain, even when other procedures - injections of hyaluronic acid, hormonal drugs, and even knee surgery were unsuccessful. The sensitive innervation of the hip joint is carried out through the articular branches of the obturator, femoral and superior gluteal (based on the sciatic) nerves. The main symptoms associated with pain in the hip joint are located in the inguinal, femoral and trochanteric regions. Inguinal and femoral pains arise from

the sensory branches of the obturator nerve, while trochanteric pains arise from the sensory branches of the femoral nerve (14).

Hip joint denervation for arthrosis pain syndrome is not a new procedure. Prior to the widespread introduction of endoprosthetics in orthopedic practice, denervation was actively used to relieve pain in arthrosis. The obturator nerveectomy was first used in 1933 by H. Camitz (11) and in 1935 W. Mol (12), L. Tavernier, and C. Godinot (13) reported the successful results of an open obturator nerveectomy in 22 of 57 patients with arthrosis of the hip joint. Combined neurotomy of the obturator and femoral nerves showed a good, but short-term effect (up to 3 months) in 22 of 24 patients. Good treatment results for 3 and 18 months. accordingly, only 2 patients were noted. Subsequently, a large number of different methods and approaches for surgical denervation of the hip joint were proposed, however, due to the complexity of the

Hip joint innervation according to S. Locher.



procedure, ambiguous results and residual problems associated with iatrogenic nerve damage, all these methods were abandoned over time. In order to treat coxalgia, S. Heywang-Robrunners under CT control performed blockade of the obturator nerve with a large volume of 1% lidocaine solution in 15 patients with osteoarthritis of the hip joint. 4 patients noted a sufficient regression of pain for a period of 3 to 11 months, another 3 patients for up to 8 weeks. A short effect or lack of effect was noted by 4 patients, on day 1 - 2 patients, without effect of 2 patients. There are 18 patients in the group. The authors introduced a local anesthetic to one group, a physiological saline control. 5 patients mainly noted a decrease in pain, 8 - an increase in range of motion. However, after 4 weeks there was no significant difference between the patients of both groups. Over the past 20 years, the use of radio frequency neuroablation has become increasingly popular. For the first time, the idea of radiofrequency denervation of the hip joint was voiced in 1991 and applied in 1993 by the Japanese orthopedist K. Okada. The author reported 15 cases of radiofrequency thermocoagulation of the obturator, femoral and sciatic nerves. In most cases, patients noted pain regression. In general, all the studies we analyzed on the application of radiofrequency neuroablation of the nerves of the hip joint were of poor quality with a small sample size, poorly described by the methodology for selecting patients with a heterogeneous etiology of pain syndromes (osteoarthritis, aseptic necrosis, metastases, postoperative), different electrode locations and lack of functional analysis results. However, all studies showed relative safety of the procedures: only one patient had hyposthesia along the anterior surface of the thigh, and in several cases hematomas in the area of the procedure. Hip joint denervation is used for the following pathologies and conditions: Hip joint osteoarthritis; Degenerative diseases of the joints; Total hip arthroplasty (before or after surgery); Partial prosthetics of the hip joint (before or after surgery); In patients with contraindications for hip arthroplasty; In patients who want to avoid or delay hip

arthroplasty. Hip replacement surgery is considered the generally accepted standard for the treatment of many diseases of this joint, however, many people have severe concomitant diseases that can significantly complicate the implementation of surgical treatment. Others simply want to avoid surgery, because they cannot afford to break away from work for a long stay in the hospital and the subsequent recovery period. In these cases, radiofrequency denervation is a safe alternative to surgery to relieve a person from pain. Despite the effectiveness of hip arthroplasty, many patients complain that the pain persists after surgery. With the advent of radiofrequency denervation, patients can count on pain relief without any additional surgery. The main advantage of hip denervation is a minimally invasive non-surgical procedure that can relieve pain when other treatments are ineffective. For many patients who have to wait several months for surgery, radiofrequency denervation can significantly reduce pain and make the waiting period comfortable and painless. After the procedure, the degree of anesthesia can vary significantly depending on the cause and source of pain. In most cases, the analgesic effect lasts from 6 to 12 months, in other cases, life without pain can last for many years.

Important and relevant issues for obtaining maximum efficiency from the procedure, as well as its safe implementation and avoidance of adverse effects, are:

- the exact concept of the innervation of the hip joint;
- variable topographic anatomy of nerves;
- location of large vessels;
- secondary damage to small vessels providing blood supply to the joint;
- changes in the joint caused by a violation of its innervation and vascularization.

Most anatomical works do not carry the necessary information about the trajectory of the position of the nerves in relation to the bone structures, which is necessary to develop a reliable and easily reproducible procedure. It is also necessary to understand the optimal volume of

denervation, is it sufficient to conduct radiofrequency neuroablation of one, or is there a need for coagulation of several nerves. The basic anatomical data on the innervation of the hip joint can be used for radiofrequency neuroablation, however, taking into account significant variations.

Findings

1. When performing denervation, there is no need to inject steroid hormones, which makes this procedure ideal for patients with high blood pressure or diabetes.

2. The benefits of denervation in a minimally invasive non-surgical procedure that can relieve pain when other treatment methods are ineffective. For many patients who are forced to expect surgery for several months, denervation can significantly reduce pain and make the waiting period comfortable and painless.

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