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PREVENTION OF EARLY POSTOPERATIVE DISLOCATION OF THE ENDOPROSTHESIS HEAD IN DYSPLASTIC COXARTHOSIS II-III DEGREE

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Akhmedov Shamshod Shavkatovich
Abu ali ibn Sina named Bukhara state medical institute. Uzbekistan
Email: fadasa_1987@mail.ru
ahmedovsamsod8@gmail.com
Orsid: https://orcid.org/my-orcid?orcid=0000-0002-0674-4444

Abstract

Dysplastic coxarthrosis is one of the most severe degenerative-dystrophic lesions of the hip joint. The number of patients with severe deformities of the femur and acetabular region, due to the progression of anatomical and functional congenital changes, as well as as a result of previous corrective surgeries, is steadily increasing. degenerative changes in the spine.

Key words

Dysplastic coxarthrosis, endoprosthesis dislocation, posterior capsulotomy.

Introduction. Degenerative-dystrophic diseases of the joints are among the most common pathologies of the musculoskeletal system, among which dysplastic coxarthrosis occupies one of the first places in frequency (1). It should be noted that degenerative-dystrophic diseases of the joints of various etiologies are common diseases of the musculoskeletal system and occur in 6.4-12% of orthopedic patients, accounting for more than 50% of all joint pathology (3,4). The number of patients with severe deformities of the femur and acetabular region, due to the progression of anatomical and functional changes, is steadily increasing over time. According to the literature, dysplastic coxarthrosis occupies from 27% to 78% in the structure of degenerative-dystrophic diseases of the hip joint. The prevalence of this pathology among the adult population ranges from 8% to 27%. On average, hip dysplasia accounts for 16.5% of the entire pathology of the musculoskeletal system. As a rule, the disease affects people of active working age, leading them to disability in almost 30% of cases (5).

Its most characteristic features are, first of all, the sloping of the roof of the acetabulum, a violation of the configuration of the upper edge, shallow depth and deformed changes in its shape, underdevelopment of the anterior edge, deformity

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of the proximal femur, imbalance of the tendon-muscular apparatus of the joint (2). Despite the timely detection of congenital underdevelopment of the elements of the hip joint, the problem of diagnosis, treatment of dysplastic coxarthrosis and prevention of its development in the postoperative period remains far from being finally resolved.

In recent decades, total arthroplasty has become one of the main methods of treating severe pathological changes in the hip joint, which allows restoring the support ability of the hip, achieving a sufficient range of motion, relieving the patient of pain, lameness, and ultimately returning him to an active lifestyle (6,7). Up to 1,500,000 total hip replacements are performed annually worldwide. According to statistics, in developed countries, there is one arthroplasty of large joints per thousand of the population.

In many world publications there are references to the presence of pain after total arthroplasty in patients with dysplastic coxarthrosis. In the studies of some authors, the pain syndrome in patients who underwent hip arthroplasty persists in 17–20% (16.17). According to the Swedish Register for 2002–2006. the causes of repeated hip arthroplasty in 1.2% of cases is pain. One year after primary arthroplasty, 14–22% of patients complain of pain, and about 30% after 10 years (18). According to the results of the study of the clinic in Salt Lake in 2004, the main pain syndrome after primary total arthroplasty occurred against the background of excessive offset, which subsequently led to the development of tensopathy or trochanteritis. And the Australian orthopedist J. Herald, after total hip arthroplasty, quite often noted that stenosis of the upper and lower gluteal arteries occurs, and this is the cause of pain in the groin [Herald, J. Unusual cause of groin pain following hip replacement (20).

Despite the significant progress made in recent years, hip arthroplasty in dysplastic coxarthrosis still remains a serious problem, in which the number of revisions, according to various authors, ranges from 32 to 58% (Zagorodniy N.V. 2019; M. Takao, K. Ozhono, T. Nishii, 2018). According to many studies, revisions for endoprosthesis dislocation in patients with dysplastic coxarthrosis are observed 3 times more often than in aseptic necrosis of the femoral head and idiopathic coxarthrosis, and in 22.5–32% of cases they are the reason for revision surgery (B.J. Boric, S. Kurtz, E. Lau., 2018; K. Ong., 2019).

One of the reasons why patients are not completely satisfied with the operation performed is postoperative pain. Despite the presence of a huge number of literary sources, it is not possible to find out the causes of postoperative pain. From the studied sources, it can be predicted that the most studied is the pain

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syndrome with instability of the endoprosthesis components and the development of postoperative infection. Pain syndrome with instability occurs or increases with movements on the affected joint or attempts to load the operated limb. The occurrence of pain in the inguinal and gluteal region, their intensification in the patient's sitting position, as a rule, is the cause of the instability of the endoprosthesis cup. Pain along the anterior surface of the thigh and in the inguinal region, especially aggravated by rotational movements, indicates instability of the femoral component of the endoprosthesis. Pain after arthroplasty can also occur in the presence of an infectious process in the joint area. Pain in infectious complications is constant, its intensity increases over time, but also increases with movement and stress.

It should be noted that the frequency of postoperative pain in patients with dysplastic coxarthrosis is higher than in idiopathic coxarthrosis or, for example, operated after a hip fracture. According to foreign sources, for a period of observation from one to 5 years, the postoperative pain syndrome in those operated on for dysplastic coxarthrosis is up to 12%, in patients who underwent arthroplasty for idiopathic coxarthrosis, it is about 7%, and in patients who underwent prosthetics for a fracture of the femoral neck , this is 5.8-6%. (8.14).

The cause of pain in the postoperative period is often the wrinkled joint capsule left, since pain receptors are located in the joint capsule and the degree of pain depends on the left area of the joint capsule.

During arthroplasty of dysplastic, idiopathic, or traumatic coxarthrosis, the remaining secondarily altered joint capsule is transformed, overtightened, and scar deformed over time. Often during the operation, the posterior part of the hip joint capsule in dysplastic coxarthrosis is visualized wrinkled and secondarily altered with the formation of inflammatory scar bands. Given this condition, you should always pay attention to the state of the capsular-ligamentous apparatus during the operation.

The purpose of our study. As it became clear, the severity of postoperative pain intensity is most likely associated with the state of the capsule-ligamentous apparatus of the hip joint. Therefore, we made an attempt to study the state of the hip joint capsule in three pathological conditions, in dysplastic, idiopathic coxarthrosis, and in operated patients for a fracture of the femoral neck, by intraoperative posterior capsulotomy.

Materials and methods of research. Under our supervision in the Department of Orthopedics and the Consequences of Injuries of the Bukhara Regional Multidisciplinary Medical Center in the period from 2018 to 2022, there were 166

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patients. 50 patients operated on with idiopathic coxarthrosis, 30 patients operated on after a fracture of the femoral neck and 86 patients with dysplastic coxarthrosis, II-III degree - 56 (65%) women and 30 (35%) men who underwent total hip arthroplasty. Dysplastic coxarthrosis II degree was noted in 34 (39%) patients, III degree — in 52 (61%). In 66 (76%) cases, the technique of posterior capsulotomy was used during the operation, mainly with a cementless type of fixation of the endoprosthesis components, depending on the anatomical shape of the medullary canal of the femur, femoral components with metaphyseal, metaphyseal-diaphyseal or diaphyseal type of fixation were used, in 23 cases — Cement arthroplasty was performed, mainly in patients with osteoporosis.

Results and their discussion. The main reason for the complexity of total arthroplasty in dysplastic coxarthrosis is the need to reconstruct the acetabulum itself and sometimes the proximal femur to eliminate subluxation or dislocation of the endoprosthesis head and restore the length of the limb after arthroplasty, which may be accompanied by pain (9,10). In this case, it is necessary to take into account changes in the anatomy at the level of all segments of the bone joint, cartilage, capsule and ligaments.

During arthroplasty in patients with dysplastic coxarthrosis, two interrelated factors should be taken into account, such as the restoration of the range of motion and the full support of the operated limb in the early postoperative period from 1 to 3 days, so basically such operations have to be done in middle-aged and even in some cases young patients, when there is a strong pain syndrome to integrate them into work.

In addition to the pain syndrome in patients with dysplastic coxarthrosis, external rotation of the lower limb is visually and clinically observed, due to constriction of the anterior capsule and wrinkling of the posterior capsule of the hip joint. Which in turn can lead to early postoperative anterior dislocation of the endoprosthesis head. To reduce pain and anterior dislocation, we have proposed a "method for the prevention of early anterior dislocation after total hip arthroplasty in dysplastic coxarthrosis FAP 2022 0280", which includes a longitudinal dissection of the fascia lata in the middle of the greater trochanter, dissection of the joint capsule along the intertrochanteric line from the base of the femoral neck along its upper edge to the upper posterior edge of the acetabulum, dislocation and osteotomy of the femoral neck, installation of a total prosthesis, layer-by-layer stitching of the wound, characterized in that after dislocation and osteotomy of the femoral neck, a total resection of the posterior capsule and coagulation of the edges of the resected hip joint capsule are performed.

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We then evaluated the results of total hip arthroplasty in these three conditions. Particular attention in these cases was paid to a thorough assessment of anatomical, local data, neurological status, psychological readiness for surgery and individual preparation for postoperative behavior of patients. When assessing the nature of previously performed operations on the hip joint, the anatomical state of the hip joint, the presence of an acetabular defect, the volume of the defect in the anterior, upper, and posterior walls were assessed as predictors of the risk of endoprosthesis dislocation and postoperative pain syndrome. The shape of the femoral head and the loss of its sphericity were assessed, as well as the cervical-diaphyseal relationship (valgus or varus position, degree of torsion of the proximal end of the femur). These factors must be taken into account at the stage of preoperative planning, as they affect the methods of arthroplasty.

Operation technique: After spinal anesthesia. The patient is laid on his side. We treat the limb 3 times with a solution of iodine + alcohol. After that, we make a Harding skin incision 8-10 cm above the greater trochanter, dissect the fascia lata of the thigh throughout the wound, and then subperiosteally separate the gluteus medius muscle from the greater trochanter. Then we perform a dislocation of the femoral head. The head of the femur is removed with a saw. We process the acetabulum with cutters, after which we excise the posterior capsule. Next, we process the femoral canal. After we install the components of the endoprosthesis. Intraoperatively, we check the presence of the volume of movement. Next, we carry out hemostasis and suturing the wound. Posterior capsulotomy, according to our data, is a serious factor in the prevention of postoperative pain syndrome and early dislocation of the endoprosthesis.

In the system of preventive measures to reduce the risk and prevent dislocations and postoperative pain syndrome during arthroplasty in patients, especially with II-III degree dysplastic coxarthrosis, attention was paid to preoperative preparation of patients, during which the nature of contracture in bilateral joint damage, the relationship with concomitant pathology of the spine and knee joints were assessed. and their influence on possible complications in the postoperative period. In some cases, with severe soft tissue atrophy at the preoperative stage, patients underwent rehabilitation treatment aimed at restoring muscle tone and increasing muscle mass in the hip joint by prescribing massage and electrical muscle stimulation. With bilateral damage to the hip joint in dysplastic coxarthrosis, the joint with more pronounced functional disorders and pain component was the first to be operated on, which was determined by assessing the pain threshold and using a visual analogue scale.

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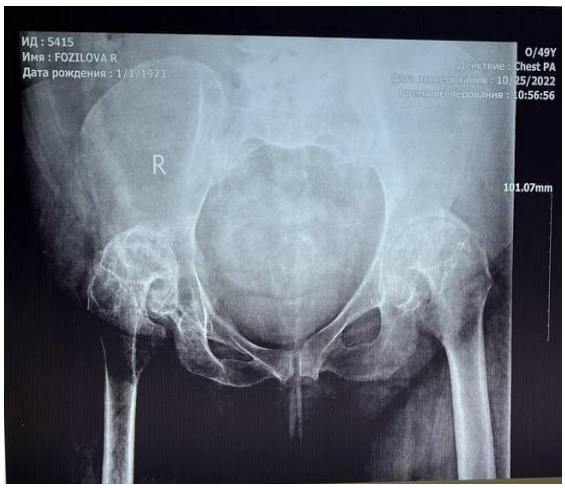
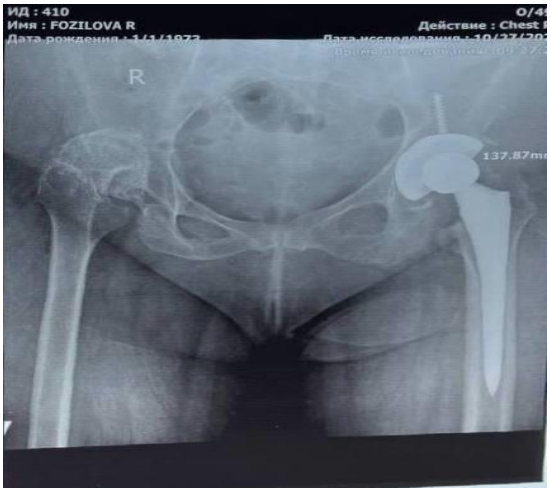
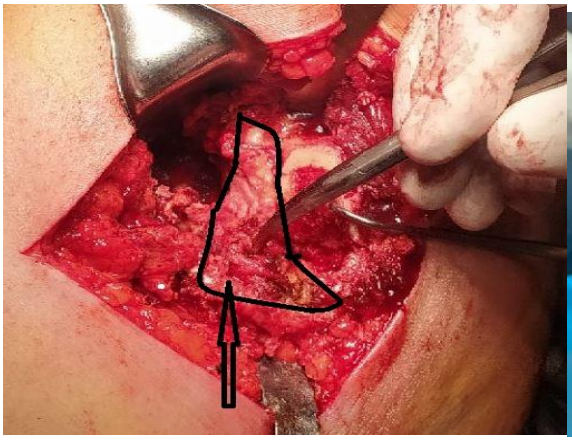
Compensation for the shortening of the second, non-operated, limb was carried out by selecting orthopedic shoes or heels for standard shoes. The average interval between operations on the joints ranged from 1 to 3 months. In the early postoperative period, for prevention, all patients were put on a plaster derotator on the operated limb for the first 10 days, and a differentiated tactic was used to restore joint function and mobility of patients, taking into account postoperative risk assessment.

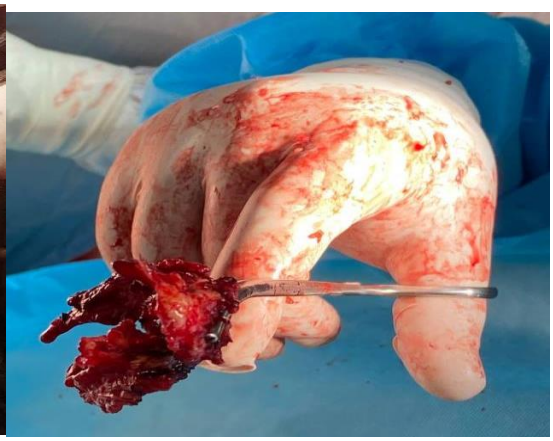
Example No. 1: Patient F.Z, born in 1973, and / b No.; 3659/270 with a diagnosis of bilateral dysplastic coxarthrosis III degree with pain.





Radiography





View of the posterior wall of the hip joint capsule

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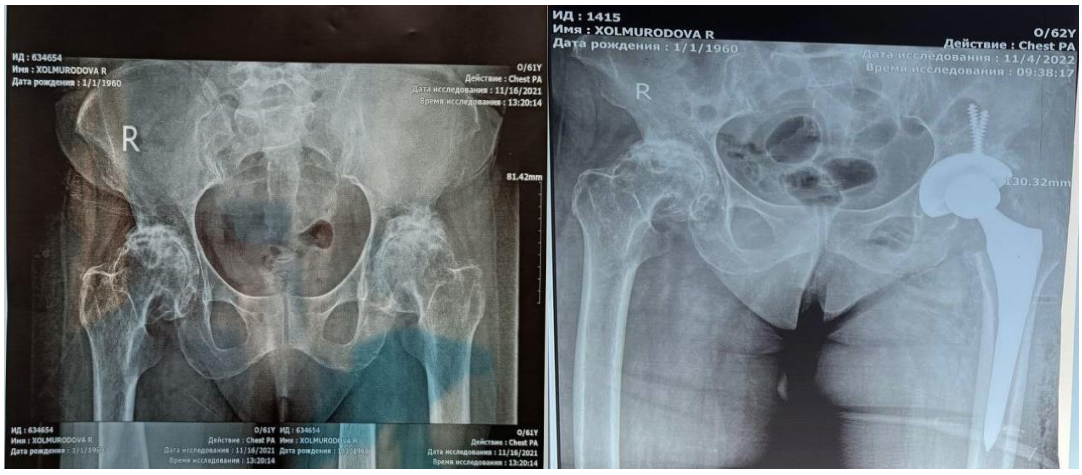
Before surgery After the operation

All patients who underwent posterior capsulotomy were recommended bed rest for 1 to 2 weeks, while electrical stimulation of the muscles of the thigh and lower leg, isometric gymnastics, exercise therapy on an arthroban 3 times a day, and lymphatic drainage massage were prescribed. In the interval between passive gymnastics on the arthroban, the patients were trained in the skills of active exercise therapy for the hip joint.

Example No. 2: Patient X.R., born in 1960, and / b No.; 8124/643 with a diagnosis of bilateral dysplastic coxarthrosis III degree.



Radiography

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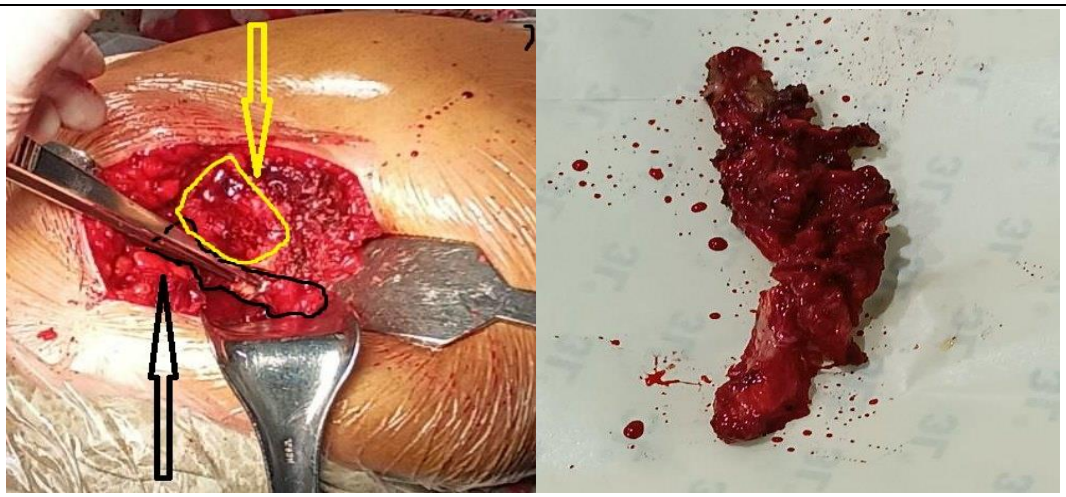

View of the posterior wall of the hip joint capsule

In the late postoperative period, the stability of the endoprosthesis components, the functional state of the joint, and aseptic instability were monitored. Such tactics of managing patients after arthroplasty with dysplastic coxarthrosis allowed us to minimize the risks of postoperative pain syndrome and endoprosthesis dislocation in the early stages after surgery. An analysis of immediate and long-term results showed that endoprosthesis dislocations after 66 hip arthroplasty in patients with dysplastic coxarthrosis occurred in 1 (0.6%) case due to non-compliance with the regimen and postoperative pain syndrome was also observed in 4 patients (6.0 %). In the study group of patients with dysplastic coxarthrosis, female patients predominated, while at the age of over 50 years, pathology was noted in 32 (78%) patients, which we considered as an additional risk factor for endoprosthesis dislocation. The results of the studied patients with idiopathic coxarthrosis and patients operated on with a fracture of the femoral neck were significantly better, since such complications were not observed at all in them.

Determination of pain on the VAS scale (Visual Analog scale) in patients with the use of the method of posterior capsulotomy. Table 1.

VAS scale	Before surgery	3 days after surgery	In 3 months	In 6 months
No 0 point	0	44	48	62
Weak 2 points	1	13	17	4
Moderate 4 points	2	4	1	0
Moderately strong 6 points	17	4	0	0
Strong 8 points	18	1	0	0
Intolerable 10 points	28	0	0	0

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Table 1 shows that when performing the method of posterior capsulotomy, there is a gradual and in some cases complete disappearance of postoperative pain. Of the 66 patients operated on by this method, 62 (94%) patients completely got rid of pain within 6 months. In 4 cases, mild pain persisted up to 6 months after surgery.

Conclusions:

1. At the stage of preoperative planning of arthroplasty

in patients with dysplastic coxarthrosis of II-III degree, it is necessary to conduct a thorough analysis of all risk factors for the development of postoperative pain and dislocation of the endoprosthesis, and take them into account when performing the operation.

2. Performing a total resection of the posterior capsule and coagulation of the edges of the resected capsule of the hip joint can reduce pain after total arthroplasty, especially in patients with grade II-III dysplastic coxarthrosis, and also increases the effectiveness of surgical treatment with earlier activation and rehabilitation of patients.

3. One of the main difficulties in total hip arthroplasty in patients with dysplastic coxarthrosis is the restoration of the length of the limb and its support ability. Often there is a difference in the size of the lower extremities. Restoration of limb length up to 2 cm is easily achievable by selecting the right implants with a high offset, which takes into account existing deformities and degenerative changes in the hip joint and spine.

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