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TOTAL HIP ARTHROPLASTY IN PATIENTS WITH ANKYLOSING HIP JOINT

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Abstract: Surgical treatment for ankylosing hip joint is an urgent problem in orthopedics. There were 250 patients with ankylosing hip under our supervision from 2010 to 2021 in the Department of Orthopedics Republican Specialized Scientific and Practical Medical Center of Traumatology and Orthopedics. From them: Idiopathic - 90, post-traumatic - 40 and ankylosing spondylitis - 120 patients. Males - 90, females - 120. Most of the patients 67% were from 35 to 65 years old. All patients underwent hip arthroplasty. The number of patients with and cementless endoprostheses was carried out in the main group of 221 patients, a good result in the main group was obtained in 121 (93.1%) patients, in the control group in 100 (83.3%) patients. A satisfactory result out of 25 patients, in the main group was obtained in 8 (6.1%) patients, in the control group in 17 (14.2%) patients. An unsatisfactory result out of 4 patients, in the main group was obtained in 1 (0.8%) patients, in the control group in 3 (2.5%) patients. The average value in points in the long-term periods before hip arthroplasty was 7-7.5 points. After the operation, the average value in the main group became 10.1 points, in the control group it was 8.9 points. These indicators indicate the effectiveness of total hip arthroplasty.

Keywords: Ankylosed, hip joint, total endoprosthetics, bone, fibrous, ankylosis, osteotomy, wedge, pelvic radiography.

Relevance: Surgical treatment for ankylosed hip joint is an urgent problem in orthopedics. There are the following options for surgical interventions for ankylosis of the hip joint: palliative (decompressive, denervating, revascularizing), stabilizing (arthrodesis) and mobilizing (biological arthroplasty, endoprosthetics). (2,11,14); The study of long-term results showed that disability after palliative interventions increased from 23 to 63%, after arthrodesis - from 20 to 75%, when using various types of interpositions between ankylosed articular surfaces - up to 67%, which became the reason for the refusal of most orthopedists from these operations in benefit of total arthroplasty. (3,7,10,17)

In order to achieve high efficiency of hip arthroplasty and rehabilitation of patients with ankylosed hip joint, various scientific studies are being carried out in the world. Most authors conduct research on the development of biological and nonbiological antirheumatic targeted drugs, surgical methods in the form of synovectomy, synovapsulectomy, as well as on the use of stem

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cells. (1,9,18,23) therefore, in most cases of total hip arthroplasty remains the method of choice for patients with ankylosed hip joint. Some authors conduct studies aimed at improving models depending on the clinical and radiological variants of the disease for primary or revision (cement or cementless) endoprosthetics. Changes in bone mineral density (BMD) play an important role in the development of osteoporosis in ankylosed hip joint, and also negatively affect the instability of the endoprosthesis. Postoperative aseptic changes in bone tissue around the endoprosthesis are the causes of periprosthetic bone resorption around the endoprosthesis (12,15,16,23) An urgent problem is total hip arthroplasty instability, as well as fractures of the femoral component, the presence of complications, the severity of revision interventions and prevention of complications.

Material and research methods. There were 250 patients under our supervision from 2010 to 2021. ankylosing hip joint in the Department of Orthopedics Republican Specialized Scientific and Practical Medical Center of Traumatology and Orthopedics. Of these: Idiopathic - 90, post-traumatic - 40 and ankylosing spondylitis - 120 patients. Males - 90, females - 120. Most of the patients 67% were from 35 to 65 years old. All patients underwent total hip arthroplasty. Patients were divided into two groups in the main group of 130 patients, in the control group of 120 patients.

With ankylosed hip joint during surgery, laboratory diagnostics of such diseases is carried out with special care. In the general analysis of blood in such patients, there is anemia, increased ESR and thrombocytopenia due to prolonged use of NSAIDs, as well as low mobility of patients. In patients with ankylosing spondyloarthritis, a biochemical blood test determines violations of protein metabolism, an increase in ALT, AST, bilirubins, and an increase in CRP also indicates a nonspecific inflammatory process. With such indicators of patients, surgical treatment is carried out in remission of the underlying disease. In preoperative planning, an important part is the preliminary measurement of the hip joint and the determination of the size of the endoprosthetic components, which is carried out using the X-ray image and MSCT of the hip joint. The patient undergoes images and a survey radiography at a scale of 1: 1, which in advance simplifies the preoperative measurement of the hip joint. The preoperative measurement scheme is shown in Fig. 1.

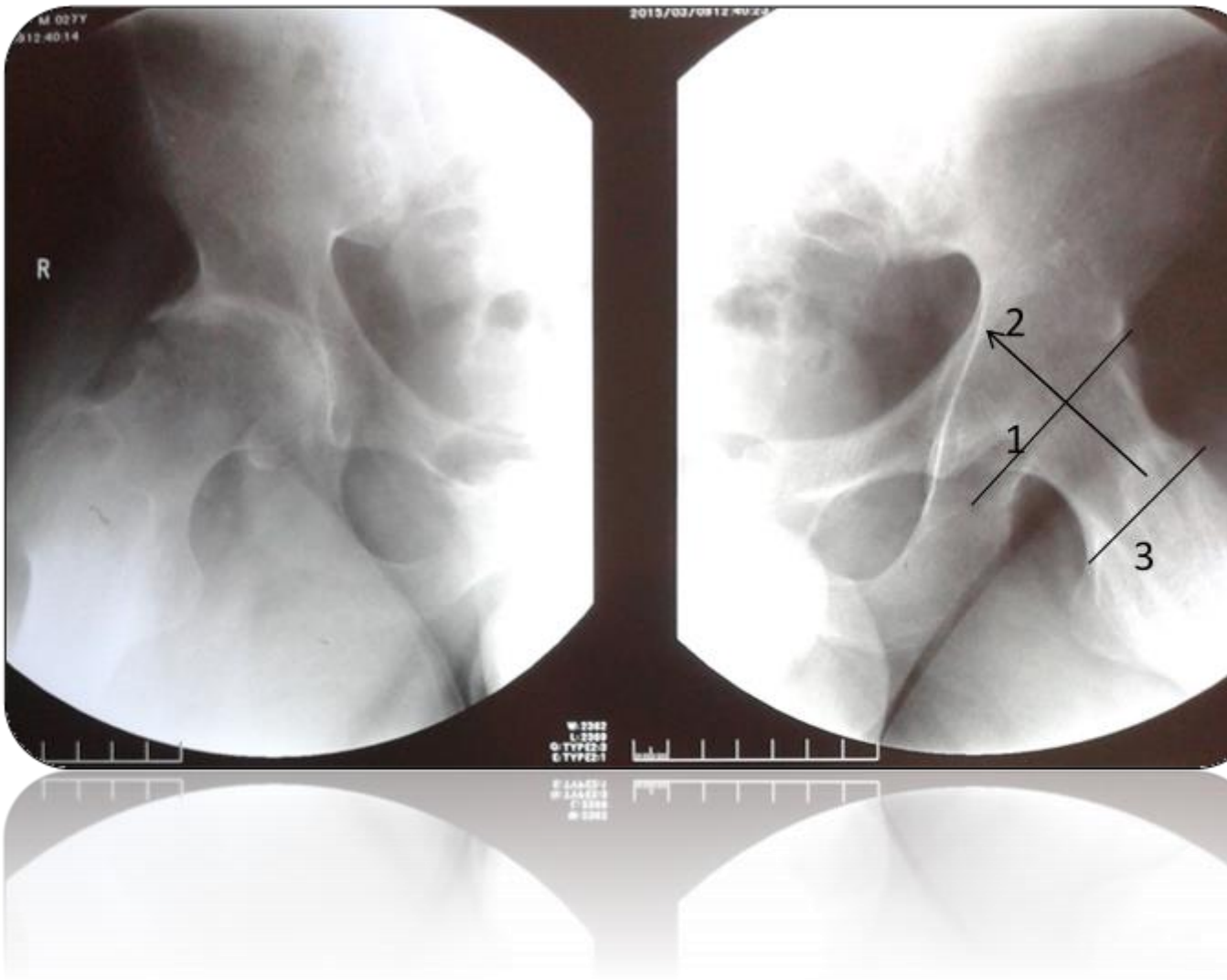

Fig. 1 Anteroposterior plain radiography of the pelvis. A patient with a diagnosis of Idiopathic ankylosis of the hip joint, bone ankylosis of the left hip joint, fibrous ankylosis of the right hip joint.

1. To determine the circumference of the acetabulum, it is carried out at its entrance from the upper-lateral point to the lower-medial
2. To determine the transition of the head to the acetabulum, the depth of the acetabulum is measured perpendicular to line 1
3.To determine the level of resection, a line is drawn in the area of the femoral neck

After carrying out all the necessary measures, the patient is prepared for the operation. We carry out operations during the operation using the devices developed by us.

Operation technique

Under anesthesia in the position of the patient on the side opposite to the operated hip joint. Anesthesia - endotracheal or spinal anesthesia. after treatment of the operated NC with an antiseptic

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solution, a longitudinal incision of Harding is made along the outer surface of the hip joint up to 10 cm long. 2-4 cm above the apex of the greater trochanter, above the middle line of the latter and ends 2-4 cm below its base. The skin, subcutaneous tissue and fascia lata of the thigh are dissected in layers. The length of the incision depends on the degree of development of the subcutaneous fat layer, the size of the patient's pelvic girdle, and the size of the hip joint. Anatomical structures are sharply and bluntly processed in layers, the hip joint is exposed. At the point of attachment to the greater trochanter, the tendon part of the gluteus medius muscle is dissected, after which the joint capsule is opened. The joint capsule is opened. The femoral head with bone ankylosis is soldered to the acetabulum. Oteotomies are performed using the device developed by us. The femoral neck is resected along the intertrochanteric line (line 3). When the thigh is rotated outwards, access opens. The acetabulum is prepared for prosthetics with the help of a bead. Then a wedge-shaped osteotomy is performed in the area of the femoral neck at an angle of 40 - 45 degrees, a width of 2 - 2.5 cm, a depth of 6-8 cm, the resulting bone wedge is removed, the proximal part of the femur is dislocated into the resulting space, the remains of the neck are resected along the Adams line (line from the greater to the lesser trochanter), form a bed for the installation of the acetabular component of the endoprosthesis. After that, with the help of ball cutters, the acetabulum is processed until the cartilage is completely removed. Then the acetabular component is installed, which matches with the applied ball cutters. In the area of the acetabulum, after complete processing, an insert is installed. In order to facilitate access to the proximal part of the femur and subsequent processing of the canal, the assistant performs a repeated external rotation with the adduction of the femur. After that, using a hollow osteotome, as well as a rasp, the canal of the femur is treated with anteversion at 15º. observing the direction of the thigh axis. After shaping the canal to measure the position of the femoral component and the length of the lower limb, the trial neck and implant head are put on. Then a preliminary reduction of the hip is carried out. For the head of the endoprosthesis, 2-3 mm is considered acceptable backlash. The length of the operated limb is measured. After fitting, the stem and head of the endoprosthesis are installed. The head is adjusted. After reduction, the stability of the endoprosthesis and the volume of passive movements of the limb are checked. Thorough toilet. Hemostasis. Movement in the hip joint was fully restored, the length was restored. Left x / w tube. Rubber graduate. Layered aseptic sutures. Aseptic dressing.

We give examples of patients: Pacient F 52, with a diagnosis of Idiopathic coxa arthrosis of the hip joint on the right with fibrous ankylosis and adductive contracture. The patient underwent an operation developed by us.

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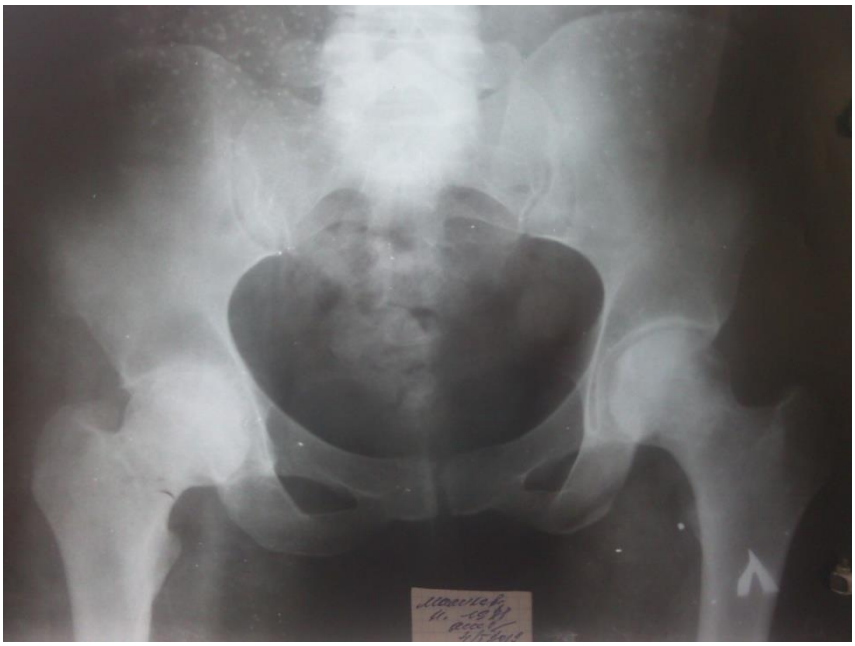

fig 1. Before surgery

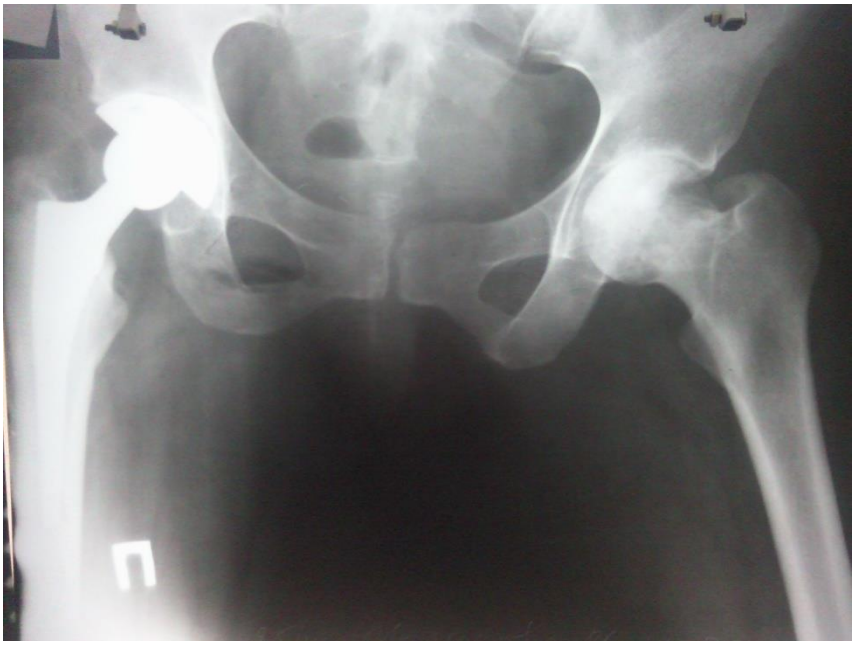

fig. 2 After the operation

Patients underwent total hip arthroplasty using various designs of endoprostheses without cement.

Table №1. The number of patients with cementless endoprostheses

Prosthesis type	Observation groups							Total		
	Main			Control			p			
	Abs.	M(%)	m	Abs.	M(%)	m		Abs.	%	m

Zimmer	59	65,56*	5,01	47	67,14	5,61	p<0,01	106	66,25	3,74
DePuy	14	15,56*	3,82	9	12,86	4,00	p<0,01	23	14,375	2,77
Irene	12	13,33*	3,58	8	11,43	3,80	p<0,01	20	12,5	2,61
Other	5	5,56*	2,41	6	8,57	3,35	p<0,01	11	6,875	2,00
Total:	90	100		70	100			160	100	

Note: *-p<0,01 in relation to the main group to the control.

The table shows that the majority of patients in the main group 59 (65.5%), in the control group 47 (.67.1%) underwent total hip arthroplasty surgery according to the Zimmer design and without the use of cement. According to the DePuy design, in the main group 14 (15.5%), in the control group 9 (12.8%), total hip arthroplasty was performed without the use of cement. According to the Irene design, in the main group 12 (13.3%), in the control group 8 (11.5%), total hip arthroplasty was performed without the use of cement. By design, others in the main group 5 (5.7%), control group 6 (8.6%) underwent total hip arthroplasty without the use of cement.

The number of patients with cemented endoprostheses was carried out (table, 2)

Table №2. The number of patients with cemented endoprostheses

Prosthesis type	Observing group						p	Total		
	Main			Control						
	Abs.	M(%)	m	Abs.	M(9%)	m		Abs.	%	m
Zimmer	27	54*	7,05	24	60	7,75	p<0,01	51	56,67	5,22
DePuy	11	22*	5,86	7	17,5	6,01	p<0,01	18	20	4,22
Irene	9	18*	5,43	4	10	4,74	p<0,01	13	14,44	3,71
Other	3	6*	3,36	5	12,5	5,23	p<0,01	8	8,89	3,00
Total	50	100*	0	40	100	0		90	100	0

Note: *-p<0,01 in relation to the main group to the control.

The table shows that the majority of patients in the main group 27 (54%), in the control group 24 (60%) underwent TE hip joint surgery using the Zimmer design and with the use of cement. According to the DePuy design, in the main group 11 (22%), in the control group 7 (17.5%), total hip arthroplasty was performed using cement. According to Irene's design, in the main group 9 (18%), in the control group 4 (10%), total hip arthroplasty was performed using cement. By design,

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others in the main group 3 (6%), control group 5 (12.5%) underwent total hip arthroplasty operations with the use of cement.

The results of the treatment were studied in all patients. The functional state of patients with ankylized hip joint was assessed according to R Judet according to a 7-point system, three parameters were assessed - pain, range of motion and walking. The result of the sum of points: good 12-10 points, satisfactory 9-7 .6 points and below not satisfactory. The indications for surgery were 7.6 or less points. (table 3)

Table№3. Evaluation of total hip arthroplasty in the near future according to the R Judet scale

Assessment (score)	abs	M(%)	m	abs	M(%)	m	p	Number of patients
Good (10 -12)	121	93,08*	2,54	100	83,33	3,40	p<0,01	221
Satisfactory (9 -8)	8	6,15**	2,40	17	14,17	3,18	p<0,001	25
Unsatisfactory (7 or less)	1	0,77*	0,87	3	2,5	1,43	p<0,01	4
Total	130	100	0	120	100	0		250

Note: *-p<0,01 in relation to the main group to the control. **-p<0,001 in relation to the main group to the control.

The table shows that in the main group of 221 patients, a good result in the main group was obtained in 121 (93.1%) patients, in the control group in 100 (83.3%) patients. A satisfactory result out of 25 patients, in the main group was obtained in 8 (6.1%) patients, in the control group in 17 (14.2%) patients. An unsatisfactory result out of 4 patients was obtained in 1 (0.8%) patients in the main group, in 3 (2.5%) patients in the control group. The average value in points in the long-term periods before the total hip arthroplasty was 7-7.5 points. After the operation, the average value in the main group became 10.1 points, in the control group it was 8.9 points. These indicators indicate the effectiveness of total hip endoprosthetics.

Thus, in the case of ankylosed hip joint, when performing surgery, laboratory diagnostics of such diseases is carried out with special care. In the general analysis of blood in such patients, there is anemia, increased ESR and thrombocytopenia due to prolonged use of NSAIDs, as well as low mobility of patients. Surgical treatment is carried out with remission of the underlying disease. In preoperative planning, an important part is the preliminary measurement of the hip joint and the determination of the size of the endoprosthetic components, which is carried out using the X-ray image and MSCT of the hip joint. The patient undergoes images and a survey radiography at a scale of 1: 1, which in advance simplifies the preoperative measurement of the hip joint. 160 patients underwent total hip arthroplasty using various designs of endoprostheses without cement. and 90

with cement. The number of patients with and cementless endoprostheses was carried out. in the main group of 221 patients, a good result in the main group was obtained in 121 (93.1%) patients, in the control group in 100 (83.3%) patients. A satisfactory result out of 25 patients, in the main group was obtained in 8 (6.1%) patients, in the control group in 17 (14.2%) patients. An unsatisfactory result out of 4 patients was obtained in 1 (0.8%) patients in the main group, in 3 (2.5%) patients in the control group.

... The average value in points in the long-term periods before the total hip arthroplasty was 7-7.5 points. After the operation, the average value in the main group became 10.1 points, in the control group it was 8.9 points. These indicators indicate the effectiveness of the surgical treatment developed by us.

Conclusions:

1.Total hip arthroplasty in patients with ankylosed hip joint, regardless of age, is an effective method of surgical treatment that eliminates pain and improves the patient's quality of life.

2. In the treatment of patients with ankylosed hip joint, the use of cementless endoprostheses enables widespread implementation of hip arthroplasty.

3. In patients with ankylosed hip joint with severe osteoporosis, protusional coxitis and defects in the walls of the acetabulum, the use of bone cement is justified in total hip arthroplasty.

4. The indications for surgery were the sum of 7.6 or less points after surgery. After surgery, the average value in the main group was 10.1 points, in the control group it was 8.9 points. These indicators indicate the effectiveness of total hip arthroplasty.

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