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HIP ARTHROPLASTY RESULTS IN SENIOR AGE GROUPS OF PATIENTS

E.B.Lapshinov, A.A.Shcherbakov, O.S.Zharovskih, E.S.Khachatryan

State Health Care Institution «Hospital For Wars Veterans», St. Petersburg

The paper presents data on 371 patients who had undergone hip arthroplasty. The adopted in the hospital algorithm of aged patients management, for whom hip arthroplasty is necessary, meets the requirements of Federal Standard and allows for such intervention after a comprehensive survey with minimal risk to patients. Complications in the postoperative period are noted in 6.8% of cases, postoperative mortality was 3.1%.

Keywords: hip arthroplasty, the elderly and senile age (aged patients)

В работе представлены данные о 371 пациенте, перенесшем эндопротезирование тазобедренного сустава. Алгоритм ведения больных пожилого и старческого возраста, которым показано эндопротезирование тазобедренных суставов, принятый в Госпитале, соответствует требованиям Федерального стандарта и позволяет осуществлять подобные вмешательства после комплексного обследования с минимальным риском для пациентов. Осложнения в послеоперационном периоде отмечены в 6,8% случаев, послеоперационная летальность составила 3,1%.

Ключевые слова: эндопротезирование тазобедренного сустава, пожилой и старческий возраст

Introduction

With an increase in overall life expectancy the frequency of hip illnesses and injuries will increase [5,6,14]. Of all the diseases of the hip joint its degenerative-dystrophic lesions represent over 70% [4,11,15]. According to most authors, degenerative-dystrophic diseases of the hip joints are the most frequent indication for arthroplasty [2,3,6,13]. In many respects this is due to increasing life expectancy in industrialized countries where their populations inherent physical inactivity and overweight [6,8,19].

In Russia the frequency of hip fractures is 60 to 100 per 100 000 of population [6,7]. In this case, this maximum index is stated in people aged over 75 years old, accounting for 230 observations on 100 000 people. V.V.Sabodashevsky (2000), referring to the projection data of WHO specialists, reports that worldwide in 1990s, fracture of the proximal femur ascertained at 1.7 million people with 95% of them were over the age of 50.

Today in the world about 500,000 operations on arthroplasty human joints are being performed [3,6,14,20]. Opportunities of arthroplasty for the rehabilitation of patients with diseases and injuries of the hip joint attract particular attention [5,11,13,16]. However, questions of the organization of this type of high-tech surgical interventions in aged patients have not yet found full coverage in the scientific literature and publications of the methodical plan [12].

Material and methods

In the trauma and orthopedic department in St. Petersburg hospital for wars veterans (Hospital) from 2003 through 2008 hip joints were implanted in 371 patients aged 60 to 96 years old. Patients were received routinely, on referring from polyclinics, and in order for emergency assistance. With an average age of patients of 78.7 ± 7.3 years, the majority (243 people — 65.5%) of patients were female (Table 1).

Table 1

Distribution of patients undergone hip arthroplasty, adjusted for age and sex

Age groups	Number of patients (%)		Total (%)
	men	women	
60-69 years old	25 (6,7)	43 (11,6)	68 (18,3)
70-79 years old	50 (13,5)	113 (30,5)	163 (43,9)
80-89 years old	33 (8,9)	90 (24,3)	123 (33,2)
90 years old and older	7 (1,9)	10 (2,7)	17 (4,6)
TOTAL:	115 (31,0)	256 (69,0)	371 (100)

For emergency medical care at the hospital there were received 167 (45%) patients. Routinely for total hip arthroplasty were hospitalized 189 (51%) people. 15 (4%) aged patients had subcapital femoral neck fracture occurred during accidental falls while staying in hospital for treatment in other hospital departments. After the transfer of these patients in trauma and orthopedic department, they had hip arthroplasty.

For all the patients who had hip arthroplasty performed in hospital, there was organized a comprehensive survey that included assessment data on morphology and function of organs and body systems (cardiovascular, respiratory, excretory, etc.). Decision on the possibility of the operation was submitted for formal care conferences with the participation of trauma surgeons and orthopedists, therapists, anesthesiologists, neurologists and other specialists (if indicated). The existing algorithm in the hospital management of patients for whom hip arthroplasty is necessary, complies with national guidelines and allows for similar intervention following the comprehensive examination with minimal risk to patients.

In 8 cases, a bilateral hip arthroplasty was held. 3 patients had arthroplasty of the same hip joint carried out twice. Overall, 371 patients underwent 382 surgical interventions (Table 2).

Table 2

Indications for hip arthroplasty

Indications for surgery	Number of observations (%)
Fracture of the femoral neck in patients of senior age groups	241 (63,1)
Dysplastic coxarthrosis	82 (21,5)
Pseudarthrosis of the femoral neck	37 (9,7)
Avascular necrosis of the femoral head	7 (1,8)
Congenital hip dysplasia	1 (0,3)
Instability metalosteosynthesis femur	2 (0,5)
State, conditional on second hip arthroplasty, including:	12 (3,1)
— femoral shaft fracture at the stem	4 (1,0)
— debris syndrome	2 (0,5)
— instability of the endoprosthesis	6 (1,6)
TOTAL:	382 (100)

As it can be seen from Table 2, the majority of patients who had undergone hip arthroplasty, before the surgery had fracture of the femoral neck or its consequences in the form of a formed false joint (278 observations — 72,8%). In every fifth case deforming arthrosis of the hip joint of II-III or III stage was confirmed. In other observations an implantation of a hip joint was required a little more than in 5% of cases.

Unipolar prosthesis was implanted in 237 cases in different periods after fracture of the femoral neck: from 1 week to 6 months. In most cases the installed implants are «YAR-TEZ» — 106 observations. 88 patients were operated with the use of endoprosthesis «Arethe». Products of the firm «Phoenix» were implanted in 30 patients. In 13 cases, the preference was given to bipolar endoprostheses of various firms (Bioimplanti — in 5 cases; ESI — 5 patients; Zweimuller, CPT, Voitovich — one clinical observation for each brand).

When selecting a unipolar (including bipolar) endoprosthesis for operation, we, like most authors, believed that the implantation of such structures is preferred in elderly patients with primary endoprosthesis for fractures of the femoral neck, when acetabulum remained and cartilage was not damaged. Revision unipolar endoprosthesises were implanted in 4 cases out of 237.

Total endoprosthesises were set in 134 patients. They had 142 operations (in 6 cases — replacing the two hip joints, in 2 cases — re-arthroplasty). In most (69) cases there were used endoprosthesises of firm «Zimmer» and in 67 observations — «Ceraver». In 6 cases, the constructions of other manufacturers were used (of the «Phoenix», «Bioimplanti», etc.)

Indications for total hip surgery were: arthrosis deformans of hip joints (in 93 patients), pseudarthrosis of the femoral neck (17 patients), fracture of the femoral neck (7 cases), aseptic necrosis of the femoral head (in 7 clinical observations). Re-arthroplasty has been performed on eight patients. Total endoprosthesises of the hip joints were implanted in a patient with bilateral congenital hip dysplasia.

Anesthetic support in most cases was carried out by means of conduction anesthesia. Epidural anesthesia was used in 304 (79.6%) of 382 surgical interventions. The average volume of blood loss during surgery did not exceed 300-350 ml. Blood loss was replenished, usually with red blood cell transfusions (300 ml) and fresh frozen plasma (250-300 ml).

Duration of surgery ranged from 50 minutes to 4 hours, on the average, about 1 hour and 45 minutes. The most long-term operations on total hip replacement were carried out for aseptic necrosis of the femoral head and dysplastic coxarthrosis extreme severity, as well as re-arthroplasty of hip joints.

Intraoperative difficulties during the implementation of interventions were reported in 21 (5.5%) cases of 382 operations. As a rule, they were associated with muscle rigidity, necessitating prolonged preoperative skeletal traction; violation of anatomic relationships in the tissues during the previous arthroplasty, and debris-syndrome.

Complications during surgery occurred in 8 (2.1%) cases. In three cases intraoperative fractures (detachment of the greater trochanter (2) and a broken canopy of the acetabulum — one case) were ascertained. In three cases when removing screws, there was a fracture of metal. In another case there occurred a fracture of involute in the

medullary canal of the femur (the metal was removed through counterpuncture). In one case the thighbone was perforated with the stem. Output from the distal femoral medullary canal caused reprocess channel scan and rasp that increased the duration of the operation.

Results

With the increasing use of endoprostheses in the practice of medical institutions the reports on complications of this type of treatment began to appear. The main ones, according to various authors, are osteolysis, implant dislocation, instability of the acetabular or femoral components, infectious complications, fractures of stems, increased wear of polyethylene in the friction, debris-syndrome, metallosis, etc. [1,10,17,18,21].

Information about the complications in the operation zone in patients undergone hip arthroplasty are presented in Table 3.

Table 3

Complications in the operation zone, marked in patients undergone hip arthroplasty

Complications of surgery	Number of observations (%)
Chylorrhea	2 (0,5)
Hematoma	3 (0,8)
Suppuration	5 (1,3)
Ligature fistulas	3 (0,8)
Dislocation of the femoral head	9 (2,4)
Fracture of femoral shaft	3 (0,8)
Fracture of the stem	1 (0,3)
TOTAL:	26 (6,8)
Total number of operations	382 (100)

Most often, the postoperative period was complicated by dislocation of the femoral head, in some cases - more than once. Dislocation of endoprosthesis head in the future or through closed reduction, either open reduction or re-arthroplasty. Information on the complications of hip joint, contributing to a surgical reintervention in the postoperative period is presented in Table 4.

Table 4

Distribution of patients undergone hip arthroplasty, taking into account the types of surgical treatment of complications developed in the postoperative period

Complications	Type of surgery aid	Number of observations
Dislocation of the endoprosthesis head	Closed reduction of dislocation	8 (2,1)
Dislocation of the endoprosthesis head	Open reduction of dislocation	1 (0,3)
Fracture of endoprosthesis shaft at the implant	Metalosteosynthesis diaphysis of the femur	3 (0,8)
Instability of the endoprosthesis	Re-arthroplasty	5 (1,3)
Total number of complications		17 (4,5)
Total number of operations		382 (100)

Thus, in the majority of cases a dislocated endoprosthesis head can be reduced in a closed way. States determined the execution of open operations in the early postoperative period are stated in 9 (2.4%) cases.

In the early postoperative period 12 patients died. In 8 cases there was an acute myocardial infarction and pulmonary embolism. In two observations stroke was a cause of death, and in two other observations — hypostatic pneumonia with progressive multiple organ failure. Overall postoperative mortality was 3.1%.

The hospital discharged 359 patients. Most of them were under the dynamic supervision of medical doctors of trauma and orthopedic department and were repeatedly inspected ambulatory or hospitalized later for examination and rehabilitation. During the first year of observation of patients after surgery 11 patients who had undergone operations died. In all cases the death was due to reasons not related to hip arthroplasty.

During the period of 2000 — 2007 in the trauma and orthopedic department of the Hospital there were 138 patients with femoral neck fractures, who were refused the operative intervention (hip replacement) for various reasons. During stay in hospital 10 patients died (7.2%) due to: pulmonary embolism — 6 cases, acute cerebrovascular events and acute myocardial infarction — in two cases each. Long-term results were analyzed in 104 (81,3%) of 128 discharged patients. None of the patients after discharge from the hospital was unable to lead an active lifestyle, all needed care. During the first year 39 people died (37,5%). Causes of death in most cases turned out to be hypostatic pneumonia, increasing pulmonary heart disease, intoxication.

There is no doubt about the quality of care at the outpatient management of patients undergone hip arthroplasty. All patients discharged from hospital after these interventions are under the supervision of clinic's surgeons. Ongoing rehabilitation treatment for them made it possible to return to active life in the shortest time. With the help of individual rehabilitation program provided at the Hospital, patients are provided with technical means of rehabilitation necessary for soon return to normal life.

Conclusion

Thus, the positive effect of hip arthroplasty is a pathogenetically justified to re-establish the static-dynamic function of the joint. Restoring of the function of hip joint improves quality of life of patients, helps to return to independent mobility, self-service and in some cases - to work. Application of hip arthroplasty in case of injuries and degenerative diseases of the hip joint, is effective and can be recommended for wide use only when the proper organization of complex preoperative examination and preparation of patients for surgery, the organization of the operation by experienced professionals with a view of features of aged patients and performance of complex rehabilitation in the postoperative period both in-patient and in the outpatient phases of the further dynamic medical observation.

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