

SHORT COMMUNICATION

Total hip replacement (THR)

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The authors present history, indications and complications of total hip replacement in 206 patients in a period of 10 months. They compare the rate of complications with published data. They present pre-operative examination, prophylaxis and specific problems in their conditions. (Short communication)

Following the preceding discoveries and first clinical experience coinciding with the use of cup arthroplasty and cervicocapital endoprostheses (CCP), the work of John Charnley as of the late 1950•s can be considered as being revolutionary (1). His idea of „low friction arthroplasty“ with the use of the head of the femoral component of 22.225 mm in its diameter proved to be correct and this fact has been justified by history (2).

In 1962, this author performed his first successful implantation of total endoprosthesis (TEP) of the hip.

Hip endoprostheses can be divided into several groups as follows: cup arthroplasty, bipolar cup arthroplasty, cervicocapital prostheses (CCP) and total endoprostheses (TEP). According to the method of fixation we distinguish cemented, hybrid, and non-cemented types of TEP with the currently preferred unit-fixing system.

Hybrid TEP is commonly performed in patients at the age between 50 and 60. The cemented TEP is performed in those at the age over 60. Cervicocapital endoprostheses are indicated between 75 and 80 years of age exclusively in coincidence with femoral neck fractures. The biological age of the patient represents the main criterion of implantation indication.

THR indications

TEP implantation is performed due to arthrosis caused by rheumatoid arthritis, juvenile rheumatoid arthritis and Bechterew disease, degenerative joint diseases, namely by primary and secondary epiphyseolyses of the femoral head, the states after congenital hip luxation, coxa plana (m. Perthes), states after acetabular and femoral neck injuries, and in coincidence with haemophilia. Avascular necrosis, states after pyogenic arthritis, failure of plastic operations and bone tumors also rank among the indications of THR.

The original indication of THR (an increasing pain in the hip in patients over 65 years of age) could not be sufficiently soothed by use of conservative treatment.

Contraindication of THR

Absolute contraindications include the diseases which render surgery impossible.

Relative contraindications include, e.g. poor co-operation of the patient after surgery (psychotic states, low intellect, atrophy) and local causes (skin diseases, history of TED).

Complications of THR

Thromboembolic disease (TED) is the most frequent serious fatal complication in patients up to three months after THR. Should prophylaxis be neglected, 40—70 % of patients develop post-operative deep vein thrombosis. 2 % out of them develop fatal pulmonary embolism (3). Prevention based on the administration of low molecular weight heparins significantly decreases the risk.

Further complications in coincidence with THR include nerve lesions, vascular damage, haemorrhages and injuries of the bladder and urinary tract. Published data provide a record of 0.7—3.5 % of nerve injuries in coincidence with primary implanta-

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tions and as many as 7.5 % in coincidence with revision surgeries. The femoral, fibular, ischial and obturator nerves are injured most frequently. Vascular damage is presented in 0.2—0.3% of cases. Femoral vein and artery, but also the external iliac artery and obturator artery are most frequently afflicted. Haemorrhage and post-operative hematoma closely coincide with the chosen surgical technique. Injuries of the urinary tract and bladder are reported in 7—14 % of cases (3).

Results

During the period of time from 1st January 2000 to 31st October 2000, at the II Orthopaedic Department of LFUK NsP Ružinov, we have implanted the total of 206 of hip endoprostheses. Out of them, 31 TEP were of Poldi type, 123 Charnley, 11 Zweymueller, 5 Duraloc, 1 individual TEP Poldi and 35 CCP. During the given period of time, we experienced two cases of complications, both caused by fracture of the proximal femur. The cases involved minor fissures below the femoral components of non-cemented endoprostheses of Zweymueller type which have originated in result of femoral marrow cavity rasping. The fissures have healed spontaneously without any impact on the stability and TEP function. Postoperative paresis is of transient character and according to our experience, it recovers ad integrum in 100 % of cases up to 6 months. THR luxations were recorded in 4 cases, 2 cases of which occurred in one patient. All luxations were repositioned under the skiascopic control and in general anaesthesia without the necessity of surgical revision, with subsequent post-operative bed-rest treatment for 2 weeks and setting the abduction orthosis.

Superficial infections of surgical wound were recorded in 3 cases. After antibiotic treatment based on cultivation sensitivity tests, the wounds healed ad integrum in all cases. No profound infection of surgical wounds were recorded. Phlebothrombosis of lower extremity was diagnosed by USG examinations in 14 cases, out of which 12 were superficial and 2 profound. All cases were cured.

We have not recorded any fatal pulmonary embolism.

Algorithm of examinations prior to the planned THR

The patients are admitted to our clinic for planned THR implantation after being subdued to internal pre-operative examinations. In the frame of pre-operative preparation, we require a thorough defocusing of the patient. We require cultivation of urine, as well as of nose and tonsils smears. In case of positive results, patients have to be cured by antibiotics according to antibiotic sensitivity tests and the subsequent cultivation has to be negative. We recommend stomatologic, ORL, and in female patients, also gynaecologic examinations focused on the possible source of infection. The patient admitted to hospital is examined by an anaesthesiologist. In order to be able to assess the optimal anaesthesia, he may perform also additional examinations (ECHO CG, USG) if required. The pre-operative planning is focused on a thorough examination of the patient, assessment of the type of implant regarding the indication criteria, as well as on the suitable size of implant according to X-ray documentation by use of a template. The prophylaxis is based on the method of „protected coagululum“. Half an hour prior to the surgical in-

tervention, Cefazolin is administered intravenously in an initial dose according to patient's body weight. The most common initial intravenous dose is 2 g. In case of hypersensitivity to Cefazolin and penicillin antibiotics, we consult the alternative antibiotic coverage with the clinical pharmacologist. The length of antibiotic administration is 48—72 hours according to the clinical state of the patient. The signs of infection are crucial in the regulation of antibiotic treatment. This is done in co-operation with clinical pharmacologists and applied on the basis of cultivation and antibiotic sensitivity tests.

Current problems in THR

Implantology as a inseparable part of orthopedics is expensive. This is caused by the fact that endoprostheses are made of expensive materials, as well as in result of costly research, pre-clinical and clinical testing of THR. Due to absolutely insufficient refunding, the number of THR is gradually decreasing. Frequently, the price of the graft forces the surgeon to disregard the correct medical indications. Prosthesis is implanted in cases of high-staged arthroses, the fact of which results in unfavourable post-operative results. In such cases, mobility, muscular strength and gait stereotypes are substantially worse than in those of THR due to lower stages of arthroses.

Discussion

During the final discussion, bad financial situation was repeatedly stressed. This problem has a major negative impact on the performance of Slovak clinics. Regarding the aspect of THR technique, the authors indicated that the assessed technologic procedure is frequently breached especially in the cementing technique. The authors have emphasised that the surgeons should perform implantations of such particular types of prostheses, in which they have become skilful through experience. The latter recommendation was documented by two unfavourable cases of one type of THR performed at one of the clinics in one year. The conclusion of the discussion was dedicated to the requirement of increasing the financial limits in order to meet the needs of orthopedic clinics.

Implantology is a very broad problem. Its medical aspects and techniques are being continuously developed. Therefore, the approach from the part of orthopedists must be dynamic. Its development is not possible without the necessary financial coverage and continuous education.

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