



## FEATURES OF KNEE JOINT ENDOPROSTHESIS FOR PATIENTS WITH RHEUMATOID ARTHRITIS

Xo'janazarov Ilxom Eshqulovich, Axmedov Xalmurad Sa'dullayevich, Anorboyev Ma'ruf Xolbo'ta o'g'li.  
Tashkent Medical Academy

| Article history:  | Abstract:   |
|---|---|
| <b>Received:</b> August 20 <sup>th</sup> 2024<br><b>Accepted:</b> September 14 <sup>th</sup> 2024 | Rheumatoid arthritis (RA) is a disease that belongs to the group of systemic autoimmune diseases of connective tissue. One of its main manifestations is an erosive-destructive lesion of the surface of the joint. |

**Keywords:** Rheumatoid arthritis

### Log in

Rheumatoid arthritis (RA) is a disease that belongs to the group of systemic autoimmune diseases of connective tissue. One of its main manifestations is an erosive-destructive lesion of the surface of the joint.

The evolution of pharmacological therapy for RA has improved the outcomes of conservative treatment of patients belonging to this group. Early diagnosis of RA and the use of certain anti-inflammatory drugs and biological gene engineering drugs have led to rapid and effective suppression of local manifestations and a decrease in the activity of systemic inflammatory processes. It should be noted that it is difficult to choose the optimal scheme of conservative therapy. Modern concepts of treating RA are subject to 2 basic principles: early aggressive therapy and control of disease activity. The positive results of the use of modern drugs, the slowing of the progression of pathological changes, and the increase in the number of good outcomes of conservative treatment have led to a decrease in the number of orthopedic surgeries in RA and an increase in the average age of patients who have come out of surgery.

Despite the advances made by conservative treatment at this level, there are inherent difficulties in timely diagnosis and verification of RA, leading to late initiation of basic therapy as well as reduced therapy efficacy. If adeumatal therapy is not carried out, erosive changes in the limbs begin within a year from the onset of the disease. Progressive destruction and manifested functional limitations will be indicative of surgical treatment. The most commonly performed procedures include knee joint endoprosthesis (TBE) and pelvic joint endoprosthesis (ChSBE).

The use of TBE and ChSBE in patients with primary osteoarthritis (OA) has led to better outcomes, resulting in an increase in the number of these surgeries. In RA patients, endoprosthetics cause a decrease in the intensity of the pain syndrome. Age, body mass index, and RA may also be a risk factor for poor functional outcomes after TBE, despite satisfactory indicators of conservative anti-inflammatory therapy.

Performing endoprosthetics in RA has some advantages. Immunosuppressive therapy used to treat RA affects the outcome of surgical treatment and the development of postoperative complications. Additional difficulties in providing orthopedic care to patients belonging to this group are the origin of the deformity, the addition of not only bone tissue, but also the periarticular connective structure to the pathological process, the failure of the longitudinal apparatus to this condition, and the development of osteoporosis.

The basis of joint lesions mentioned above significantly affects the conduct of perioperative tactics in patients with RA. In order to improve the results of surgical treatment, it is necessary to involve patients of other profiles.

The lack of a scheme to guide patients through this process who need for endoprosthetics of large joints adversely affects the final results, making it difficult for preoperative follow-up and treatment. Therefore, we need to be able to anticipate the complications of the operation by analyzing the current literature data.

### TESTS BEFORE THE OPERATION

According to the American Society of Anesthesiologists, older age, diabetes, and unsatisfactory overall condition of the patient are risk factors for the emergence of postoperative complications of large joint endoprosthetic surgeries. However, RA is not included in the authors' list of comorbid cases that reduce surgical treatment outcomes.

The systemic nature of the disease and the high likelihood of internal organ involvement in the inflammatory process make patients with RA need careful preoperative preparation.

Spirometry and, in some cases, computed tomography are also performed to exclude lung tissue damage and determine the functional state of the respiratory system.

In RA, ECG and Exo-KG are prescribed to determine the extent of manifestation of damage to the heart, coronary arteries, pericardium.

Urinary system lesions in RA are manifested by the development of amyloidosis and glomerulonephritis. Laboratory and instrumental testing methods determine



the level of creatinine and urea, the filtration rate of the umbilical cord, as well as ultrasound examination of the kidneys.

In patients with RA, pathological changes in the spine are often detectable and are manifested by instability of the neck region, which can cause difficulty in undergoing exit and intubation. To establish the presence and degree of pathological changes, it is desirable to undergo X-ray examination with functional probes in those areas of the spine.

Identification and evaluation of the severity of hematological changes is also essential. In the methods of laboratory examination, chronic anemia is detected in most cases, thrombocytopenia and neutropenia in rare cases.

### **Possible complications after the operation**

#### **Thromboembolic complications**

The most severe complications after TBE and ChSBE include leg vein thrombosis (OVT) and pulmonary artery thromboembolism (O'ATE). Due to lack of adequate prophylaxis, the frequency after surgery exceeds 30%. If all preventive measures are performed correctly, it occurs at a frequency of 1.0% after TBE and 0.5% after ChSBE.

According to the study, the incidence of thromboembolic complications in patients with RA compared to the general population was 2.4 times higher, at 6.1 per 1000 cases. Despite the high probability of the occurrence of thromboembolic complications in patients with RA, the occurrence of these complications after knee joint arthroplasty did not exceed the rates in OA. A number of authors believe that following the prescribed preventive measures in relation to OVT and OATE after TBE and ChSBE will reduce their incidence frequency to a minimum.

#### **Cardiac – vascular complications**

Large joint endoprosthetics are among the surgical operations characterized by a moderate likelihood of developing cardio-vascular complications (YQTA). The presence of a history of chronic cardiovascular disease increases the development of MI after surgery by 6.5%. Therefore, RA increased the incidence of cardiac pathologies by 48% and the probability of a lethal outcome by 60% compared to the mean statistical indicators. The incidence of developing YQTA in patients with diabetes was 3 times higher than in RA (1.07 and 0.34%, respectively).

Limitation of motor activity in RA and the systemic character of the disease are additional factors for the development of PDTA along with comorbid hypertension, hypercholesterolemia, diabetes mellitus, smoking, and obesity. According to the results of the information base analysis of large joint endoprosthetics,

no increase in the incidence of YQTA development was observed after TBE and ChSBE. These facts can be attributed to the intake of drugs such as tumor necrosis factor  $\alpha$  (O'NO- $\alpha$ ) or methtrexate, which reduce the likelihood of YQTA.

Some studies have shown that cholesterol in patients with RA does not exceed the population average, so it can be misinterpreted to estimate the likelihood of developing an RA using standard methodologies that indicate this indicator (the SCORE system). However, other studies have said that patients have a higher likelihood of developing YQTA, atherosclerosis, and higher rates of lethal outcomes in patients with RA. The increase in frequency of occurrence of atherosclerotic changes in RA becomes evident after ultrasound investigation of vessel intrawall thickness. Therefore, according to national and world recommendations, the sum of the probability of occurrence of cardiovascular risk factors according to the SCORE system in patients with RA and other inflammatory diseases of the joints should not exceed 1.5.

Diagnosis and treatment of YQTA in RA patients is more difficult due to the painless forms of myocardial ischemia, the high incidence of symptom-free MI, and the low incidence of patients in this group due to anginous attacks. Therefore, to objectively assess the likelihood of developing YQTA, it is proposed by L. Fleisher et al. to perform special tolerance tests for physical tension before surgery or to focus on the origin of cardiac symptomaticism when walking at a distance of up to 5 km. Due to polyarticular lesions and limitation of functional mobility, physical tension tests cannot be performed. For objective assessment of pathological changes of the cardiovascular system, exocardiography and magnetic resonance imaging are performed.

For patients with RA, systemic erythematosus, psoriatic arthritis, according to the American College of Cardiology and the American Heart Association (ACC/AHA) recommendations, the following steps are planned for surgical treatment: 1) prompt delivery of operative treatment. 2) the presence of cardiovascular diseases (unstable angina pectoris, heart failure). 3) the presence of typical cardiovascular risk factors

#### **Periprosthetic infection**

The development of periprosthetic infection (PI) is one of the worst complications of joint endoprosthetics. According to studies, the mean incidence of PI after TBE in patients with primary OA has been shown to be between 1.0 and 2.4%, while in RA, the median PI rate is as high as 3.7%. The likelihood of PI-related revision measures after TBTE in RA is 1.6 times higher than in primary OA. In 30% of cases, PI develops if anmnesis is detected in the anamnesis. According to many



studies, the drug therapy used in RA also increases the likelihood of infidelity. On the other hand, there are also scientific studies that have not been found to increase the frequency of PI based on the results of treatment with O'a inhibitors.

An incidence of PI has also been determined as a result of the use of glucocorticoids. In this case, long-term treatment prior to surgery, total and absolute dosing of CS may be additional risk factors. In patients with RA, the onset of PI may also be caused by severe chronic anemia that requires gene transfusion.

Another common aostrophe seen in patients with RA after large joint endoprosthesis is that slow healing of the wound after surgery also increases the likelihood of developing PI.

According to the results of a number of studies, there was an increase in the incidence of periodontal disease in RA and colonization of the oral and pharyngeal by *Staphylococcus aureus* (up to 54% in RA, up to 24% in control groups). Presumably, the occurrence of PI in RA patients is due to the prevalence of *S. aureus* in many cases.

Summarizing the data mentioned above, prophylaxis of patients with RA in TBTE from PI includes oral cavity chronic infection foci counting, smoking cessation, and preoperative anemia correction.

#### **Medical therapy during the perioperative period**

The outcomes of surgical treatment of patients with RA depend in many cases on the duration and nature of pharmacological therapy. The main drugs used in patients with RA include nonsteroidal anti-inflammatory drugs, glucocorticosteroids, basal anti-inflammatory drugs, and target therapy drugs. Prolonged use of these drugs leads to a decrease in the systemic and local immune system. As a result, slow healing of the wound after the operation and the occurrence of complications are possible.

In endoprosthetics of patients with RA, it is considered very difficult to determine the optimal medical therapy during the perioperative period. Specific recommendations for the implementation of perioperative medical therapy in TBE and ChSBE in patients with rheumatoid diseases have been created by the American College of Rheumatologists and the American Association of Hip and Knee Joint Surgeons.

A number of authors have indicated that these propositions have moderate and low-level arguments. These opinions of them are due to the lack of randomized placebo-controlled clinical diagnoses. However, they are used by most standard cases. The balance between controlling systemic process activity and reducing the frequency of immunosuppressive

therapy complications requires patient, rheumatologist, and traumatologist-orthopedic interaction.

#### **Conclusion**

In patients with RA, systemic pathological changes and the use of immunosuppressive therapy may lead to the occurrence of postoperative complications in knee and hip joint endoprosthesis. Nevertheless, pre- and post-operative diagnosis and adherence to all preventive measures improve the postoperative outcome. Improving the outcome of surgical treatment in patients with RA can only be accomplished with the help of a multidisciplinary team of specialists. Due to the lack of uniform standards, perioperative management of a patient with RA requires an individual approach depending on the type of surgery, the likelihood of comorbidities, infectious and thromboembolic complications, and the pharmacological therapy used.

#### **REFERENCES**

1. Asilova, S. U., et al. "PECULIARITIES OF HIP JOINT PROSTHESIS IN PATIENTS WITH RHEUMATOID ARTHRITIS." *Central Asian Journal of Medicine* 2019.4 (2019): 90-105.
2. Herasymenko, S. I., et al. "The knee joint deformities in rheumatoid arthritis patients." (2022).
3. Walldius, Börje. "Arthroplasty of the knee using an endoprosthesis." *Clinical Orthopaedics and Related Research* 331 (1996): 4-10.