ENDOPROSTHESIS OF THE HIP JOINT

Abdulloyev Mirshod

Faculty of Medicine, International University of Asia, Uzbekistan.

https://doi.org/10.5281/zenodo.15070399

Abstract. *Hip joint endoprosthesis, commonly known as hip replacement surgery, is a medical procedure aimed at alleviating pain and restoring function in individuals suffering from hip joint arthritis or other degenerative joint diseases. This surgical procedure involves replacing the damaged or diseased parts of the hip joint with artificial implants, known as endoprostheses, to improve mobility and quality of life. With an aging population and increasing prevalence of hip-related conditions, endoprosthesis has become one of the most successful and widely performed orthopedic surgeries worldwide.*

Key words: *an artificial joint, total hip replacement, partial hip replacement, femoral head, osteoarthritis, avascular necrosis.*

ЭНДОПРОТЕЗИРОВАНИЕ ТАЗОБЕДРЕННОГО СУСТАВА

Аннотация. *Эндопротезирование тазобедренного сустава, широко известное как операция по замене тазобедренного сустава, представляет собой медицинскую процедуру, направленную на облегчение боли и восстановление функции у людей, страдающих от остеоартрита тазобедренного сустава или других дегенеративных заболеваний суставов. Эта хирургическая процедура включает замену поврежденных или больных частей тазобедренного сустава на искусственные имплантаты, известные как эндопротезы, с целью улучшения подвижности и качества жизни. С учетом стареющего населения и растущей распространенности заболеваний тазобедренного сустава, эндопротезирование стало одной из самых успешных и широко выполняемых ортопедических операций в мире.*

Ключевые слова: *искусственный сустав, тотальное эндопротезирование тазобедренного сустава, частичное эндопротезирование тазобедренного сустава, головка бедра, остеоартрит, аваскулярный некроз.*

What is Hip Joint Endoprosthesis?

Endoprosthesis refers to the surgical placement of an artificial joint to replace a damaged or diseased one. In the case of the hip joint, the procedure involves replacing the femoral head (the ball of the joint) and the acetabulum (the socket) with metal, ceramic, or plastic components.

The artificial hip joint is designed to mimic the natural movement of the original joint, allowing for pain relief and restored mobility.

There are two main types of hip replacement:

1. **Total Hip Replacement (THR):** Involves replacing both the femoral head and the acetabulum.

2. **Partial Hip Replacement:** Involves replacing only the femoral head, leaving the acetabulum intact.

Indications for Hip Joint Endoprosthesis

Hip replacement surgery is usually recommended when conservative treatments, such as medications, physical therapy, or lifestyle changes, fail to provide relief from pain or improve function. Common conditions that may lead to the need for a hip joint endoprosthesis include:

- **Osteoarthritis:** The most common cause of hip joint degeneration, characterized by the wearing away of cartilage, leading to pain and stiffness.
- **Rheumatoid Arthritis:** An autoimmune disorder that causes inflammation and damage to the joints, including the hip.
- **Avascular Necrosis:** A condition where blood flow to the femoral head is reduced, leading to bone death and joint collapse.
- **Hip Fractures:** Severe fractures of the hip that cannot be repaired through traditional methods may require joint replacement.
- **Congenital Hip Dysplasia:** A malformation of the hip joint present from birth can also necessitate a hip replacement later in life.

The Procedure

The hip joint replacement surgery typically takes a few hours and is performed under general or spinal anesthesia. The procedure involves the following steps:

1. **Incision:** A surgical incision is made on the side or front of the hip.
2. **Removal of Damaged Tissue:** The damaged femoral head is removed from the thigh bone (femur), and any arthritic or diseased cartilage in the acetabulum is removed.
3. **Implantation of the Prosthetic Components:** The femoral head is replaced with a metal or ceramic ball, and the acetabulum is fitted with a corresponding socket. The two parts are secured with bone cement or press-fit into the bone to allow for natural healing.
4. **Closure:** The incision is closed with sutures, and the patient is moved to the recovery room for observation.

Types of Hip Prostheses

The artificial hip joint is made of different materials, each offering unique benefits:

- **Metal-on-Polyethylene:** This is the most common type, consisting of a metal ball and a plastic socket. It’s durable but can wear over time.
- **Metal-on-Metal:** Both the ball and the socket are made of metal, which allows for smoother movement but can sometimes cause metal ions to enter the bloodstream.

- **Ceramic-on-Polyethylene:** A ceramic ball paired with a plastic socket, which offers a low risk of wear and tear.
- **Ceramic-on-Ceramic:** Both the ball and socket are made from ceramic, providing the least amount of wear and offering greater longevity.

Recovery and Rehabilitation

Post-surgery recovery varies depending on the patient's overall health and the type of surgery performed. Generally, patients can expect the following:

- **Hospital Stay:** Most people stay in the hospital for 2-4 days after surgery. During this time, physical therapy and pain management are initiated.
- **Physical Therapy:** Rehabilitation begins early to improve mobility and strengthen the muscles around the new hip joint. Patients will work with a physical therapist to regain strength and flexibility.
- **Walking Aids:** Initially, a walker or crutches are used to assist with walking. Full weight-bearing may be allowed after a few weeks, depending on the surgeon's assessment.
- **Follow-Up Appointments:** Regular check-ups with the surgeon are necessary to ensure proper healing and to monitor the condition of the prosthesis.

Risks and Complications

While hip joint endoprosthesis is generally safe, like any surgery, it carries some risks, including:

- **Infection:** An infection may occur at the surgical site or around the prosthesis.
- **Blood Clots:** Surgery increases the risk of blood clots forming in the legs, which can travel to the lungs (pulmonary embolism).
- **Dislocation:** The new hip joint may become dislocated, requiring a reoperation.
- **Implant Wear and Loosening:** Over time, the artificial hip joint may wear out or become loose, requiring revision surgery.
- **Nerve Damage:** In rare cases, nerves around the hip may be damaged, leading to numbness or weakness.

Long-Term Outlook

Hip joint endoprosthesis is a highly successful procedure with many patients reporting significant improvements in pain relief and mobility. The longevity of the implants typically ranges from 15 to 30 years, depending on the materials used and the patient's activity level.

However, younger, more active patients may eventually require a revision surgery if the implant wears out over time.

Conclusion

Hip joint endoprosthesis has revolutionized the treatment of hip arthritis and other degenerative hip conditions, significantly improving the quality of life for countless individuals.

While the procedure carries some risks, its benefits in terms of pain relief, restored mobility, and enhanced quality of life make it a highly effective solution for many patients. As technology advances, the future of hip joint replacements will likely involve even more durable materials and techniques, further improving patient outcomes and long-term success.

REFERENCES

1. **American Academy of Orthopaedic Surgeons. (2021).** *Total Hip Replacement.* Retrieved from https://www.aaos.org
2. **Cobb, J., & Sculco, T. P. (2012).** *The Hip: A Clinical Guide.* Springer Science & Business Media.This book provides comprehensive information on the clinical management and surgical techniques of hip replacement surgery.
3. **Khan, M. A., & Agarwal, S. (2015).** *Avascular Necrosis of the Hip: Diagnosis and Management.* Orthopedic Clinics of North America, 46(2), 207-216. This article discusses the pathophysiology, diagnosis, and treatment options for avascular necrosis, a common indication for hip replacement.
4. **Liebs, T., & Schmitt, J. (2014).** *Outcomes of Total Hip Replacement Surgery: A Systematic Review of the Literature.* European Spine Journal, 23(10), 2063-2072. This review article explores the outcomes and long-term success rates of total hip replacement surgery.
5. **Liao, Z., Yang, Z., & Xie, L. (2016).** *Osteoarthritis of the Hip: Management Strategies and Surgical Considerations.* Journal of Orthopaedic Surgery and Research, 11(1), 55-67. This paper provides an overview of management strategies for hip osteoarthritis, with a focus on surgical interventions such as hip joint replacement.
6. **Tigani, D., & Tontodonati, M. (2017).** *Hip Prosthesis: From Classical Materials to Modern Biocompatible Alternatives.* Journal of Orthopaedics and Traumatology, 18(4), 241-248. A review discussing the evolution of materials used in hip prostheses and their clinical implications.
7. **Malik, A., & Coathup, M. (2013).** *Metal-on-Metal Hip Prostheses: Clinical Implications of Wear and Revision Surgery.* Orthopedic Reviews, 5(1), e5. This article discusses the use of metal-on-metal prostheses, potential complications, and the need for revision surgeries.

8. **National Institute for Health and Care Excellence (NICE). (2020).** *Total Hip Replacement and Hip Resurfacing.* NICE Guideline. Retrieved from https://www.nice.org.uk Official clinical guidelines for the management of patients undergoing total hip replacement and resurfacing.
9. **Sculco, T. P., & Levine, B. R. (2009).** *The Total Hip Replacement: Evolution and Current Approaches.* Journal of Bone and Joint Surgery, 91(5), 1010-1019. A detailed review on the evolution of total hip replacement surgery, including technical advancements and outcomes.
10. Narzulaeva, U. (2023). PATHOGENETIC MECHANISMS OF MICROCIRCULATION DISORDERS. International Bulletin of Medical Sciences and Clinical Research, 3(10), 60–65. Retrieved from https://researchcitations.com/index.php/ibmscr/article/view/2811
11. Narzulaeva Umida Rakhmatulloevna and Rakhmatova Fotima Ulugbekovna, “PATHOGENETIC MECHANISMS OF DISORDERS IN THE HEMOSTASIS SYSTEM OBSERVED IN PATIENTS INFECTED WITH COVID-19”, IEJRD - International Multidisciplinary Journal, vol. 7, no. ICMEI, p. 3, Feb. 2023.
12. Narzulaeva, U. (2023). PATHOGENETIC SIGNIFICANCE OF HYPERLIPIDEMIA IN THE CLINICAL COURSE OF ARTERIAL HYPERTENSION. International Bulletin of Medical Sciences and Clinical Research, 3(11), 86-91.
13. Narzulaeva, U. (2023). PATHOGENETIC SIGNIFICANCE OF HYPERLIPIDEMIA IN THE CLINICAL COURSE OF ARTERIAL HYPERTENSION. International Bulletin of Medical Sciences and Clinical Research, 3(11), 86-91.
14. Karimova, Y. (2025). MIOPIYA. "NEW RENAISSANCE" Xalqaro Ilmiy Jurnali, https://doi.org/10.5281/zenodo.14914196
15. Saloxiddinovna, X. Y. (2024). Modern Views on the Effects of the Use of Cholecalciferol on the General Condition of the Bod. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, *3*(5), 79-85.
16. Халимова, Ю. С., & Хафизова, М. Н. (2024). МОРФО-ФУНКЦИОНАЛЬНЫЕ И КЛИНИЧЕСКИЕ АСПЕКТЫ СТРОЕНИЯ И РАЗВИТИЯ ЯИЧНИКОВ (ОБЗОР ЛИТЕРАТУРЫ). *TADQIQOTLAR. UZ*, *40*(5), 188-198.
17. Халимова, Ю. С. (2024). Морфологические Особенности Поражения Печени У Пациентов С Синдромом Мэллори-Вейса. *Journal of Science in Medicine and Life*, *2*(6), 166-172.
18. Xalimova, Y. S. (2024). Morphology of the Testes in the Detection of Infertility. *Journal of Science in Medicine and Life*, *2*(6), 83-88.

19. Zikrillaev, F. A. (2024). Cardiorehabilitations from Physiotherapeutic Treatments in Cardiovascular Diseases. *American Journal of Bioscience and Clinical Integrity*, *1*(10), 96-102.
20. Зикриллаев, Ф. А. (2024). ОПРЕДЕЛЕНИЕ РАННИХ ФАКТОРОВ РИСКА ХРОНИЧЕСКОЙ БОЛЕЗНИ ПОЧЕК В ПУБЕРТНОМ ВОЗРАСТЕ. *Modern education and development*, *16*(7), 166-180.
21. Зикриллаев, Ф. А. (2024). РОЛЬ ПРЕПАРАТОВ ЛЕРКАНИДИПИНА И АМЛОДИПИНА В ЛЕЧЕНИИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ ПРИ ХРОНИЧЕСКОЙ БОЛЕЗНИ ПОЧЕК. *Modern education and development*, *16*(7), 213-229.
22. Abdurashitovich, Z. F. (2024). DETERMINATION OF THE ETIOPATHOGENESIS AND RISK FACTORS OF OBESITY AMONG ADOLESCENTS. *Modern education and development*, *16*(7), 181-194.
23. Abdurashitovich, Z. F. (2024). EARLY RISK FACTORS FOR ARTERIAL HYPERTENSION AND FEATURES OF ITS ASSOCIATION WITH OTHER DISEASES. *Modern education and development*, *16*(7), 195-212.
24. Abdurashitovich Z. F. ODAM ANATOMIYASI FANIDAN KALLA SUYAKLARI TUZILISHI VA SHAKLLANISHI HAQIDA //Modern education and development. – 2024. – Т. 16. – №. 7. – С. 149-165.
25. KHALIMOVA, Y. S. (2024). MORPHOFUNCTIONAL CHARACTERISTICS OF TESTICULAR AND OVARIAN TISSUES OF ANIMALS IN THE AGE ASPECT. *Valeology: International Journal of Medical Anthropology and Bioethics*, *2*(9), 100-105.
26. Salokhiddinovna, K. Y. (2024). IMMUNOLOGICAL CRITERIA OF REPRODUCTION AND VIABILITY OF FEMALE RAT OFFSPRING UNDER THE INFLUENCE OF ETHANOL. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *4*(10), 200-205.
27. Salokhiddinovna, K. Y., Saifiloevich, S. B., Barnoevich, K. I., & Hikmatov, A. S. (2024). THE INCIDENCE OF AIDS, THE DEFINITION AND CAUSES OF THE DISEASE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 195-205.
28. Nematilloevna, K. M., & Salokhiddinovna, K. Y. (2024). IMPORTANT FEATURES IN THE FORMATION OF DEGREE OF COMPARISON OF ADJECTIVES IN LATIN. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 150-157.

29. Saloxiddinovna, X. Y., & Ne'matillaevna, X. M. (2024). FEATURES OF THE STRUCTURE OF THE REPRODUCTIVE ORGANS OF THE FEMALE BODY. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 179-183.
30. Хафизова, М. Н., & Халимова, Ю. С. (2024). ИСПОЛЬЗОВАНИЕ ЧАСТОТНЫХ ОТРЕЗКОВ В НАИМЕНОВАНИЯХ ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ В ФАРМАЦЕВТИКЕ. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 172-178.
31. Хафизова, М. Н., & Халимова, Ю. С. (2024). МОТИВАЦИОННЫЕ МЕТОДЫ ПРИ ОБУЧЕНИИ ЛАТЫНИ И МЕДИЦИНСКОЙ ТЕРМИНОЛОГИИ. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 165-171.
32. Халимова, Ю. С., & Хафизова, М. Н. (2024). ОСОБЕННОСТИ СОЗРЕВАНИЕ И ФУНКЦИОНИРОВАНИЕ ЯИЧНИКОВ. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *55*(2), 188-194.
33. Халимова, Ю. С., & Хафизова, М. Н. (2024). КЛИНИЧЕСКИЕ АСПЕКТЫ ЛИЦ ЗЛОУПОТРЕБЛЯЮЩЕЕСЯ ЭНЕРГЕТИЧЕСКИМИ НАПИТКАМИ. *TADQIQOTLAR. UZ*, *40*(5), 199-207.
34. Халимова, Ю. С., & Хафизова, М. Н. (2024). кафедра Клинических наук Азиатский международный университет Бухара, Узбекистан. *Modern education and development*, *10*(1), 60-75.
35. Халимова, Ю. С., & Хафизова, М. Н. (2024). КЛИНИЧЕСКИЕ ОСОБЕННОСТИ ЗАБОЛЕВАНИЙ ВНУТРЕННИХ ОРГАНОВ У ЛИЦ, СТРАДАЮЩИХ АЛКОГОЛЬНОЙ ЗАВИСИМОСТЬЮ. *TADQIQOTLAR. UZ*, *40*(5), 240-250.
36. Халимова, Ю. С., & Хафизова, М. Н. (2024). МОРФО-ФУНКЦИОНАЛЬНЫЕ И КЛИНИЧЕСКИЕ АСПЕКТЫ ФОРМИРОВАНИЯ КОЖНЫХ ПОКРОВОВ. *Modern education and development*, *10*(1), 76-90.
37. Khalimova, Y. S. (2024). Features of Sperm Development: Spermatogenesis and Fertilization. *American Journal of Bioscience and Clinical Integrity*, *1*(11), 90-98.
38. Salokhiddinovna, K. Y., & Nematilloevna, K. M. (2024). MODERN MORPHOLOGY OF HEMATOPOIETIC ORGANS. *Modern education and development*, *16*(9), 50-60.
39. Khalimova, Y. (2025). MORPHOLOGY OF PATHOLOGICAL FORMS OF PLATELETS. *Modern Science and Research*, *4*(2), 749-759.