

Types of implants and evaluation of quality of life in knee replacement patient

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Abstract

Knee osteoarthritis and rheumatoid arthritis is commonly seen in the elderly people and is affecting millions of people across the globe. On increasing age, weight and trauma; the flexibility and alignment of knee declines. Implants are inserted based on the types of metal alloys. Quality of life can be evaluated using various scales to evaluate the progress and function of knee before and after knee replacement surgery. Quality of life mainly depends on the severity of pain and the movement of knee after surgery. It also depends on individual's physical, mental, psychosocial and psychological factors pertaining to the disease.

Keywords: Knee replacement; Implants; Quality of life; Alloys

1. Introduction

Osteoarthritis is a degenerative joint disease in which protective cartilage of the joints starts wearing down. As the cartilage becomes rough, the bones rub against each other and cause pain. Symptoms such as severe pain in the joints, swelling, and difficulty in walking, sitting and squatting are observed. This disease mainly occurs in the elderly people above 45 years. Various risk factors are age; body mass index, physical activity, gender, weight [1].

Rheumatoid arthritis, which causes inflammation of the synovial membrane and results in excessive synovial fluid, can lead to pain and stiffness. Traumatic arthritis, arthritis due to injury, may cause damage to the cartilage of the knee. When non-pharmacological treatments and medications are ineffective, surgical procedures will be performed. On prolonging the indications for arthroplasty in the patients it is possible for the development of the plastic phase of the operation.

1.1. Types of knee replacement

Knee replacement surgery can be performed as a partial or total knee replacement. In general, the surgery consists of replacement of damaged joint parts of the knee with various types of metal alloys or plastic components and is shaped accordingly. Based on the severity of knee damage, knee replacement is done.

There are four types of knee replacement

- Total knee replacement
- Unicompartmental (partial) knee replacement
- Kneecap replacement (patellofemoral arthroplasty)

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- Complex or revision knee replacement

Some risk or complications while performing knee replacement are bleeding, infection, blood clots in the legs or lungs, loosening or wearing out of the prosthesis, fracture, continued pain or stiffness.

1.2. Alloys used in knee replacement

There are different types of implants available for total knee replacement based on different metals. Metals have corrosive properties, i.e. gradual degradation of the metallic implant when it is placed inside the body. Blood and other body fluids play a major role in corrosion [2]. Alloys which are used are Titanium, Cobalt Chromium, Zirconium, Polyethylene, Nickel, Stainless Steel, Tantalum, Gold, and plastic. Mainly Titanium and Cobalt Chromium are most commonly used.

1.3. Evaluation of quality of life

Quality of life can be evaluated by using various scores available such as Western Ontario and McMaster Universities Arthritis Index (WOMAC) score, Short Form health survey questionnaire-36 (SF36), SF12, Lysholm knee scoring scale, Knee Society Score, High-Activity Arthroplasty Score, The forgotten joint score (FJS), The Knee injury and Osteoarthritis Outcome Score (KOOS). Various types of questions are asked to the patients regarding their symptoms, stiffness, pain, function, daily living, sports and recreational activity and lifestyle changes.

Western Ontario and McMaster Universities Arthritis Index (WOMAC) consists of Pain (5 items), Stiffness (2 items), Physical Function (17 items).

Short Form health survey questionnaire-36 (SF36), consists of general health, limitations of activity, physical health problems, and emotional health problems, social activity, pain, energy and emotions.

SF12 consists of 12 questions based on physical activity, health and emotional problems.

Lysholm knee scoring scale consist of Pain (25 points), Instability (25 points), Locking (15 points), Swelling (10 points), Limp (5 points), Stair limbing (10 points), Squatting (5 points), Need for support (5 points).

High-Activity Arthroplasty Score was designed to detect subtle variations in physical function of highly functioning patients [3].

The Forgotten Joint Score (FJS) consists of 12 questions related to joints.

The Knee injury and Osteoarthritis Outcome Score (KOOS) is more specific in comparison to other scores because it consists of 42 questionnaires covering all problems related to knee.

2. Conclusion

The surgeon makes the decision based on a patient's condition, activity level and other factors. By doing total knee replacement, improvement in quality of life is observed. The advantages of knee replacement are to reduce pain, improvement in mobility and better quality of life. However, there are some disadvantages too that one cannot bend and kneel completely like natural knee.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest.

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