



E-ISSN: 2707-8353
P-ISSN: 2707-8345
IJCRO 2019; 1(1): 05-06
Received: 08-11-2018
Accepted: 11-12-2018

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Total knee replacement- A case report

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DOI: <https://doi.org/10.22271/27078345.2019.v1.i1a.3>

Abstract

Total knee replacement is considered to be an effective treatment for end-stage knee osteoarthritis. TKR is a surgical procedure in which an artificial joint or prosthesis replaces a damaged knee joint. We reported a case in 58 year old patient who underwent TKR.

Keywords: osteoarthritis, prosthesis, total knee replacement

Introduction

Osteopetrosis has been classified into three main types: infantile malignant, intermediate and benign. The malignant autosomal recessive form of this disease results in death in the first decade of life because of obliteration of the medullary cavity, which results in loss of bone marrow, pancytopenia, immunodeficiency and life-threatening infections ^[1].

Total knee replacement (TKR) is considered to be an effective treatment for end-stage knee osteoarthritis ^[2]. TKR is a surgical procedure in which an artificial joint or prosthesis replaces a damaged knee joint. The primary indication for TKR is pain, followed by functional limitation. Usually, a person's daily activities must be substantially affected by pain and functional limitations for him or her to be considered a candidate for TKR ^[3].

There are 3 different types of knee replacement prostheses. Non-constrained prostheses use the patient's ligaments and muscles to provide the stability for the prosthesis. Semi-constrained prostheses provide some stability for the knee and do not rely entirely on the patient's ligaments and muscles to provide the stability. Constrained prostheses are for patients whose ligaments and muscles are not able to provide stability for the knee prosthesis ^[4]. The most common risks and complications associated with TKR are deep venous thrombosis, infection, stiffness, loosening, and osteolysis. To prevent deep venous thrombosis, patients are treated with heparin prophylactically and/or given support stockings to wear. Patients are also given antibiotics for 24 hours after surgery to minimize the risk of infection. Stiffness is another associated complication. In most patients, it can be avoided by keeping the knee moving in the days and weeks following surgery ^[5]. We reported a case in 58 year old patient who underwent TKR.

Case Report

A 58 year-old male reported to Orthopaedic department with complaint of osteopetrosis of both knees since 8 years. History revealed knee pain with progressively activity limitation for the past 10 years. Patient was medically fit except osteopetrosis of knees. Patient was subjected to radiographs such as AP view, lateral view and CT scan of both knees.

Examination revealed painful knees with diminished movement. X-rays of the knee showed osteoarthritic changes. The patient was planned for TKA in both knees. A careful planning and preparation was done preoperatively.

Weight-bearing was not permitted during the first 12 weeks post-operatively, and only partial weight-bearing was allowed for further six weeks. The patient was advised to wear knee brace for a week. At 15-months follow-up, x-rays showed satisfactory position of the components. Prognosis of the case was favourable.

Discussion

The number of total knee replacements performed each year in the United States has increased dramatically, from 31.2 per 100,000 person-years during the period 1971–1976 to 220.9 during the period 2005–2008. In 2012, more than 670,000 total knee replacements were performed in the United States alone, with corresponding aggregate charges of \$36.1 billion. The number of total knee replacements is expected to increase as the average age of

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the population increases, which highlights the associated future economic burden [6].

Osteopetrosis has been classified into three main types: infantile malignant, intermediate and benign. The malignant autosomal recessive form of this disease results in death in the first decade of life because of obliteration of the medullary cavity, which results in loss of bone marrow, pancytopenia, immunodeficiency and life-threatening infections [7]. The intermediate autosomal recessive form carries a life expectancy into adulthood. This type has the highest incidence of osteomyelitis of the jaw attributed to the decreased bone vascularity and the relative low white blood cells. The benign autosomal dominant form is the most common. It typically carries a full life expectancy, despite of increased propensity for fractures and other musculoskeletal problems such as hip and knee osteoarthritis. We reported a case in 58 year old patient who underwent TKR [8].

Lingard *et al.* [9] performed THA and TKA in a 59-year-old osteopetrotic patient with painful osteoarthritis in the left hip and right knee. In the hospital the patient underwent THA in the left hip firstly. Six months later, we performed TKA of the right knee. At 15-months follow-up, the components were in good position, and the patient could walk freely and perform activities of daily living with no pain. This case report demonstrates that total joint arthroplasty is an effective treatment for painful hip and knee osteoarthritis in patients with osteopetrosis.

Borjesson *et al.* [10] reported a case in 83-year-old female with bilateral primary TKA performed 17 years prior presented to the clinic. The patient was referred with worsening left knee pain, reported gait instability, and swelling for three months duration. Until this point, she had been completely asymptomatic. Patient was initially treated with physical therapy, followed by a left knee arthrocentesis to rule out infection. The aspirate demonstrated proteinaceous fluid with few benign inflammatory and epithelial cells and cultures were found to be negative. An in-house X-ray was notable for an increase in size and number of osteochondral bodies in the left suprapatellar recess with a left joint effusion and “lysis and subsidence of the tibial component and decreased thickness, suggestive of loosening and wear”. The patient then underwent a bilateral knee bone scan which confirmed the tentative diagnosis of implant loosening with polyethylene wear and instability. The patient was counseled on her treatment options, including surgical and non-surgical management, and elected to undergo revision surgery of her left knee arthroplasty.

Conclusion

Authors found that total knee replacement is an effective way of treating osteopetrosis especially in aged patients.

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