



The Quality of Life After a Total Hip Replacement Procedure: The Factors Attributed to a 24-Year Survival Case

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Abstract

Total Hip Replacement (THR) is a restorative procedure aimed at managing hip-joint ailments that display little to no response to conventional medical therapy. The procedure has improved patients' quality of life and overall survival. After conducting a comprehensive review of a case of a fortuitous left hip replacement procedure conducted on a senior 93-year-old male patient whose ability to hike was impaired by bilateral hip joint osteoarthritis, the success factors of this procedure were determined. After enduring a surgical excision of the femur's head and proximal neck, his walking ability was restored. There were no physical activity-related complications. A comprehensive cross-sectional study showed that good surgical excision, effective cementing techniques, proper placement of implants, the young patient age at the time of THR, and the underlying cause for the surgery were the elements attributed to the procedure's success.

Keywords: Total Hip Replacement, Osteoarthritis, Cementing Technique

Introduction

The THR procedure is the most commonly performed orthopaedic practice, widely endorsed by healthcare practitioners due to its exceptionally long-term outcomes [1]. Since its inception, the procedure has been used to restore the functionality of the hips of patients suffering from Osteoarthritis. According to the National Joint Registry (2018), osteoarthritis-related complication has necessitated the most cases of total hip replacement, amounting to almost 90% of the surgeries in the UK, followed by the fractured neck of the femur accounting for 5% of surgeries, dysplasia and avascular necrosis for 2% of the surgeries, and inflammatory arthritis for 1% [2]. Multiple predisposing factors to hip osteoarthritis are the patient's mechanical, biological, environmental, and genetic elements [3]. When compared to conventional elective surgeries, the modern total hip replacement procedure dramatically improves the patient's quality of life [3]. Recently, implant technology has witnessed remarkable improvements since the revolution-

ary work of Wiles [4], Charnley, and other 20th-century orthopaedic researchers [1]. Prior follow-up and survival studies conducted ten years after the procedure show that the survival of 15 years is currently at 57.6%, at 20 years at 34.6%, while at 25 years, it is only 11.6% [5]. It shows that very few patients survive to 25 years after the procedure. The case study describes the 24-year continued survival of a patient after the THR procedure.

Case Report

A patient suffering from High Blood Pressure (HTN), diabetes, and ischemic heart disease was diagnosed with bilateral hip joint osteoarthritis. Before turning 63, the patient enjoyed outdoor hiking before his hip joint was extensively destroyed beyond repair. It was a stressful ordeal since his mobility was impaired. In 1998, he prescribed a Total Hip Replacement (THR) surgery. His left hip was replaced through a Stanmore Hip Replacement system, after which a cemented implant was inserted. The surgical procedure achieved

the desired outcomes since his mobile functioning was restored. In 2014, a subsequent right hip replacement was done through the Stryker Exeter Hip system. A longitudinal review shows that since the first surgery, the patient has been notably functioning exemplarily well. He has not reported any walking concerns or issues bearing weight with lower extremities. He would partake in his favorite hiking activity without any difficulties.



Figure 1: After Left Hip Replacement.

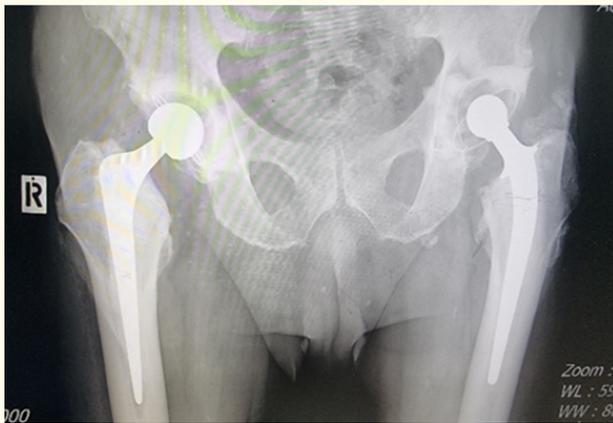


Figure 2: After Right Hip Replacement.

Discussion

Since Total Hip Replacement was pioneered in the 1960s, its reliability and efficiency have improved [6-7]. Fifteen to twenty years later, this surgical excision procedure had already cemented its position as the top choice for hip pathologists [1,5]. Initially, the procedure faced multiple drawbacks, ranging from surgical infections

structural implant failures, and the inability to choose the most appropriate femoral and acetabular implants objectively. It was also challenging to determine the perfect fixation component [8-10]. However, effective revisions have been made to the procedure, such as using Polymethylmethacrylate cement, a self-curing acrylic polymer with no adhesive properties and acetabular components resistant to wear [11]. Recent studies have also established that factors influencing implant survival include patient dynamics, diagnosis, surgical technique, and the surgeon factor [12].

Prior Orthopedic Evidence shows that 95% of THR display a reduction in mortality, where the patients survive beyond ten years [13], averaging between 15-17 years. In this case, the left THR survived without any complications for 24 years. The success of THR could be attributed to the use of cemented implant excision design, which provided less mobility friction and consequential high-survival rates [14,15]. The patient has successfully exceeded the 15-year average life of the polythene acetabulum component [16]. As shown in the X-ray image in figure 2, there has been no damage to the cross-linked polyethene acetabulum component. Prior research has also established the link between improper cup angles and consequential lower limb dislocation. The X-ray review shows that the cup was correctly inserted in this procedure. It was fixed at the suggested angle of 35 to 45 degrees [17]. The comprehensive review also displays an excellent cementing technique. The cement was mixed with antibiotics, reducing the chances of post-surgical infection. The distal intramedullary femoral plug was also used, which would contribute to the survival of the implant [18]. It reduces blood loss in the THR procedure.

The age factor is responsible for early THR failure. Younger patients have demonstrated higher failure rates [19,20] due to high physical activity demands [21]. In this case, the patient was 69 years of age when he first had left hip replacement surgery. In this age group, the revision rates in these age groups are known to be exceptionally high due to the usage of cemented implants [22]. Moreover, the underlying diagnosis requisite for total hip replacement also influences the implant's survival and impacts the functional outcome. For example, the survival rate is likely shorter when a total hip replacement is done after a fracture compared to Osteoarthritis [23]. In the case mentioned above, the patient had bilateral hip joint osteoarthritis. At the time the patient was receiving the THR procedure, the condition had not deteriorated yet. In

this case, this is another reason for the sustained survival of the left THR.

Conclusion

THR is a key surgical procedure for patients suffering from Osteoarthritis. However, the patient's long-term survival depends on factors such as age at the time of the procedure, the implant design used, underlying surgery causes, sex, and the surgical operator technique. Factors such as good surgical excision, exemplary cementing techniques, proper placement of implants, the age of the patient at the time of THR, and the underlying cause for the surgery were responsible for the surgery's outcomes and the 24-year survival.

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