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Functional and Radiological outcomes of Revision Total Hip replacement-Midterm Analysis

Dr.Jambu Nageswaran[1], Dr.Ganesan Ganesan Ram[2] Dr.Madhu Kiran3
[1, 2,3]*(Department of orthopaedics, Sri Ramachandra Medical College, Tamilnadu)*

Abstract: *Prospective study of twenty-four patients who underwent revision total hip replacement in Sri Ramachandra medical centre. The study period was from June 2010 to Dec 2014. The inclusion criteria were Revision total hip replacements done following primary total hip replacement both cemented and uncemented, aseptic loosening, infections (including staged revisions), instability and implant failure. The exclusion criteria were revision total hip replacements done for failed internal fixation around the hip and bipolar arthroplasty. The mean pre op Harris hip score was 38.6 while mean post op Harris hip score was 83. The difference between mean pre op and post op Harris hip score was 44.4. In our series as per Harris hip score criteria we had 50% good result. Revision total hip replacement surgery is an extensive operative procedure with significant number of complications, though it gives good results as shown in our study.*

Keywords: *Revision total hip, Aseptic loosening, septic loosening, Harris hip score*

I. Introduction

Revision total hip replacement is a relatively infrequent operation. The average revision rate is 18% in the United States [1]. The most common causes for revision are repetitive dislocation of a hip replacement, mechanical failure and infection. The revision total hip replacement surgery are done to improve mobility, relieving pain and to improve the function of the hip joint after failed primary surgeries of hip. Fulfillment of these goals requires long term stable mechanical fixation of the implanted components acceptable wear rates of the articulating surface minimization of osteolysis and avoidance of infection. Revision total hip arthroplasty also demands additional attention to potential problems such as removal of failed components and cement, deficient host bone stock and reinsertion of new components. We are going to analyse the midterm follow up of functional and radiological outcome of revision total hip replacement.

II. Aim

To analyse the functional and radiological outcome of revision total hip arthroplasty.

III. Materials And Methods

Prospective study of twenty-four patients who underwent revision total hip replacement in Sri Ramachandra medical centre. The study period was from June 2010 to Dec 2014. The inclusion criteria were Revision total hip replacements done following primary total hip replacement both cemented and uncemented, aseptic loosening, infections (including staged revisions), instability and implant failure. The exclusion criteria were revision total hip replacements done for failed internal fixation around the hip and bipolar arthroplasty. Informed consent was obtained from patients after discussion of the advantages, disadvantages and risk. Institutional ethics committee clearance was obtained before commencing the study. The Mean age of the patient was 66 yrs. Of the 24 hips, 8 were cemented and 16 were uncemented. The mean follow up was 30 months. The posterior approach was used in all cases. Follow up was done using the Harris hip score [2]. Plain x-ray pelvis with both hips and proximal femur AP view and x-ray of the operated hip lateral view were done for radiological evaluation. Regular follow up were done upto 2 years and then yearly. The Andrew Whaley and Daniel et al criteria and the De Lee and Charnley criteria were used to assess cup loosening [3]. The Gruen zones and the Enghs criteria for uncemented stems were used to assess femoral stem loosening. In our study out of 24 patients 16 had aseptic loosening, 4 had subsidence and 4 had septic loosening radio logically. All the patients had pain and disability clinically. The Brookers Classification was used to assess Heterotropic ossification [4].

IV. Results

The mean pre op Harris hip score was 38.6 while mean post op Harris hip score was 83. The difference between mean pre op and post op Harris hip score was 44.4. In our series as per Harris hip score criteria we had 50% good result. The outcome based on Harris hip score was tabulated in table 1. Heterotrophic ossification in our series was 17% (4 hips). Two patients had sciatic nerve palsy. Nine percentage of our patients had limb length discrepancies. We had no case of wound gaping, infection, dislocation, and embolism.

Table 1:Results as per Harris hip score

Outcome	Number of Patients	Percentage
Excellent	0	0%
Good	12	50%
Fair	10	42%
Poor	2	8%

V. Discussion

Amstutz et al states that quality of the results of revision total hip replacements were poorer than the index total hip replacement [5]. Javad parvizi et al study proves that prevalence of complications following revision thr in elderly ranges from 30- 60 %, also the probable reason for dislocation is due to more constrained liners [6]. There is a decrease risk of dislocation with the use of modular prosthesis, which gives the surgeon more option in reconstituting the desired amount of version, offset and limb length. According to Kavanagh and Fitzgerald the quality of results after an uncomplicated revision thr was comparable with those after primary thr, but incidence of serious complications precluding a successful results much higher [7]. Pellicci et al study shows initial quality of uncomplicated revision thr compares favorable with primary thr, but the durability is substantially less.

In our study two patients had poor outcome. But those patients had good pain relief in hip. One of the patient's opposite knee was diagnosed to have infected total knee replacement, which resulted in painful gait. The hip itself was not painful. In our study all the patients had good pain relief after 6 months post surgery in their hips. Pain in the thigh is generally associated with the use of femoral stems that were designed for ingrowth of bone than cemented ones. In all of our patients the pain decreased with time and were pain free at 6 months post surgery. The variation in these incidences may be due to differences in operating technique or in how the pain was interpreted and graded. Two of our patients had limp, due to sciatic nerve palsy. All our cases were done through posterior approach. Out of twenty-four patients all patients are walking without any support except two patients who had poor outcome, uses walker support for mobilization. Preoperatively none of the patients were able to walk for unlimited distance. At the latest follow up 20 patients are able to walk for unlimited distance and 2 patients were able to walk six blocks without any difficulty, and 2 patients who had poor outcome is able to walk indoor only.

We had 2 patients with limb length discrepancy. Equalization of limb length with a total hip replacement remains a challenge. Frequently the procedure is completely successful except for an unexpected leg length inequality. The causes of leg length inequality other than hip disease if any should be noted. In the series by jasty m, webster w and harris w reported an incidence of 16% limb length inequality in a series of 85 total hip replacements, their criteria was shortening of 1 cm. Foot wear correction was given to the above patients. Discrepancies of 1 cm generally are well tolerated, and perception of the discrepancy tends to diminish with time. Apparent leg length inequality and pelvic obliquity caused by residual soft tissue contracture usually responds to physical therapy with stretching and improve with time. In the study by John C and Harris, 4% of the acetabular components were revised. In our study mean follow up is 31.9 months. We did not have any case of implant loosening during our period of follow up. However, long term follow-up is necessary in order to evaluate the potential mechanisms of failure of the acetabular component, including excessive polyethylene wear, dysfunction of the locking mechanism, dissociation of the liner and pelvic osteolysis. In our series we have 4 case of class 2 heterotrophic ossification. Heterotopic ossification is a relatively common complication after total hip arthroplasty.

Our mean Harris hip score pre-operatively 38.6 was increased to post-operatively 83.7. This difference in mean was statistically significant at $p<0.0001$.We had fifty percentage of good results (Fig 1,Fig 2,Fig 3,Fig 4) which can be comparable with various literatures. Revision total hip arthroplasty is a safe option that gives good functional results, with marginally higher rates of intra-operative complications; and patients should be warned of the possibility of incomplete relief of groin pain postoperatively [9]. The revision total hip replacement for symptomatic failed arthroplasty gives the patient a pain free and functionally acceptable lifestyle. The goal of revision total hip arthroplasty is to return the patients to the pre injury functional state as rapidly as possible [10]. Revision total hip arthroplasty for symptomatic failed primary total hip replacement due to aseptic loosening has been shown to be successful with good results (Harris hip score- 83) in the mid term follow up.

Figure 1-Aseptic Loosening

Figure 2-Post Op Revision

Figure 3-Pre Op Loosening

Figure 4-2 Years Follow Up

VI. Conclusion

The results of our study was rewarding in term of improving patient's quality of life as evidenced by pre-op and post-op Harris hip score. Revision total hip replacement surgery is an extensive operative procedure with significant number of complications, though it gives good results as shown in our study.

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