

# SINGLE STAGE CEMENTLESS BILATERAL TOTAL HIP REPLACEMENT SURGERY: CASE REPORT AND REVIEW OF LITERATURE

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## ABSTRACT

Two staged bilateral total hip replacement (THR) is commonly performed for bilateral hip end stage arthritis and is preferred as THR is a complex planned surgery and performing both sides simultaneously may be fraught with risks and complications. However, many studies now indicate that in carefully selected patients, single stage or simultaneous bilateral THR can be performed with successful and cost effective results. We report a case of one-stage bilateral THR performed in a 22 year old with bilateral severe arthritis due to ankylosing spondylitis. Patient was severely disabled due to pain and was only ambulating on wheelchair. After a successful single stage bilateral THR, patient recovered fully and after 6 weeks was walking independently without any pain, with full function of both hips and performing his occupation normally. The surgical costs to the patient and hospital were both economical. We conclude that single stage bilateral THR is a better surgical option for young and fit patients with bilateral hip arthritis.

**KEYWORDS:** Ankylosing spondylitis, bilateral hip end stage arthritis, Bilateral total hip replacement, Single stage bilateral total hip replacement

## INTRODUCTION

Total Hip Replacement (THR) has become one of the most satisfying surgeries for patients with end stage arthritis of hip joint to enable them to lead a painless, independent and fully functional life. The increasing incidence of bilateral hip involvement especially in younger population due to diseases like avascular necrosis of femoral head (AVN) and inflammatory arthritis like ankylosing spondylitis (AS) and rheumatoid arthritis have led to a significant painful disability in this age group (1). The incidence of bilateral involvement of hip joint ranges from about 40-70% in AVN (2) and about 80-90% in AS patients (3).

These diseases have led to advent of the idea to perform single stage or simultaneous uncemented bilateral THR surgery to give a one stop solution to these severely disabled young patients. There is still no clear clinical consensus in the literature on which is better, between single stage bilateral versus staged bilateral THA procedures. Some studies have reported higher incidence of complications after single stage bilateral THR (4). Increased blood loss, heterotopic ossification, higher prevalence of deep vein thrombosis and greater risk of pulmonary complications are amongst the main reported complications after single stage bilateral THR (5-7). These results have become much better with improved anaesthetic and surgical techniques and

postoperative care. The major benefits of bilateral single stage uncemented THR include single anesthesia, shorter surgical time, more efficient use of hospital resources, reduced hospitalization, cost effectiveness and shorter rehabilitation (6). Also, the improvements in various elements of walking are reportedly higher in patients with bilateral THR than in those with unilateral staged replacement with resultant better hip function (7).

We hereby present a case of single stage bilateral cementless THR performed in a young patient suffering from ankylosing spondylitis. This bilateral THR in a single anesthesia was performed first time in our region. We hereby report the surgical details and the functional results after 2 years of follow up.

## CASE REPORT

A 22 year old patient, school clerk by profession, belonging to Hardoi district came to Era's Lucknow medical college orthopaedics outdoor service on a wheelchair with severe bilateral hip end stage arthritis due to ankylosing spondylitis. He had early involvement of cervical spine and severe back pain too. He was not able to ambulate independently since about 6 months and was in disabling pain. He was diagnosed with ankylosing spondylitis in 2014 and due to improper treatment and disease severity his hips were involved early and were totally arthritic. In September 2016, he was admitted to the indoor service for detailed examination and proper management planning.

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On examination, He had severe bilateral hip arthritis with beginning of fusion in right hip joint, Both hips were painfully stiff with left hip having some limited range of motion and very poor Harris hip scores of 17 in right hip and 19 in left hip. (Table 1).

Particulars	Right Hip	Left Hip
<b>Range of Motion</b>		
Flexion	30 <sup>0</sup>	50 <sup>0</sup>
Extension	0 <sup>0</sup>	0 <sup>0</sup>
Abduction	10 <sup>0</sup>	10 <sup>0</sup>
Adduction	10 <sup>0</sup>	10 <sup>0</sup>
Internal Rotation	0 <sup>0</sup>	10 <sup>0</sup>
External Rotation	10 <sup>0</sup>	10 <sup>0</sup>
<b>Flexion Deformity</b>	20 <sup>0</sup>	20 <sup>0</sup>
<b>Harris Hip Score</b>	17	19

**Table 1. Functional Evaluation Of The Patient , 22 Years Male (preoperatively)**

The antero-posterior radiograph of both pelvis with both hips and thighs in neutral rotation showed end stage arthritis of both hips (Figure 1).



**Fig 1: Pre Operative X-ray Pelvis With Both Hips - Antero-posterior View Showing Severe Bilateral End Stage Arthritis Of Both Hips ( Right>left)**

As the patient was young, healthy and with normal hematological investigations after a detailed examination by anesthetist , he was graded as ASA (American Society of Anaesthesiologists ) I fitness. A joint decision of surgical team, the anesthetist team, the operation theater staff , implant team and patient with his family members to perform a single stage bilateral uncemented total hip replacements.

It was deemed that the surgery would be single stage , single anaesthesia , cost effective and with a single post op physical therapy plan offsetting the need of second surgery after 3 months and leading to a complete functional recovery.

**Operation**

Under Spinal Epidural anesthesia, First the left hip was

operated with a standard posterolateral approach in lateral position and uncemented total hip replacement was done with total surgical time of 65 minutes. Then the patient was made supine again with careful monitoring of the patient by the anesthesia team and after a break of 15 minutes, the right hip was prepared and scrubbed and uncemented total hip replacement surgery was performed on the right hip with total surgical time of about 63 minutes. The total blood loss in the whole procedure was about 500 ml and there was a single unit transfusion given to promote early recovery. The patient tolerated the whole procedure very well and was shifted to the post op recovery room in a stable condition.

**Post op care and follow up**

He was given post op antibiotics for a period of 5 days and under adequate pain control he was able to perform bilateral quadriceps strengthening exercises from Day 1 of surgery and by day 4, he was ambulating pain free with walker, he was discharged on Day 5 and had complete functional recovery with joining of his clerical duties after 6 weeks of surgery.

On his 6 weeks post op evaluation , he has had full functional recovery with the Harris hip score of 100 (Table 2) and at the last 2 year follow up , he was doing extremely well with full function and is very happy with his recovery. His latest radiograph showed well aligned and well fixed acetabular and femoral prosthesis in situ on both sides (Figure 2).

Particulars	Right Hip	Left Hip
<b>Range of Motion</b>		
Flexion	120 <sup>0</sup>	120 <sup>0</sup>
Extension	30 <sup>0</sup>	30 <sup>0</sup>
Abduction	40 <sup>0</sup>	40 <sup>0</sup>
Adduction	40 <sup>0</sup>	40 <sup>0</sup>
Internal Rotation	30 <sup>0</sup>	30 <sup>0</sup>
External Rotation	30 <sup>0</sup>	30 <sup>0</sup>
<b>Flexion Deformity</b>	0 <sup>0</sup>	0 <sup>0</sup>
<b>Harris Hip Score</b>	100	100

**Table 1. Functional Evaluation Of The Patient , 22 Years Male (postoperatively: 6 Weeks Follow Up)**



**Fig 2: Post Operative X-ray Pelvis With Both Hips With Both Thighs - Antero - Posterior View Showing Well Fixed And Well Aligned Acetabular And Femoral Prosthesis**



**Fig 3: 2 Year Follow Up X-ray Shows Well Aligned And Well Fixed Acetabular And Femoral Prostheses.**



**Fig 3: 2 Year Follow Up X-ray Shows Well Aligned And Well Fixed Acetabular And Femoral Prostheses.**

## DISCUSSION

THR is one of the most versatile orthopedic procedures with gratifying results for both the surgeons and the patients. With serious joint diseases like AVN and ankylosing spondylitis affecting bilateral hips in young patients<sup>1</sup>, the need for bilateral THRs is increasing exponentially for these patients to lead a pain free and independent life.

Recent literature evidence suggests that simultaneous bilateral total hip arthroplasty is a valuable therapeutic option in appropriately selected patients with bilateral hip arthritis.<sup>8-11</sup>

We believe that in properly selected patients with severe bilateral arthritis and after close consultation with our anesthetic and specialized joint replacement operative team, doing one-staged THRs were better, since both hips were equally arthritic, and replacing one hip would not have achieved the results that we otherwise did, since the gaits would have still been compromised after unilateral surgery. Secondary benefits reported from studies included less use of resources, quicker recovery, less hospital stay and hence more economical.<sup>9-11</sup> The cost data showed that in a theoretical model, comparing one- and two-staged procedures showed a 24% reduction in hospital and sick-leave costs in favour of the one-stage bilateral THRs in healthy patients.<sup>9</sup> Also improved balance and walking ability is noted as early as 4 weeks after bilateral THR.<sup>12</sup>

Our patient returned to work within 4 weeks with independent ambulation and had a complete recovery at the follow up period of 6 weeks with Harris hip scores improving from below 20s to a normal 100. There were no complications observed till the latest follow up of 2 years.

## CONCLUSION

We recommend single stage bilateral uncemented THRs in cases of severe functional disability due to bilateral end stage arthritis of both hips in young patients (< 45 years) who are medically fit, well informed, motivated and well versed with the

postoperative rehabilitation plan. The added benefit of single anesthesia, cost savings for both the hospital and patient and rapid functional recovery is very important in our socio-economic conditions.

### Conflict of Interest

The authors declare that they have no conflicts of interest in relation to this article.

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