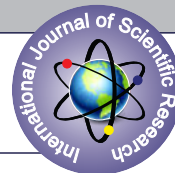


# CEMENTLESS TOTAL HIP ARTHROPLASTY USING MORSELIZED BONE GRAFT IN PATIENTS WITH PROTRUSIO ACETABULI SECONDARY TO RHEUMATOID ARTHRITIS : CASE SERIES



## Orthopaedics

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## ABSTRACT

Rheumatoid arthritis (RA) is the most common inflammatory joint disease lesions involving the hips, knees, and other large joints which can lead to joint deformity and dysfunction [1,2]. Juvenile rheumatoid arthritis is chronic inflammatory arthritis involving which may involve one or more joints with age of onset less than 16 years. With progressive hip disease, the deformed femoral head causes irregular abrasion of the acetabulum, secondarily shifting the femoral head inward and in turn triggering varying degrees of the acetabular protrusion, the incidence of which is about 5%. [3,4] THR in such cases provide improvement in function and pain but challenges posed by lack of bone stock, deficient medial cup support, and medialization of the joint centre in those with protrusio acetabuli must be addressed during acetabular reconstruction.

## KEYWORDS

Juvenile rheumatoid arthritis, total hip arthroplasty, protrusio acetabuli

### INTRODUCTION:-

Rheumatoid arthritis is one of the most debilitating and common causes of hip arthritis and deformity. Juvenile rheumatoid arthritis is chronic inflammatory arthritis with age of onset less than 16 years. Medical management involves use of Disease modifying rheumatoid drugs (methotrexate, hydroxychloroquine, sulfasalazine) along with NSAIDs used for relief of pain and inflammation. Hip involvement is seen in 10-38% of the cases. With progression of arthritis and continued weight bearing protrusio acetabuli develops, the incidence of which is 5%. This adds to existing morbidity and increased pain. Total hip arthroplasty is indicated in those cases where pain is severe enough to affect activities of daily living. However acetabular protrusion, weak bone stock, severe osteopenia in RA make the surgery challenging and selection of appropriate technique more important [2-5].

### Case reports

#### Case 1

A 22-year-old female came to the opd with a chief complaint of pain in bilateral knee pain (R>L) 8 years ago and bilateral hip pain (R>L) from 5 years ago. Pain started in the Right hip, 5 years back which is non radiating. Pain is aggravated on walking and relieved on taking rest. The pain was progressive over time with painful progressive restriction of movements of right hip. On presentation patient was unable to sit cross legged, squat, walking was highly restricted such that it was affecting activities of daily living aggravating. Patient was taking methotrexate and hydroxychloroquine for RA along with NSAIDs for pain and inflammation. On examination patient had Trendelenburg antalgic gait and severe restriction of movements. There was shortening of 2 cm in the right limb. All routine investigations were sent along with ESR & CRP. CRP was negative and ESR was 5. X ray of pelvis with both hips showed severe arthritic changes in both hips with grade 1 protrusio acetabuli by Sotelo-Garza and Charnley classification [6]. Patient was advised for Right sided THA first given her symptoms. As a staged procedure with right hip operated first later on the left hip.

With written informed consent and explaining of disease progression, right hip uncemented THA (total hip arthroplasty) under spinal with epidural anaesthesia. Patient was operated in lateral position using posterolateral approach. As dislocation of the head was difficult due to protrusion of the head inside the acetabulum in situ femoral neck osteotomy was done. The head was then removed by breakage. Morsellized bone graft was taken from the femoral head and was used to reinforce the acetabular wall which was impacted with an acetabular trial cup one size smaller than the final implant. During acetabular preparation the centre of the acetabulum was restored inferiorly and

laterally to restore hip biomechanics. After acetabular and femoral preparation an uncemented acetabular cup which reinforced by two screws, acetabular liner and uncemented femoral stem were implanted. Limb length assessment was done intraoperatively and appropriate size femoral head was implanted. After giving thorough wash closure was done in layers. Postoperatively drain was removed after 4 days. Antibiotic prophylaxis was given with iv antibiotics and low molecular weight heparin was given for 5 days. Appropriate analgesia was administered through epidural catheter which was removed after 3 days and iv paracetamol and tramadol. Patient was started bedside sitting on post op day 1. Non weight bearing mobilization was started with walker on day 5 with partial weight bearing started after 1 week. Post-operative x ray shows restoration of rotational centre of hip with good acetabular cup stability. Post op two months x ray shows good implant stability with no evidence of implant loosening. Loosening of the acetabular prosthesis was reflected by a shift (horizontal or vertical) of the acetabular cup of > 5 mm or the presence of transparent lines around the prosthesis. At 2 months post op patient was pain free and walking comfortably with no aids, Subjective patient satisfaction was also satisfactory. Harris hip score was 92 i.e. excellent outcome.

#### Case 1



**fig-1.1 Preoperative x ray of patient showing severe arthritis And grade 1 protrusio acetabuli on right side**



**Fig.1.2 Immediate post-operative x ray showing uncemented THA with correction of hip centre.**



**Fig.1.3** 2-month post-operative x ray showing stable implant without any loosening.

## Case 2



**Fig.2.1**



**Fig.2.2**

55yr/Female visited OPD with right sided hip pain since 4 years.

Patient is known case of Rheumatoid arthritis and on medication for the same since 4 years on Hydroxychloroquine. On examination patient had shortening of 2 cm. Patient was unable to walk due to pain was bedridden and had inability in sitting cross legged and squatting. Patient was diagnosed with Protrusio Grade II with severely arthritic right hip. Patient was operated using above mentioned technique for right sided THA following similar post operative protocols.

At 2 months patient was walking without any aids and was pain free without any limb length discrepancy and good subjective satisfaction. Harris hip score was 94.

## CASE 3

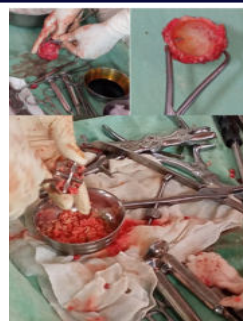
45 year old female, came with complaints of left sided hip pain and inability to bear weight since 1.5 years with inability to sit cross legged and squat. Patient had 1 cm of shortening. Patient was diagnosed with Protrusio Grade I with severely arthritic left hip. Following above protocols patient was operated for Left uncemented THA with morselized grafting. After 2 Months patient shows good functional outcome with walking without aid and has a pain free mobile hip. Harris hip score was 91 with good excellent outcome.



**Fig.3.1**

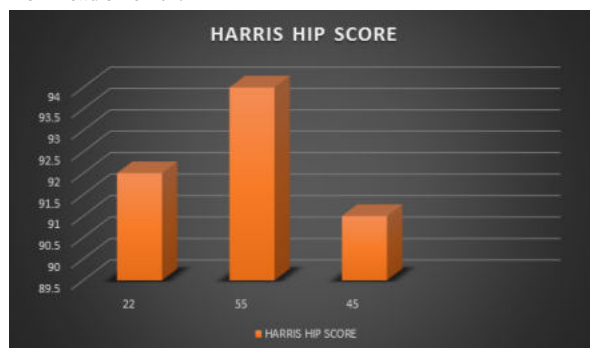


**Fig.3.2**



**Fig.3.3**

Above fig.3.3 demonstrating morsellization of bone graft taken from head of femur.



**Fig.3.4**

**Fig.3.4** demonstrating functional outcome among all three cases

## DISCUSSION

Hip involvement in JRA and RA can lead to significant disability and pain. THA is indicated when pain becomes severe such that it is affecting activities of daily living. However, total hip replacement in patients with protrusion acetabuli developing secondary to RA is difficult because the severe acetabular alterations increase the difficulty of joint replacement and may also threaten the initial stability of the prosthetic implant<sup>[1-6]</sup>. The acetabular wall may be thin, rim maybe weak and there maybe ventral defects<sup>[4]</sup>. Bone graft from the femoral head helps to restore bone stock, provides medial buttress and helps to lateralize the cup to restore the hip centre<sup>[7]</sup>. The deficient medial wall cannot be relied on for implant placement and the cup is stabilized on the reshaped rim. The dislocation of femoral head is also difficult due to protrusion of the head inside the acetabulum, so in situ osteotomy of the neck followed by removal of the head by breakage is often necessary. As patients with protrusion acetabuli secondary to JRA are young cementless acetabular cup is preferable due to better hip survival<sup>[8,9]</sup>. Also cemented cups in protrusion can have disadvantages of thermal necrosis of the deficient acetabular wall, early loosening and high recurrence rate.<sup>[10,11,12,13]</sup> The average low weight and decreased level of activity may contribute to better results in young patients with JRA.<sup>[14]</sup>

## CONCLUSION:-

Cementless THA using autologous bone graft from the femoral head is a suitable treatment option for cases of arthritic hips with protrusion acetabuli secondary to RA including JRA with satisfactory short-term results. The average low weight and decreased level of activity may contribute to better results in young patients with JRA. Long term follow up of such cases is further warranted to understand any delayed complications and long-term results of the same.

## Legend

- 1)THA-Total Hip Arthroplasty
- 2)JRA-Juvenile rheumatoid arthritis
- 3)RA-Rheumatoid arthritis

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