

## Recurrent Dislocation of Total Hip Prosthesis Done In Ankylosing Spondylitis With Spinopelvic Malrotation- A Case Report

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**Abstract:** we report our experience in a case of total hip arthroplasty with special regard to angle of cup position in patients with bilaterally ankylosed hips. A thirty five year old male, an engineer was diagnosed to have ankylosing spondylitis with bilateral chronic arthritis hip, with bilateral sacroilitis. patient was treated with uncemented total hip arthroplasty. Postoperatively patient had recurrent dislocation of the prosthesis twice and we concluded that the altered pelvic biomechanics in ankylosing spondylitis inturn modifies the version and inclination of prosthetic component causing recurrent dislocation of hip.

**Keywords:** bilaterally ankylosed hips, pelvic tilt, THA-acetabular cup position.

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### I. Introduction

In ankylosing spondylitis, bone deformation, atrophy and contracture of surrounding soft tissues, the effects of previous operation, and alterations of normal anatomy all increase the difficulty of this procedure. Additional difficulty is expected in conversion of bilaterally ankylosed hips to THA. Ankylosis of the contralateral hip can be an obstacle to proper positioning of the pelvis that is essential for performing THA, especially in the lateral position. If the contralateral limb is fixed in the abducted position, the pelvis will tilt cephalad in the coronal plane, and if the contralateral limb is fixed in the adducted position, it will tilt caudal (fig :1). Moreover, fixed flexion contracture of the contralateral hip can also hinder proper pelvis positioning, and loss of spine motion in patients with ankylosing spondylitis can add to this problem. Improper positioning of the pelvis during the operation increases the likelihood of implant malpositioning, especially in the acetabular side.

### Case Report:

A 35 years male,engineer presenting with pain both hips and difficulty in walking and doing day to day activities for 4 years not able to squat or to sit with crossed legs able to walk only 100 feet continuously,a chronic smoker and alcoholic, a known case of ankylosing spondylitis . On examination, he was found to have Fixed flexion deformities and external rotation deformity on both hips,Restricted movements in all planes, Loss of lumbar lordosis Restricted neck movements and chest expansion.Clinically patient is having more symptoms on left side hip than right side( fig:2). We planned for conversion of hip ankylosis left side to uncemented total hip arthroplasty.Under Epidural anesthesia, right lateral position, through posterior approach (since patient had fixed external rotation deformity,in view of releasing short external rotators), uncemented total hip arthroplasty on left side done. Components - Acetabularcup : 56mm,Femoral stem: 13mm, Head size: small.Hip stable after reduction. Peroperatively components, version and inclination were satisfactory. Patient stable after procedure(fig:3).

On day-2 post operative period, Clinically flexion, adduction and external rotation with limb shortening. Prosthetic femoral head palpated laterally in the gluteal region. Patient was not cooperative for lateral view x ray. On taking xray pelvis with both hips –AP view, we found posterior dislocation of the prosthesis[1],[2]. We attempted closed reduction under anaesthesia but failed. Then planned for open reduction and revision surgery.Through same posterior approach, hip exposed.The version and inclination of the cup and anteversion of stem were found to be correct. However the anteversion of the cup was reduced and fixed with screws, poly changed(fig:4). Reduction achieved without changing the size and version of other components. Peroperatively, hip was stable. Meticulous soft tissue reconstruction done. Patient stable after procedure. Again patient had the same complication following revision surgery. Literature analysis[3] says that altered pelvic biomechanics in ankylosing spondylitis inturn modifies the version and inclination of prosthetic component

causing recurrent dislocation of hip. Recurrent dislocation of hip is mainly due to spino pelvic malrotation[4], then we did spino pelvic CT lumbosacral spine and pelvis with 3D reconstruction(fig:5) to know about the spino-pelvic malrotation and then We finally did closed reduction under anaesthesia(fig:6) and applied broom stick spica for 4 weeks followed by weight bearing walking.

## **II. Discussion**

The biomechanics in ankylosing spondylitis is Loss of lumbar lordosis with stiff spine and sacroiliacs will alter pelvic biomechanics which inturn modifies the version and inclination of prosthetic component. Fixed sagittal mal-rotation of pelvis is common in ankylosing spondylitis. Pelvis positioning in these patients for THR can be a pitfall and gives rise to mal position of acetabular component leading to dislocation. It is not assessed in routine radiographs. Indirect way to assess is taking x ray centered at pubic symphysis showing shape of obturator foramen. Sagittal mal-rotation of more than  $20^{\circ}$  if ignored resulted in a cup with an anteversion of more than  $30^{\circ}$  and an inclination of more than  $55^{\circ}$ . Half the cup surface was not in contact with host bone when the cup position was maintained at  $20^{\circ}$  anteversion and  $45^{\circ}$  inclination in a patient with  $50^{\circ}$  sagittal pelvic mal-rotation. Usual method of cup positioning is modified in patients with sagittal pelvic mal-rotation to attain desired cup position. Hence for each  $10^{\circ}$  of sagittal pelvic mal-rotation beyond  $20^{\circ}$  of mal-rotation, the cup needs to be put in such that it is  $5^{\circ}$  inclined and anteverted[5].

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