



TRAUMATIC DISLOCATION (CAM JUMP) IN A MORBID OBESE POST TOTAL KNEE REPLACEMENT PATIENT: A CASE REPORT ON A RARE COMPLICATION IN FIELD OF TOTAL KNEE ARTHROPLASTY.

Orthopaedics

Dr. Sai Kumar

Reddy

MBBS, MS, Fellowship in Arthroplasty Registrar. *Corresponding Author

Mukkamalla*

Dr. P. Yuvarajan

MBBS, MS, DNB Chief Joint Replacement Surgeon.

ABSTRACT

Dislocation after total knee arthroplasty is uncommon and more challenging if it occurs in morbid obese patients with multiple comorbid factors.

Case Report: This is a case of a 70-year-old male patient with a BMI of 40 with known HTN, Ischemic Heart Disease presenting with posterior dislocation of his right knee post TKR in a posterior stabilized knee after 3 years without a history of trauma.

Results: The patient underwent closed reduction under spinal anaesthesia and reduced under fluoroscopic guidance. Range of movements were found to be satisfactory. The patient has been kept under a long knee brace and was encouraged to walk on POD-2. His Post-op 3 months follow up is uneventful.

Conclusion: Identifying the cause and closed reduction under fluoroscopic guidance, stability, alignment, range of motion was found satisfactory. The patient can undergo closed reduction without any other procedure of choice.

KEYWORDS

Instability, Posterior Stabilized Knee, Dislocation, Total Knee Replacement, CAM JUMP

INTRODUCTION

Total Knee Arthroplasty is one of the most common and successful procedures in modern orthopaedics. It had undergone many evolutionary changes over the years and yet it is still to be completed. As it has undergone tremendous evolutionary changes, many fine implantation and newer techniques came into the limelight. One such advancement was the advent of posterior stabilized knee design, as it has the advantages like increased knee flexion, better tissue balancing and better polyethylene wear characteristics. Dislocation occurred in the posterior stabilized knee after primary total knee, such cases are very few. Our case is such that high BMI, multiple comorbid factors, and its presentation are dealt in a way with this particular case, making it an unique case report.

Case Presentation:

History:

Presenting Features:

- A 70-year-old male with a weight of 130 kg, height: 6 feet, BMI: 40
- Underwent Right Total Knee Replacement 3 years ago.
- Known Coronary Artery Disease, Hypertension, and Obesity

History of Present Illness:

Sudden onset of severe pain in the right knee after a history of fall at his home, unable to extend his right knee.

- Sedentary lifestyle.

Past Medical History: Known case of Ischemic Heart Disease, Systemic Hypertension and Obesity, on medication.

Case Presentation:

History:

Presenting Features:

- A 70-year-old male with a weight of 130 kg, height: 6 feet, BMI: 40
- Underwent Right Total Knee Replacement 3 years ago.

Physical Examination:



Fig-1: Attitude of the limb on Presentation

Attitude of the Limb: Right hip in abduction, flexion and external rotation, knee in flexion, patella facing laterally, ankle in plantar flexion, lateral border of the foot touching the couch.

- Diffuse tenderness present over the right knee.
- Unable to move the knee due to pain
- No DNVD

Investigation: Preliminary Investigations done.

X-Ray:



Fig: 2: Pre op X-rays of the right knee showing Posterior dislocation in AP and lateral views.

X-Ray of the right knee: Shows posterior dislocation of tibia in AP, Lateral views.

Diagnosis: Right posterior dislocation of tibia in post total knee replacement 3 years ago with no DNVD. "CAM JUMP"

Surgical Procedure: After a thorough evaluation and extensive research, we found out closed reduction and casting for 6 to 8 weeks, Revision with thicker insert, revision surgery with new components and soft tissue balancing. Immediately we planned for an emergency reduction of the dislocation. After spinal anaesthesia, under fluoroscopic guidance the reduction was done. Alignment, stability and component positioning were assessed. After confirming the reduction, alignment and stability of the components are satisfactory. The limb has been kept in long knee brace for 8 weeks.

RESULTS:

The patient achieved near normal range of movements post reduction.

On Day 1: Bedside mobilization and standing done.

On Day 2: Mobilized with the help of walker. Later he has been able to walk by himself without the support of a walker. His follow up is uneventful.



**Fig-3: Before Reduction & After Reduction
Post Op X-rays:**



Fig-4: Post Reduction in AP and Lateral views.

DISCUSSION:

Dislocation after total knee arthroplasty is a rare complication and a difficult problem to address. When the flexion gap is larger than the extension gap and the collateral ligaments are injured, instability and knee arthroplasty dislocation can occur. This complication has been reported with every prosthesis design reinforcing the fact that the more important factors in deciding the long term result after a total knee is the technique and decision making rather than the design of the prosthesis itself.

The posterior stabilized design was introduced to address the limitations of total condylar prosthesis, incorporating a femoral Cam and a tibial post to produce femoral roll back thereby increasing the possible range of flexion(1). But there is a critical point beyond which an implant design allowing increasing flexion range would compromise knee stability (2). Sharkey et al(3) in 1992 reported seven patients with knee replacement who had a posterior dislocation and postulated that extensor weakness along with flexion instability as the predominant cause of dislocation.

Instability after total knee arthroplasty can be classified into anteroposterior or flexion space, varus/valgus or extension space and global instability (4). Each type of instability has a different pathology and can be satisfactorily managed only by addressing the specific problem. In our patient, due to his sedentary life style the patient is keeping his knee in subtle flexion due to his weak quadriceps mechanism while in a sitting position.

Cause for “Cam Jump”(5):

When the patient flexes the knee to >70degrees



Overlap of the femoral Cam and tibial support, also defined, as the dislocation safety factor decreases.



This decrease in the overlap along with subtle extensor dysfunction and persisting instability in flexion (Globally Unstable Knee)



A femoral Cam to ride over the tibial post leading to a frank posterior dislocation without a major trauma or implant breakage.

According to the review of literature obtained from various case

studies (6) the Authors attributed the dislocation to inadequate stability in flexion and addressed them with 2 options:

1. Mobilization under Anaesthesia
2. Revision Surgery

In Revision Surgery we have two options. One is replacing with thicker tibial insert due to inadequate stability in flexion or by revision stabilizing the flexion instability with femoral and tibial components.

In review of Literature, out of a total of 6 cases, 3 cases were treated with mobilization under anaesthesia and 3 cases underwent revision followed by stabilization with knee braces to prevent further episodes of dislocation yielding good results.

In our case study, on the basis of his general health and functional state with comorbid factors taken into consideration, we did closed reduction under fluoroscopic guidance. High BMI, fat necrosis, wound healing complications, and infections. We avoided the option of Open Reduction. As the stability of the components were intact, it gave us promising result from the closed reduction. Eventually the patient was relieved from pain and disability. This report highlights the challenges of TKR when considering for High BMI patients and the primitive importance of surgical technique during the Primary TKR.

REFERENCES:

- [1] Pandit H, Ward T, Hollinghurst D, Beard DJ, Gill HS, Thomas NP, et al. Influence of surface geometry and the cam-post mechanism on the kinematics of total knee replacement. *J Bone Joint Surg Br.* 2005 Jul;87(7):940–5.
- [2] Delp SL, Kocmond JH, Stern SH. Tradeoffs between motion and stability in posterior substituting knee arthroplasty design. *J Biomech.* 1995 Oct;28(10):1155–66.
- [3] Sharkey PF, Hozack WJ, Booth RE, Balderston RA, Rothman RH. Posterior dislocation of total knee arthroplasty. *Clin Orthop.* 1992 May;(278):128–33.
- [4] McAuley JP, Engh GA, Ammeen DJ. Treatment of the unstable total knee arthroplasty. *Instr Course Lect.* 2004;53:237–41.
- [5] Kocmond JH, Delp SL, Stern SH. Stability and range of motion of Insall-Burstein condylar prostheses. A computer simulation study. *J Arthroplasty.* 1995 Jun;10 (3): 383 –8.
- [6] Arumilli BRB, Ferns B, Smith M, Thalava R, Obeid E, Muddu B. Non-traumatic dislocation (Cam Jump) in a revision knee: a case report. *Cases J [Internet].* 2009 Apr 28 [cited 2021 May 6];2. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2740184/>