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Case Report

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Total Knee Arthroplasty in a Patient of Pseudogout: A Rare Case Report

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Abstract

TKR in patients suffering from pesudogout of the knee is a rare phenomenon.Crystalline arthropathies occur when crystals get deposited in synovial membrane or inside the joint. The patient had bilateral knee pain for 5 years associated with swelling and hypertension for 2 years and was recently diagnosed with hepatitis B. The patient had no other relevant history.

The patient was provisionally diagnosed with B/L osteoarthritis of the knee. Since the patient was willing to undergo surgery for only one joint, total knee replacement was performed on the left knee joint, and a biopsy was sent for investigation, which revealed pesudogout. The patient was started on NSAIDS. Postoperatively, the patient recovered 90% of his normal ROM and developed no complications. These findings show that patients with arthritis due to pseudogout can be treated with total knee arthroplasty surgeries.

Keywords: Knee, Pseudogout, Arthroplasty

Introduction

Pseudogout (chondrocalcinosis articularis, calcium pyrophosphate crystal deposition disease, pyrophosphate arthropathy, chondrocalsynovitis, etc.) is an arthritic disorder with variable manifestations due to the deposition of calcium pyrophosphate dihydrate crystals in or around fibro- and hyaline cartilage and occasionally ligaments, tendons, and joint capsules. Some have suggested that one name (chondrocalcinosis) be applied to the asymptomatic state, generally diagnosed by X-ray, and another (pseudogout, chondrocalsynovitis) to the symptomatic state, but this seems too rigorous. Many disorders may be silent or symptomatic, but a single name is found adequate; gout and sarcoidosis are good examples. Pseudogout can be both symptomatic and asymptomatic. Crystalline arthropathies occur when crystals get deposited in synovial membrane or inside the joint. The most common crystalline arthropathies are gout and pseudogout, caused by the deposition of monosodium urate and calcium pyrophosphate crystals, respectively. The typical presentations of gout and pseudogout are nearly identical, manifesting as warmth, swelling, erythema, and pain within a joint [1].

Studies have reported the overall prevalence of gout to be 0.94%, whereas pseudogout is more prevalent, affecting up to 8.1% of people. Crystalline Arthropathy is often difficult to diagnose when compared with septic arthritis. Pseudogout is one of the most common inflammatory forms of arthritis, and recent epidemiologic evidence suggests that the global burden of pseudogout is increasing [2-4].

Clinicians have sometimes affirmed that OA and pseudogout occur in association, but few studies have examined this potential relationship. The result is acute and sometimes chronic inflammation. These, or other yet undefined, mechanisms could promote OA [5-8]. However, total knee replacement in patients with osteoarthritis caused by pseudogout syndrome is rare and hence needs to be performed increasingly more for the benefit of such patients.

Case Presentation

Patient Information

The patient is a 62-year-old Hindu male. The patient was presented with knee pain for five years associated with swelling for four and a half years. He had no history of prior trauma. The pain was insidious at onset and gradual during progression, not associated with any diurnal variation; it was relieved by taking over the counterNSAIDs and was increased upon walking.

The patient had hypertension for the past two years and was treated with cilnidipine, metoprolol and furosemide. He had no history of diabetes, tuberculosis, asthma, COPD, or previous surgeries.

The patient had no significant family history or any family history of related symptoms. By occupation, the patient is a farmer belonging to the lower economic class. No genetic testing was performed in the past, but no disease or ailment was observed in his family. On admission and during the investigations, the pa-

tient was determined to be positive for hepatitis B surface antigen, but the patient denied any knowledge of the disease. The patient had not undergone any previous interventions for his knees and was managed with NSAIDS only.

Clinical Findings

Table 1: Inspection Findings

Knee	Right	Left
Patella	Normal	Normal
Position	Varus	Varus
Quadriceps Bulk	Normal	Normal
Skin	Normal	Normal
Scars	None	None
Swelling	Mild	Mild

Table 2: Palpation Findings

Knee	Right	Left
Local Rise of Temperature	Absent	Absent
Patellar Tap Test	Negative	Negative
Tenderness in Joint Lines	Negative	Negative
Mass on Palpation	None	None

Table 3: Knee movements

Knee	Right	Left
SLRT	Positive	Positive
Extension	Upto 15 degrees of flexion	Upto 30 degrees of flexion
Flexion	140 degrees	120 grees

Table 4: Knee measurements

Knee	Varus/Valgus (Standing)	Varus/Valgus (Supine)	Flexion/Extension (Standing)	Flexion/Extension (Supine)
Left	14 Degrees Varus	20 Degrees Varus	54 Degrees Flexion	32 Degrees Flexion
Right	10 Degrees Varus	14 Degrees Varus	30 Degrees Flexion	18 Degrees Flexion

Diagnostic assessment

Two orthogonal X-rays of bilateral knee joints in anteroposterior and lateral views were taken; these images were suggestive of grade 4 osteoarthritis in bilateral knees with? Old fracture sequelae with left proximal tibia. The patient was not financially stable for CT or MRI scanning and hence was not included. A provisional diagnosis of a B/L osteoarthritis knee joint with an old fracture left proximal tibia was made.

Figure 1: Preoperative X-ray of B/L knee joints in the anteroposterior and lateral views

Therapeutic Intervention

After admission, all routine investigations and written informed consent were obtained, and the patient was taken up for surgery. The patient only wished to undergo surgery on his left knee joint; hence, only unilateral total knee arthroplasty was planned. Preoperatively, the patient was given an anxiolytic in the form of Tab Alprazolam (0.5 mg) the night before surgery, and one hour before the incision, 1 gm of Ceftriaxone was given intravenously. The patient underwent surgery under spinal anesthesia with no anesthesia-related complications throughout the procedure.

After painting and draping with all aseptic precautions and inflating the tourniquet at 320 mmHg, a standard medial parapatellar approach was taken starting 5 cm superior to superior pole of patella till the tibia tubercle. Subcutaneous tissues were dissected, and a medial skin flap was developed. The joint capsule was incised, and the joint was exposed. Intraoperatively, a large, fun, yellowish gray mass was found within the joint capsule and eroding both the femoral and tibial cartilages with fat-like consistency. The quadriceps were divided, and the suprapatellar pouch was opened. The fat pad was retracted. The patella was dislocated laterally. The mass was biopsied and sent for histopathology, and the entire mass was curetted out. Then, a total knee arthroplasty (PS) was performed with a poly(on metal) implant via standard cuts and lateral soft tissue release to correct the varus and balance. All the cuts were made, and the implants were cemented with Gentamycin Bone Cement.

At the end, before closure, all movements and patellar tracking were checked, and complete curettage of the mass was confirmed. The wound was closed in layers, and a compression bandage was applied. The postoperative period was uneventful. The patient started walking with a walker on day 1, and physiotherapy started. The patient was given 0.6 ml of Inj LMWH SC for 5 days followed by 75 mg of Tab Aspirin for 4 weeks. The patient was discharged on day 5. Sutures were removed at 2 weeks, and the patient was able to walk without support after 3 weeks.

Figure 2: Draping of the patient intraoperatively

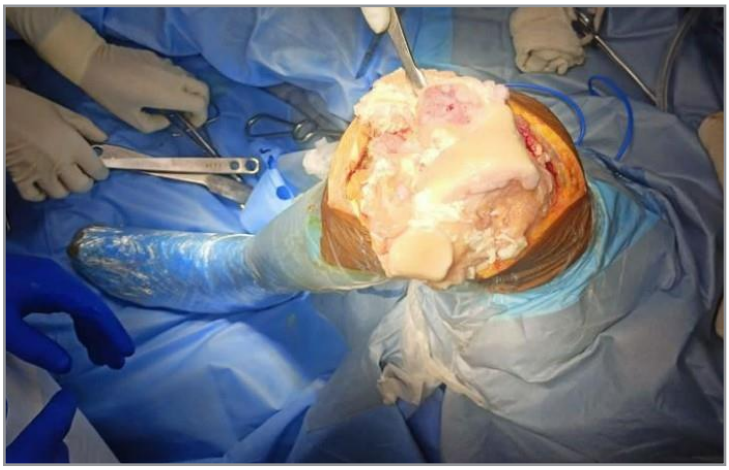


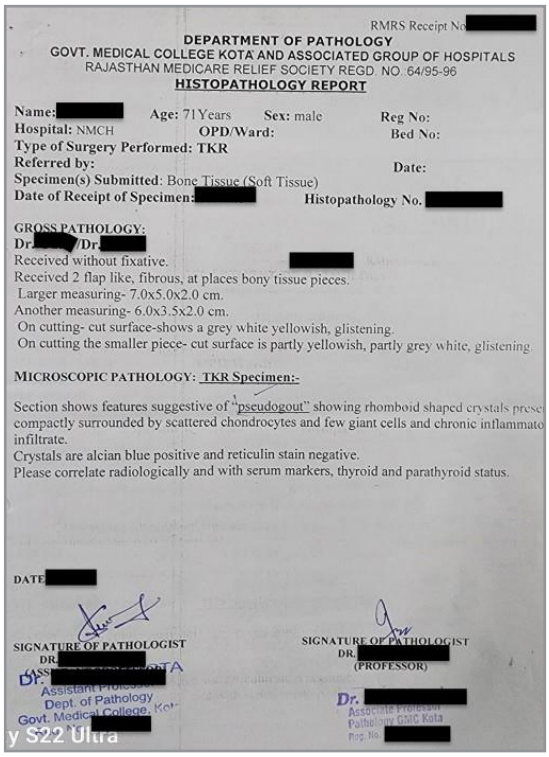
Figure 3: Intraoperative mass in the knee joint

Figure 4: Intraoperative final implant fixation in the knee joint

Figure 5: Postoperative X-ray of the left knee joint - anteroposterior and lateral view

Results

The patient was discharged on day 5 and followed up on day 14 and day 28. Histopathology reported on day 14 revealed the presence of rhomboid-shaped crystals with scattered chondrocytes, giant cells and chronic inflammatory infilitrate. Crystals were alcian blue positive and were consistent with the findings of Pseudogout. On day 28, an examination was performed, and the findings were noted. The patient started physiotherapy and walking with support beginning on day 1. By 3 weeks, the patient was able to walk without support and was very satisfied with the results. No adverse events or complications occurred.



RMRS Receipt No [redacted]

DEPARTMENT OF PATHOLOGY
GOVT. MEDICAL COLLEGE KOTA AND ASSOCIATED GROUP OF HOSPITALS
RAJASTHAN MEDICARE RELIEF SOCIETY REGD. NO. 64/95-96
HISTOPATHOLOGY REPORT

Name: [redacted] **Age:** 71Years **Sex:** male **Reg No:**
Hospital: NMCH **OPD/Ward:** **Bed No:**
Type of Surgery Performed: TKR
Referred by: **Date:**
Specimen(s) Submitted: Bone Tissue (Soft Tissue)
Date of Receipt of Specimen: [redacted] **Histopathology No.** [redacted]

GROSS PATHOLOGY:
Dr [redacted] /Dr [redacted]
Received without fixative. [redacted]
Received 2 flap like, fibrous, at places bony tissue pieces.
Larger measuring- 7.0x5.0x2.0 cm.
Another measuring- 6.0x3.5x2.0 cm.
On cutting- cut surface-shows a grey white yellowish, glistening.
On cutting the smaller piece- cut surface is partly yellowish, partly grey white, glistening.

MICROSCOPIC PATHOLOGY: TKR Specimen:-

Section shows features suggestive of "pseudogout" showing rhomboid shaped crystals prese
compactly surrounded by scattered chondrocytes and few giant cells and chronic inflammato
infiltrate.
Crystals are alcian blue positive and reticulin stain negative.
Please correlate radiologically and with serum markers, thyroid and parathyroid status.

DATE [redacted]

SIGNATURE OF PATHOLOGIST
DR [redacted]
Assistant Professor
Dept. of Pathology
Govt. Medical College, Kot

SIGNATURE OF PATHOLOGIST
DR. [redacted]
(PROFESSOR)
Dr. [redacted]
Associate Professor
Pathology GMC Kota
Reg. No. [redacted]

Figure 6: Histopathological Report of the Specimens

Table 5: Postoperative Knee Examination Comparison

Knee Left	Preoperative	Postoperative Day 28
Patella	Normal	Normal
Position	Varus	Normal
Quadriceps Bulk	Normal	Mild reduction
Skin	Normal	Normal
Scars	None	TKA Scar Present
Swelling	Mild	Mild

Table 6: Postoperative Knee Movement Comparison

Knee Left	Preoperative	Postoperative Day 28
SLRT	Positive	Positive
Extension	Upto 30 degrees of flexion	Upto 10 degrees of flexion
Flexion	120 degrees	130 degrees

Table 7: Postoperative Knee Measurement Comparison

Knee Left	Varus/Valgus (Standing)	Varus/Valgus (Supine)	Flexion/Extension (Standing)	Flexion/Extension (Supine)
Preoperatively	14 Degrees Varus	20 Degrees Varus	54 Degrees Flexion	32 Degrees Flexion
Postoperatively	3 Degree Valgus	3 Degree Valgus	10 Degrees Flexion	10 Degrees Flexion

Figure 7: Postoperative clinical photograph of the operated knee during flexion

Figure 8: Postoperative clinical photograph of extension of the operated knee

Figure 9: Postoperative clinical photograph showing coronal balance of the operated (left) vs nonoperated (right) knee.

Discussion

Patients with pseuodgkin disease in the knee have varying presentations, with a wide spectrum of mild to severe illness on presentation. There are very few data on total knee arthroplasty performed on knees with pseudogout, and this procedure represents a gray area for all orthopedic and arthroplasty surgeons. Our case reports aim to establish that total knee arthroplasty is a viable treatment option for patients suffering from arthritis due to chronic pseudogout. The results from our patient were very satisfactory, and we did not observe any complications throughout the patient's follow-up.

Conclusion

This study aimed to establish that one need not necessarily wait or decline total knee arthroplasty in patients with pseudogout, and this procedure can be performed safely if all precautions are taken for the same patient.

Patient's Perspectives

The patient on being asked his perspective was very happy and satisfied with the results. The continuous pain during walking along with the cosmetic disfigurement was a huge burden on him and except for the post-operative pain on Day 0, the patient had no complains with his treatment and was compliant and satisfied with his treatment throughout. He was willing for a joint replacement in his other knee joint as well once he regained his strength, he said.

Informed Consent

The Patient, along with his son had provided written and informed consent in the patient's own language i.e. "Hindi".

Conflicts of Interest

The authors declare no conflicts of interest.

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