



Case Report

Osteophytes in Knee – How large they can be?

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ABSTRACT

Osteophytes in knee are a common feature of degenerative osteoarthritis. They do have negative effects like deformities of knee (varus, valgus and fixed flexion deformities), loose bodies (sudden and painful obstruction of knee movements), and pain during movements of knee. They do bring stability to knee by increasing the joint surface area. Here by presenting a case of bilateral osteoarthritis knee, with a large anterior-lateral osteophyte complex, with range of motion 0-90°. Total Knee Replacement surgery was done. Pre, per and post operative period was uneventful, with restoration of normal range of motion 0-90° without any pain. Patient was able to carry-out daily activities of living, thereafter normally.

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1. Introduction

Osteophytes in knee are a common Phenomenon. These are genuine osteophyte or osteochondrophytes, arise from periosteum in junction between bone and cartilage.¹ Pain in knee is strongly associated with osteophyte in skyline view than those in lateral and anterior-posterior view. Moreover, presence of osteophytes are better predictor of pain than narrowing of joint space itself.² at times in end stage of osteoarthritis knee, osteophytes stabilize the joint by increasing joint surface.^{1,3} This is seen particularly in Anterior Cruciate Ligament tear, where development of osteophytes are seen anterior and posteriorly, which limit femur translocation on it and stabilize tibia.³

2. Case Report

We here present a case of 55 years male patient presented to our out-patient department, with bilateral knee pains for past 8 years. Main complaint being difficulty in walking, inability to sit cross-legged (Unable to sit down on the floor), and cannot use Indian toilet. Pain was constant, dull aching pain at rest. Initially pain with activity, relieved by rest and

medication, presently excruciating and disabling pain with walking and standing, progressed to rest pain. At present pain was neither relieved by rest or medication. Presently pain was so disabling his daily activities of living.

On systemic examination there was diffuse swelling present around knee, with no marked sinuses and engorged veins. No visible pulsations. On palpation no local rise of temperature. Diffuse tenderness present. Palpable bony hard swelling over anterior aspect of knee extending superior to patella at about 10cm X 11cm, which does not show any signs of movement with knee. Vastus medialis wasting present. Range of motion 0° -90°, further restricted due to pain, soft end point. No swelling in popliteal fossa.

X-Ray shows bilateral grade IV osteoarthritis of knee, with huge osteophyte over anterior and lateral aspect of knee. Medial Tibial deformity present. Osteopaenia, loose bodies present. Patellar osteophytes present.

2.1. Diagnosis: Bilateral Grade IV osteoarthritis

Patient was posted for left Total Knee Arthroplasties, after routine investigations, cardiology, general medicine, and anesthesia work-up. TKR was performed under Spinal epidural anesthesia, with pneumatic tourniquet.

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2.2. Findings during surgery

1. Before incision patient was having more than 0° -90° flexion, with soft end point.
2. After the incision parapatellar approach, on arthroscopy there was huge osteophyte complex was found anterior-medial-lateral measuring at about 11 X 12 cm depth of 1.5cm. this was attached to articular margin of
3. Huge patellar osteophyte was found, removed.
4. Numerous loose bodies, both Osseo- cartilaginous were found.
5. Medial defect was found.

Normal TKR was done. Patient was later mobilized on same day after 4 hours with adductor block. Later patient was discharge without any event. Specimen was sent for Histopathological examination.

2.3. Histopathological report

1. Gross – grey white bony fragment.
2. Microscopic – bone reveals outer periosteum, underlying cartilage, bony trabeculae and fatty marrow, with no evidence of malignancy.
3. Features are consistent of osteophyte.

3. Discussion

Indian population is mostly rural in nature. It is custom to sit down on the floor with cross-legged, to have food, and to perform religious rituals. These people are farmers, and require complete full movements of knee and hip to perform various activities in farming, agriculture, animal husbandry tasks of daily activities. Osteophytes are common in osteoarthritis. They may start as marginal osseous genuine outgrowths.¹ They do develop at junction point of bone and cartilage, in periosteum and are under the cover of synovium.¹ Near to cartilage surfaces in the joint, cell in periosteum form osteophytes. Chondrocytes initially, and later change to bone like structure, osteophytes. This occurs by endochondral ossification.⁴ Our Histopathological report shows similar findings.

In our case we did not find any Anterior Cruciate Ligament. We had osteophytes developed anteriorly, and posteriorly. We also had loose body component attached to Medial meniscus which was probably broken osteophyte medially. Probably these are to stabilize the femur on tibia by increasing the articular surface.³ There is enough evidence to show that marginal osteophytes are just not overgrowths in affected joints, but have functional role in stabilizing it. Marginal osteophytes will not only stabilize the knees but also results in fixed deformity of knees. Their removal is beneficial in non osteoarthritis knees than osteoarthritis knees. They do increase the range of motion in non osteoarthritis than osteoarthritis knees.⁵

Osteophytes present at various places in knee can result in deformity at that particular place. One of the reasons for varus deformity can be medial osteophyte along with degeneration and deformation of medial tibial articular surface. Similarly valgus deformity can result from lateral tibial osteophyte along with hypoplasia of lateral condyle of femur. Fixed flexion of deformity of knee can be due to posterior osteophytes of femur and tibia which can result posterior capsular contracture. The presence of such a large anterior and lateral osteophyte in our case could result in no deformity except for terminal restriction of flexion terminally. Patient was able to flex the knee more than 90°.

In our patient, grading of knee osteoarthritis according to Kellgren and Lawrence classification was 4 and severe.⁶

Knee osteoarthritis grading according OARSI has the following.⁷

Knee – Tibio-femoral

1. 1. Marignal Osteophyte

- Lateral femoral osteophyte – 3(+)
- Medial femoral osteophyte - 3(+)
- Lateral tibial osteophyte - 3(+)
- Medial tibial osteophyte – 3(+)

1. 2. Joint space narrowing

- Medial joint space narrowing - 3(+)
- Lateral Joint space narrowing – 3(+)

1. 3. Others

- Medial tibial attrition – Present
- Medial tibial sclerosis - Present
- Lateral tibial sclerosis – Present

We could not find any other classification for osteophytes for further analysis.

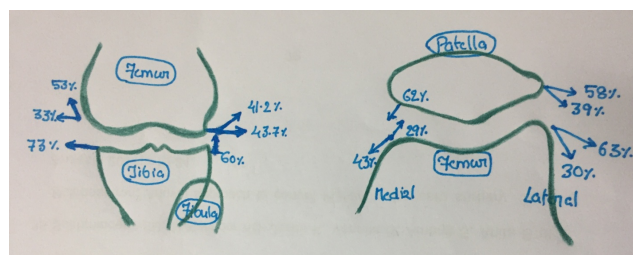


Fig. 1: Showing the growth of osteophytes in knee in different directions with percentages in that particular direction⁸

Size of the osteophyte is inversely proportional to joint space narrowing of that compartment. i.e, size of osteophyte increases with joint space narrowing.⁸ Moreover, growth of osteophyte depends upon its grade. Grade I osteophytes grow more laterally and medially (i.e, horizontally), whereas grade II/III osteophytes grow vertically away from

the joint.⁸ Limitation of this lateral growth of osteophyte may be due to 1) anatomical restriction due to adjacent fibrous tissues like ligaments and soft tissues, 2) shortening and widening of the osteophyte vertically leads to protection of osteophyte base from fracture.⁸ These findings were consistent with our case report.

Presence of grade III osteophytes and complete joint space narrowing in all compartments (patella, lateral and medial femur and tibia) might have lead to growth of such a big osteophyte in our case. However growth of such a big osteophyte (15 x10cm) bilaterally in both knees, without any deformity was surprising. Patient being farmer by occupation was able to make up daily activities of living with difficulty with pain. Probably continuing the daily activities of living even after knee osteoarthritis have modified the growth of osteophyte to such a large extent. Medial defect with loose bodies medially was found with varus deformity was found. After the surgery patient was able to do his daily activities of living, except for sitting down cross-legged. Maximum amount of flexion more than 100° was attained after the surgery.



Fig. 2: Showing removal of osteophyte from anterior and lateral aspect of distal femur. It also shows huge patellar osteophytes

4. Conclusion

Presence of such a large osteophyte (15 x 10cm) in anterior-lateral and medial side of knee, without any deformity in knee and complete range of motion with terminal restriction of motion is surprising. Moreover, these types of osteophyte out growths are common in our rural population with farming as background. People still continue daily activities of living with difficulty, which mould the osteophyte outgrowths vertically. This could result in such big osteophytes. Loose bodies are also more common. Osteophytes also help in stabilizing the joint.

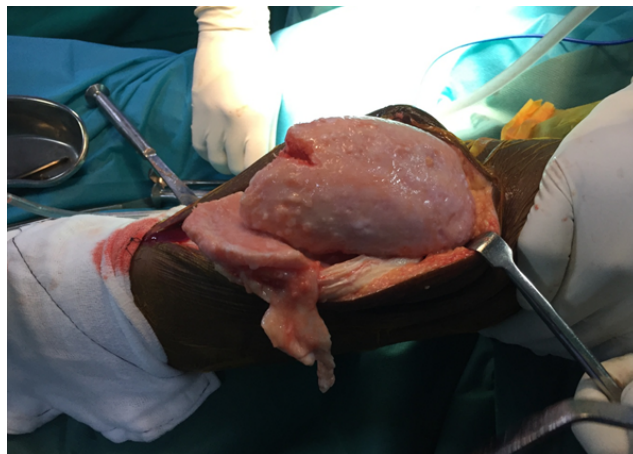


Fig. 3: Showing huge osteophyte removed from distal femur during the TKR procedure



Fig. 4: Showing size of Osteophyte extracted from knee at about 8 * 13 cm



Fig. 5: Showing Anterior Posterior Knee X ray showing the extent of osteophyte



Fig. 6: X-Ray Lateral view showing large osteophytes and loose bodies anterior and posteriorly

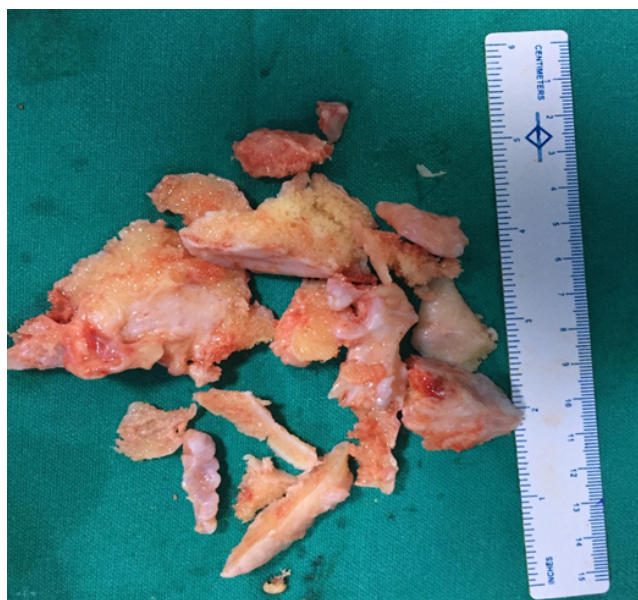


Fig. 7: Showing remaining osteophytes and loose bodies removed during cuts.

The growth of osteophyte depends upon its grade, fibrous structures around the joint.

4.1. Finally we do infer that

1. Presence of such a large osteophyte complex in knee is not that uncommon in our country, through very rare in western world.
2. In presence of such a large osteophyte complex, the bone-cuts during the TKR must be done in a careful manner. These cuts through small can result in sudden increase in joint space, requiring the higher spacer.
3. In such cases soft tissue gap balancing, complete loose bodies and osteophytes removal, must be done prior before proceeding for revision cut during the surgery.
4. We do infer careful planning before proceeding for surgery in these types of cases.

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