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CASE REPORT

OSTEOCHONDRITIS DISSECANS OF KNEE: A CASE REPORT

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ABSTRACT: Osteochondritis dissecans refers to a focal area of subchondral bone that undergoes necrosis with or without detachment due to lack of vascularity. Osteochondritis dissecans is most common cause of loose bodies in knee joint and the symptoms vary from continuous dull aching pain to locking of the joint. We present a case of Osteochondritis dissecans of knee in a female adult patient. She underwent an arthrotomy for removal of the fairly large loose fragment ever reported in our hospital. The objective of this report is, as the clinical signs may be subtle in Osteochondritis dissecans early diagnosis and appropriate treatment should be done to prevent long term sequelae.
KEYWORDS: Osteochondritis dissecans, loose body, subchondral bone.

INTRODUCTION: Osteochondritis dissecans is the most common cause and source of loose bodies in the knee joint.[1] It constitutes about 50% of loose bodies in knee joint: the incidence of osteochondritis dissecans is estimated to be 15-30 cases per 1, 00, 000 persons. Osteochondritis dissecans in previous studies were found to be more affected in boys,[2] but recent incidence appears to be increasing in women and in adolescent children,[3] may be because of increasing involvement in organized sports. The non-weight bearing medial femoral condyle is classically involved in 85% cases of osteochondritis dissecans of the knee.[4] As 20-30 percent of cases are bilateral; in the contralateral joint osteochondritis dissecans must be ruled out.[2]

CASE REPORT: A 30 yrs. old female patient presented to our hospital with history of pain and restricted movement of her left knee since 2-3 weeks. The pain was dull aching in nature and she noticed swelling in the joint on walking a distance and sometimes feels locking on flexion of knee joint. On examination there was swelling and tenderness on joint line around the tibial spine and 10-15^0 restriction of flexion and 5^0 short of extension. Lachman test was negative and medial and lateral collateral ligaments are normal and there was no neurological deficit.

She was investigated regularly and on radiological examination we found an evidence of classical type of osteochondritis dissecans in the medial femoral condyle (fig.1).

Fig. 1: x-ray of AP and lateral view of left knee

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MRI scan of left knee revealed osteonecrosis of the lateral aspect of medial femoral condyle fig. (2) there was a fluid signal between the fragment and underlying bone.

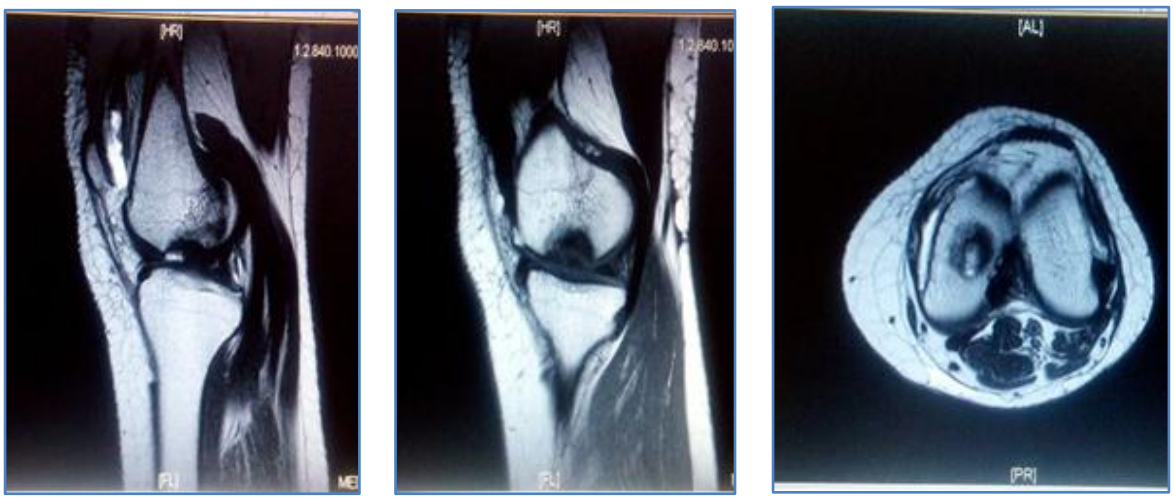

Fig. 2: MRI scans of left knee

As osteochondritis dissecans was symptomatic, patient insisted for surgery. Hence we did arthrotomy of left knee. Through a medial parapatellar incision joint was exposed under tourniquet control. We found a fragment of approximately 2.5cmX2cmX1cm was lying freely in a bone crater and it was detached completely from underlying medial condyle (fig 3).

As there were no signs of healing of an osteochondritis dissecans, the fragment was removed and the bone crater was drilled to establish revascularization and the edges are curetted and freshened. Wound closed in layers and tourniquet removed to establish circulation. Limb was immobilized by cylindrical plaster cast. She was advised to do quadriceps drill and weight bearing started after 4 weeks.

Fig. 3: showing bone crater with osteochondritis dissecans fragment in medial femoral condyle

Fig. 3

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DISCUSSION: Konig in 1887 was first to use the term Osteochondritis dissecans to describe the osteocartilagenous separation of the femoral condyles.[5] In osteochondritis dissecans, there is necrosis of focal area of subchondral bone and degenerative changes occur in the cartilage overlying it. As the necrotic bone is resorbed, the cartilage loses its supporting structure,[3] then it becomes loose body. There are two types of osteochondritis dissecans: the juvenile form, which occurs in patients with open epiphysial plate,[2] the adult form, which occurs after the physis closes. The adult form is believed to be undiagnosed persistent juvenile osteochondritis dissecans by many researchers.[6]

Apart from femoral condyles, the other bones affected by osteochondritis dissecans are talar dome, capitellum of the humerus.[4] The cause of osteochondritis dissecans is controversial and most accepted theories include exo and endogenous trauma, ischemia, abnormal ossification within the physis and constitutional or genetic predisposition.

In 1933, Fairbanks first implicated an indirect or endogenous trauma suggesting impingement of the tibial spine on the lateral aspect of the medial femoral condyle during internal rotation of the tibia.[7] This theory later suggested by Smillie. The medial articular facet of the patella has been shown to contact the classic site of osteochondritis dissecans when the knee is flexed to 135°.

Any trauma to the patella in this position can result in traumatic force being transmitted to the classic site of osteochondritis dissecans on the medial femoral condyle. The history of trauma will be the onset of symptoms in 21% of patients, pain related to activity and stiffness after periods of disuse[8] may also be present.

Enneking proposed an ischemic theory as one of the causes and he compared the blood supply of subchondral bone to that of the bowel mesentery with its end arterial arcade and found that the terminal branches anastomose poorly with their neighbours,[9] therefore infarction results in necrosis of wedge shaped pieces of bone immediately beneath the articular cartilage.

In osteochondritis dissecans common complaints include pain on weight bearing, sensation of catching and giving way[6] and limitation of extension. The patients with osteochondritis dissecans of the knee may walk with an external tibial rotation,[1] and with positive Wilson's sign. It is elicited by flexing the knee to 90°, then internally rotating the tibia and extending the knee slowly, watching for a painful response.[2]

Osteochondritis dissecans is a radiologic diagnosis; the lesion is usually detected in anteroposterior and lateral view of plain x-rays. A tunnel view (knee in flexion) may be indicated in doubtful cases. In plain films circumscribed area of necrosis can be detected, but for assessment of articular cartilage and stability of fragment it is not useful. If the osteochondritis dissecans lesions are evident on x-rays, should be staged for stability with MRI. The MRI is 97% sensitive in detecting the lesion[10] and helpful in assessing the fragment attachment and viability.

The classification of osteochondritis dissecans lesion was described by Clanton and DeLee in 1982 depends on attachment of the fragment.[11]

Stage 1: Depressed osteochondral fracture.

Stage 2: Osteochondral fragment attached by an osseous bridge.

Stage 3: Detached non-displaced fragment.

Stage 4: Displaced fragment.

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In MRI scan, a fluid signal between the lesion and bone crater is indicative of detached fragment. For planning surgery, distinguishing between stage 2 & 3 is important.[12]

Conservative treatment for stable lesions is generally accepted- prognosis worsens with age and physis closure. In juvenile osteochondritis dissecans the goal of treatment is to promote resolution of the lesion before physis closure. In older adolescents and adults, the prognosis is less satisfactory, regardless of treatment.

Many forms of surgical treatment have been discussed in the literature, including drilling and curettage, excising the fragment, debriding the crater and different forms of fixation and grafting. Reattaching a separated non-displaced fragment with a bone peg graft was first mentioned in 1955 by Smillie.[13]

Arthroscopy is use full in osteochondritis dissecans lesions to establish a diagnosis and also to perform a needed procedure like drilling or curettage of a crater or fixation of the fragment by pins or Herbert screws.

Guhl cited advantages of arthroscopy in treating a case of osteochondritis dissecans, i.e. immediate evaluation of the surface topography, a decrease in total rehabilitation time, avoidance of open surgery, the risk of infection, decreased length and cost of hospitalization.[14] He classified the lesions by:

- location,
- percentage of weight bearing surface involved
- the degree of separation

and then correlated these with treatment. He indicated an osteochondritis dissecans of a knee as symptomatic in a patient skeletally older than 12 yrs. of age, a lesion larger than 1 cm in diameters and involvement of the weight bearing surface.

For treatment regimen of symptomatic adult patients, an algorithm of Clanton and De Lee can be used. Fig. (4)

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Fig 4: Algorithm for treatment of OCD suggested by Clanton and De Lee.

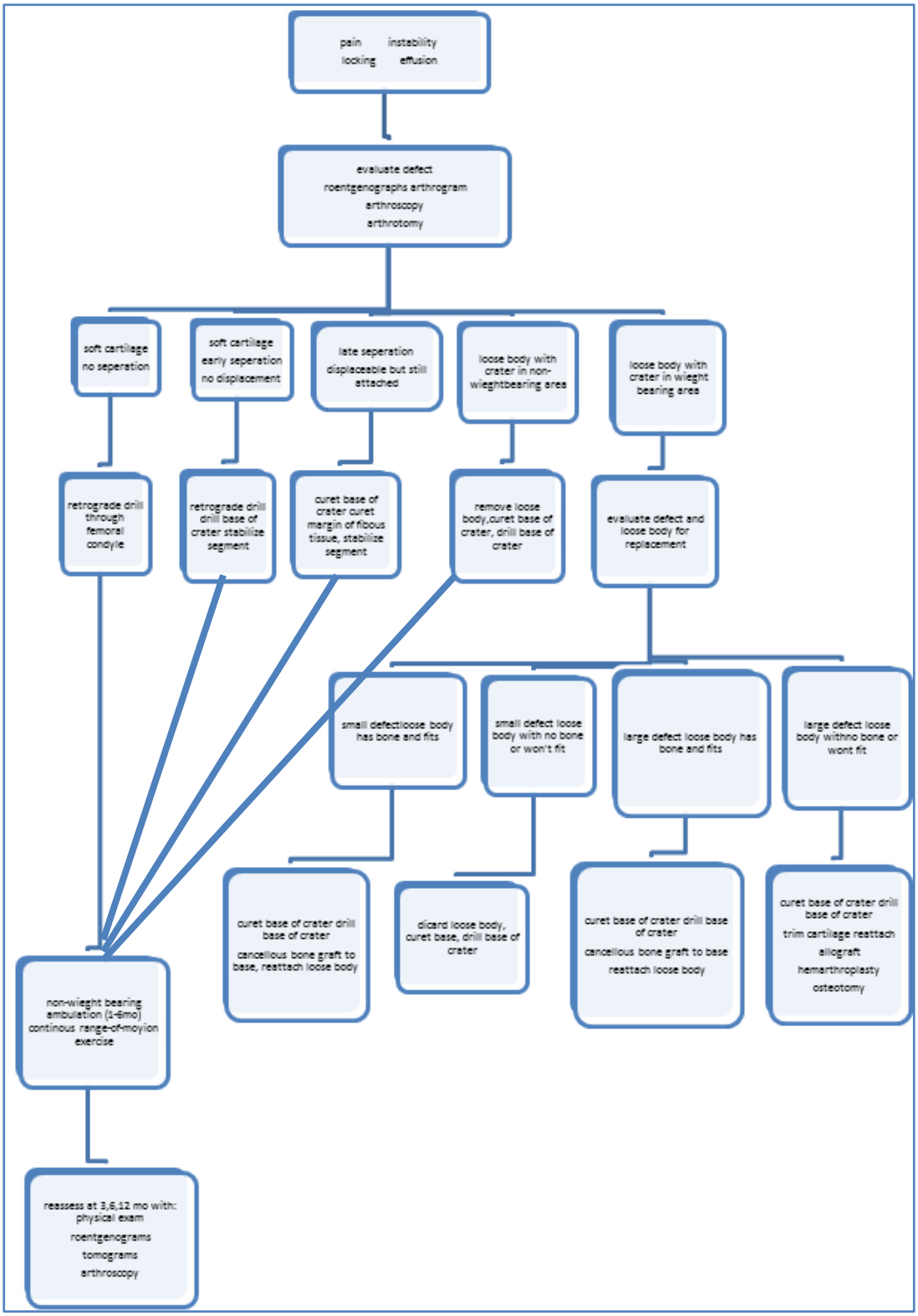

Fig. 4

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As the fragment in our case was about 1.5 cm X 1cm in size as per MRI scan and because of non-availability of arthroscope in our hospital and as the patient was not affordable to undergo arthroscopic treatment in outside setup, we planned to do a arthrotomy of left knee. She was followed up after 6 weeks and clinical signs are satisfactory with decrease in pain and other symptoms. The plain x-ray revealed filling up of bone crater with even joint line (fig. 5). Clinically movements were painless and improved, painless and the joint was stable.

Fig. 5: POST OP X-RAY OF LEFT KNEE AFTER 6 WEEKS

CONCLUSION: As in the OSTEOCHONDRITIS DISSECANS, the clinical signs are subtle; the diagnosis of the lesion may be obscure leading to long term sequelae, which should be prevented. Each case is unique and needs thorough examination, investigation and proper treatment as the knee is a major weight bearing joint.

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