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Study of outcome of conservative management in osteochondritis dissecans of trochlea

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Abstract
Introduction: Osteochondritis dissecans (OCD) of elbow has been known to be one of the causes of chronic pain in elbow region, targeted population being children and adolescents. Usual location was thought to be capitellum but rarely trochlea. Conservative and operative treatments have been studied and published. Aim of this study is to discuss outcome in conservatively managed 8 cases in our institution.
Materials and Methods: Prospective analysis has been done in our study over 8 children of age in range between 11-17 who presented to our outpatient department between the years 2009 to 2016 with complaints of chronic elbow pain and no history of trauma. Nelsons classification for staging OCD appreciable on MRI is used.
Results: There were 8 children with age varying from 11-17 years, 6 being boys and 2 girls. 5 cases had flexion contracture ranging from 5-10 degrees in the affected elbow. 2 cases (female) had hyperextension in the contra lateral un-affected elbow of 5 and 10 degrees respectively. After 3 months, 3 patients developed flexion contracture. 6 months later flexion contracture was seen in 2 patients.
Motion pain of the joint disappeared and full range of movements were achieved at 6 months after first visit.
Conclusion: In conclusion OCD of trochlea though an infrequent occurrence, is important differential diagnosis in chronic elbow pain. Reviewing the elbows both clinically and radiologically would lead to early diagnosis and effectiveness of conservative management.

Keywords: OCD, trochlea, conservative

Introduction
Osteochondritis dissecans (OCD) of elbow has been known to be one of the causes of chronic pain in elbow region, targeted population being children and adolescents. Usual location was thought to be capitellum but rarely trochlea. The term OCD was coined by Franz Konig in 1888. This was a finding in a case of knee wherein a fragment of cartilage from femoral condyle was dissected due to chronic inflammatory process. From since then various other areas of occurrence have been published. The most common regions of occurrence being knee, ankle and elbow joints [2]. OCD of capitellum was named Panner's disease that of trochlea is called as Hagemanns disease. Initially was described by Uhrmacher in 1933, later in 1951 3 cases were put forth by Hagemann earning him the respect of nomenclature. Conservative and operative treatments have been studied and published. Aim of this study is to discuss outcome in conservatively managed 8 cases in our institution.

Materials and Methods
Prospective analysis has been done in our study over 8 children of age in range between 11-17 who presented to our outpatient department between the years 2009 to 2016 with complaints of chronic elbow pain and no history of trauma. Clinical and radiological evaluation with radiographs and Magnetic resonance imaging has been undertaken to reach to a final diagnosis. Nelsons classification for staging OCD appreciable on MRI is used. Plain radiography was the initial investigation revealing no abnormality according to radiologists, but on retrospective observations revealed an abnormality of articular surface of trochlea resembling a pseudo-inter condylar notch [3]. MRIs were obtained to study characteristics of the lesion. Diagnosis was made and patients were advised to restrict throwing and other sport related activities. They were given NSAIDs and long plaster splints.

Results

There were 8 children with age varying from 11-17 years, 6 being boys and 2 girls. Unilateral involvement and right handedness was common in all cases. None of the cases was involved in rigorous sporting activities, drug abuse or had any significant family history for bone pathology. Physical examination revealed mild swelling, tenderness at medial epicondyle and clicking with mild tenderness with extension or hyper extension in few cases. No evidence of instability noted medially or laterally in any of the cases. Nelson system of classification was employed and found that 6 cases were grade 2 and 2 case were grade 3 in our study. Range of movements and their progression at 3 and 6 months has been depicted in table no. 1, 2 and 3 respectively. 5 cases had flexion contracture ranging from 5-10 degrees in the affected elbow. 2 cases (female) had hyperextension in the contra lateral un-affected elbow of 5 and 10 degrees respectively. After 3 months, 3 patients developed flexion contracture. 6 months later flexion contracture was seen in 2 patients.

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Nelson's classification based on MRI put forth in 1990 was employed, described below.

Grade 1: Intact cartilage with signal changes in subchondral bone.

Grade 2: A high signal breach of the cartilage, low signal posterior to lesion.

Grade 3: Thin high signal rim extends behind the osteochondral fragment indicating synovial fluid around it.

Grade 4: Mixed or low signal loose body in the centre of the lesion or free within the joint.

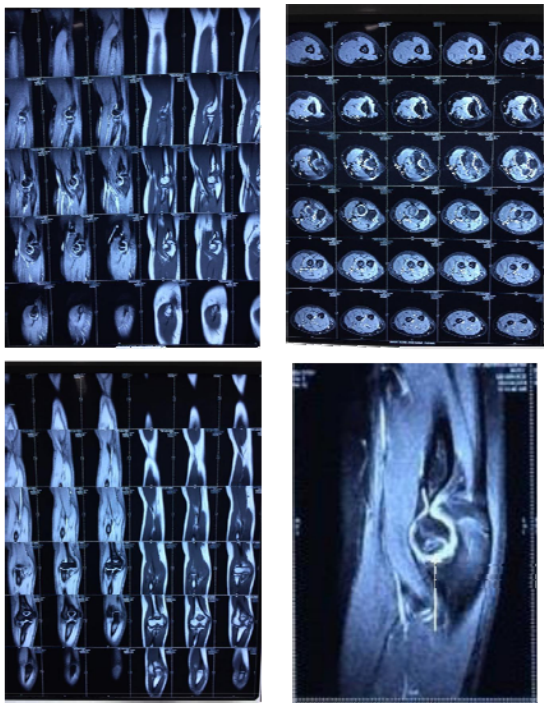
Diagnosis was made and patients were advised to restrict throwing and other sport related activities. They were given NSAIDs and long plaster splints. Motion pain of the joint disappeared and full range of movements were achieved at 6 months after first visit.

Clinical presentation with FFD of 10 degrees

Pseudointer-condylar notch sign

Normal contra lateral elbow

MRI showing the lesion in the trochlear region of right elbow



MRI saggital, coronal and axial cuts showing the defect in the right elbow

Rom Improvement after 6 Months Follow Up

Clinical pictures showing improvement of ROM

Radiograph showing healed lesion in the trochlea

Tables: Examination at Initial Presentation

Age/Sex	Side	Rom	Contralateral Side
			ROM
11 Y/M	RIGHT	0-140	0-150
12 Y/M	RIGHT	5-140	0-150
14 Y/M	RIGHT	0-135	0-150
16 Y/M	RIGHT	10-140	0-150
13 Y/F	RIGHT	5-135	- 5-150
17 Y/M	RIGHT	10-140	0-150
13 Y/M	RIGHT	5-140	0-150
12 Y/F	RIGHT	0-140	- 10-150

Examination at 3 Months Follow Up

Age/Sex	Side	Rom	Contralateral Side
			ROM
11 Y/M	RIGHT	0-150	0-150
12 Y/M	RIGHT	5-150	0-150
14 Y/M	RIGHT	0-140	0-150
16 Y/M	RIGHT	10-150	0-150
13 Y/M	RIGHT	0-140	MINUS 5-150
17 Y/M	RIGHT	10-150	0-150
13 Y/M	RIGHT	0-150	0-150
12 Y/M	RIGHT	-5-150	-10-150
Examination At 6 Months Follow Up			
Age/Sex	Side	Rom	Contralateral Side
			ROM
11 Y/M	RIGHT	0-150	0-150
12 Y/M	RIGHT	0-150	0-150
14 Y/M	RIGHT	0-140	0-150
16 Y/M	RIGHT	5-150	0-150
13 Y/F	RIGHT	-5-150	MINUS 5-150
17 Y/M	RIGHT	10-150	0-150
13 Y/M	RIGHT	0-150	0-150
12 Y/F	RIGHT	-10-150	-10-150

Discussion

OCD of trochlea as compared to capitellum is a very rare occurrence and very little literature has been published previously. OCD is a subchondral bone lesion leading to separation of the articular cartilage. Most commonly affected joints in decreasing frequency are knee, elbow and ankle. OCD of capitellum can be attributed to various factors like-repeated varus strain causing micro trauma,-wide range of motion (flexion, extension, pronation, supination) through the radio capitellar joint, it accepts 60% of compressional load making it vulnerable to rotatory, compressive, axial and angular forces associated with activities like throwing and gymnastics.

Both trochlea and capitellum have precarious blood supply.

Marshall *et al* [5] hypothesized that trochlear groove OCD lesions occur in characteristic water shed zone resulting from unique blood supply of trochlea. Haraldson [6] has shown that the vascular supply of the capitellum was limited with end arteries entering only the posterior portion of the distal humerus in people aged from 5-19 years. Yamaguchi *et al* [7] indicated that the medial and lateral aspects of trochlea were supplied by separate vascular arcade and there was a water shed area in the central part, therefore capitellum was mostly involved. Both trauma and ischemia have been implicated as the cause. The mechanism causing OCD is still unclear. The pathology of OCD has been described in three stages, explained here under –

Stage 1: Thickening and oedema of intra-articular and peri-articular soft tissue.

Stage 2: Epiphysis reveals an irregular contour with thinning of sub-cortical zone. This stage is more easily appreciated on radiographs as epiphysis fragmentation.

Stage 3: Separation with granulation tissue gradually replacing the necrotic tissue resulting in compression and flattening of articular surface [3].

The differential diagnosis of conditions affecting trochlea should include Hagemann's disease. The pathology is similar to Panner's disease and Perthe's disease. OCD of trochlea involves sub-chondral bone but this entity affects the entire epiphysis leading to sclerosis, condensation and collapse. Other entities are chondroblastoma, synovial osteochondromatosis, ossification variations and epiphyseal dysplasias [1, 9]. Synovial osteochondromatosis has multiple loose bodies in the joint cavity. Chondroblastoma has stippled calcification within the epiphysis. Epiphyseal dysplasia is bilateral condition involving joints symmetrically.

The prognosis and treatment often depends on the stage at which OCD is detected and the stability and location of the lesion. Till date there is no standard treatment and several kinds of treatments have been suggested. Patel and Weiner(1) reported a case of trochlear groove OCD treated conservatively and two years later the patient showed some radiological evidence of consolidation of the lesion. Many authors suggested surgical modalities with varied results.

Patel and Weiner [1]. curettage of the lesion.

Iwasaki [10]. transplantation of tissue engineered cartilage which was used mostly in adults with decreased bone remodelling potential. Hirouchi [11] - retrograde drilling.

Antegrade drilling is commonly used in knee and capitellum, but difficult to perform in OCD of trochlea.

Arthroscopic examination of elbow can reveal the integrity of overlying articular cartilage and stability of lesion.

This study has several limitations, as the number of cases was only eight. However the literature in itself has very few cases reported till date. Arthroscopic examinations were not done and analysis was purely based on radiographs and MRIs.

Nearly 50% of the stable lesions heal with conservative

management and the other half may require surgical intervention like loose body excision, drilling, curettage and micro fracture.

In conclusion OCD of trochlea though an infrequent occurrence, is important differential diagnosis in chronic elbow pain. Reviewing the elbows both clinically and radiologically would lead to early diagnosis and effectiveness of conservative management.

References

1. Patel N, Weiner SD. Osteochondritis dissecans involving the trochlea: report of two patients (three elbows) and review of the literature. *J Pediatr Orthop* 2002; 22:48-51. [PubMed]
2. Ito K, Ogino TT, Aoki M, Wada T, Ishil S. Growth disturbance in aseptic osteonecrosis of trochlea, a case report with developmental distal radioulnar joint ingronguencey, J Paeditric Orthop, 2004; 24(2):201-4.
3. Pruthi S, Parnell SE, Thapa MM. Pseudointercondylar notch sign: manifestation of osteochondritis dissecans of the trochlea. *Pediatr Radiol* 2009; 39:180-183. [PubMed]
4. Nelson DW, DiPaola J, Colville M. Osteochondritis dissecans of the talus and knee: prospective comparison of MR and arthroscopic classifications. J Comput Assist Tomogr 1990; 14:804-808
5. Marshall KW, Marshall DL, Busch MT. Osteochondral lesions of the humeral trochlea in the young athlete. Skeletal Radiol. 2009; 38:479-491. [PubMed]
6. Le, Tung B, Mont Michael A, Jones Lynne C, LaPorte Dawn M, Hungerford David S. Clinical Orthopaedics & Related Research: Section II: Original Articles: Elbow, 2000; 373:141-145.
7. Yamaguchi K, Sweet FA, Bindra R, Morrey BF, Gelberman RH. The extraosseous and intraosseous arterial anatomy of the adult elbow. The Journal of Bone and Joint Surgery. American. 1997; 79(11):1653-1662
8. Omer GE Jr. Primary articular osteochondroses. Clin Orthop Relat Res 1981; 158:33-40, PubMed
9. Vanthournout I, Rudelli A, Valenti P. Osteochondritis dissecans of the trochlea of the humerus. Pediatr Radiol. 1991; 21:600-601. [PubMed]
10. Iwasaki M, Yamane S, Ishikawa J. Osteochondritis dissecans involving the trochlea of the humerus treated with transplantation of tissue-engineered cartilage: a case report. J Shoulder Elbow Surg. 2008; 17:e22-e25. [PubMed]
11. Horiuchi T, Omokawa S, Fujitani S. Bilateral osteochondritis dissecans involving the trochlea of the humerus: a case report. J Jpn Elbow Soc 2010; 17:101-104. (Japanese).