



## STIFF ELBOW!! POST TRAUMATIC MYOSITIS OSSIFICANS? A CASE REPORT

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**ABSTRACT** Myositis Ossificans is defined as Ossification of Haematoma around a joint resulting in formation of bone mass leading to restriction of joint movements completely in majority of cases. This is also known as Heterotopic Ossification, Ectopic Ossification. It is pathological bone formation in soft tissues especially in between muscle planes. It is extensive, progressive benign lesion occurring most commonly in flexor muscles of arm, quadriceps muscles, adductor muscles of hip joint in young active adults and athletes [2,3,10]. Massage following trauma is the most aggravating factor of Myositis Ossificans. We report a case of 12 year boy with complaining of stiff elbow since 9 months, restricted elbow joint movements with history of fall while playing 1 year back for which he had taken treatment from local quack with aggressive massaging. There is fixed flexion deformity of 90°. Clinical examination revealed a palpable bony mass on anterior aspect of elbow and Radiological investigation revealed ossified bony mass bridging elbow joint. Surgical Excision is done and biopsy showed mature stage Myositis Ossificans trabecular bone. Elbow range of movements started and patients has good range of movements with 1 year follow up with good physiotherapy.

**KEYWORDS :** Myositis Ossificans, post traumatic, benign lesion, surgical excision, post-op physiotherapy.

### INTRODUCTION:

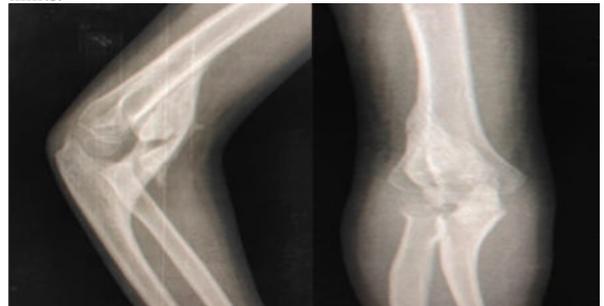
Myositis Ossificans is normal bone mass formed at abnormal site composed of actively proliferating Fibroblasts and Osteoblasts. 75% of the cases are due to trauma which can be a single severe trauma or multiple low energy trauma [8]. Patient presents with pain at the beginning with gradual limitation of movements of the joint resulting in complete stiffness and loss of movement [10]. This is called Extra-articular Ankylosis. Stiffness of joint can be due to thickening of capsule or bone mass blocking movements. Myositis Ossificans is metaplasia of connective tissue resulting in extraosseous bone formation. On X-ray examination, there are two types: Active and Mature Myositis Ossificans. In Active Myositis Ossificans, there are fluffy bone margins while in Mature Myositis Ossificans, there are well defined margins and Trabecular bone deposition. On X-ray examination, it shows circumferential calcification with radiolucent area in centre along with string sign i. e. Radiolucent cleft seen in between bone mass and adjacent Bone cortex suggesting no connection between them. The peripheral rim of calcification is seen in 4-6 weeks of Bone mass formation in CT Scan. Bone scan Technetium 99 is the most sensitive test for early detection of Heterotopic Ossification. Alkaline phosphatase (ALP) and 24 hour urinary PGE2 Excretion are the screening methods to detect Myositis Ossificans. Massage following trauma is strictly prohibited. In Early Active stage, limb should be given rest and NSAIDS like Indomethacin, Ibuprofen and Naproxen are given. In Mature stage, Movements can be regained using physiotherapy, otherwise Surgical Excision is the last and best resort. Histopathological examination shows Mature lamellar and trabecular bone in periphery, intermediate osteoid region while Immature bone in Central zone. Histopathology shows [11,12] In first month, tissue injury causes organizing granulation tissue with fibroblastic and osteoblastic differentiation and osteoid formation. In second month, Immature Lamellar bone formation, while in third month, mature Lamellar Cortical and Trabecular bone formation. Use of Indomethacin prophylaxis are commonly prescribed in post traumatic cases as well as post-operative Periarticular Elbow joint cases.

### Case Report:

A 12 year old boy presented to our OPD with chief complaints of inability to do movements of left elbow since 9 months. Patient had history of fall while playing 1 year back for which he had taken treatment from native quack who did aggressive massaging and daily bandaging for 1 month. Later, patient started complaining of pain in elbow on terminal movements in the beginning which became gradually progressive to such an extent that patient cannot do activities

of daily living like wearing clothes, etc. On examination, there is wasting of forearm and arm on inspection due to disuse atrophy. On palpation, there are no signs of inflammation, irregular palpable bony mass on anterior aspect of elbow, tenderness over bony mass, attempt to flex or extend elbow is painful, no soft tissue contracture felt. There is no any similar lesion in the body elsewhere. Neurovascular system is intact of the left upper limb.

Antero-posterior and lateral X-rays of left elbow, left arm and left forearm taken. There is irregular large bony mass extending from Distal Humerus to Proximal Ulna with bridging of elbow (Humero-Ulnar) joint. USG LOCAL done which shows homogenous hypochoic mass, well defined and regular border with hyperechoic peripheral rim calcification. Complete blood count, Erythrocyte Sedimentation Rate (ESR), C Reactive Protein (CRP) and other routine investigations are done. All came out to be within normal limits.



**Fig. 1** Pre-op X-rays Showing Bone Mass Bridging Elbow Joint With String Sign Present

Keeping in mind the fixed flexion deformity of elbow and limitations of Activities of Daily Living, Surgical Excision is planned. Patient is kept supine and General Anesthesia given with tourniquet applied. A BOAT-RACE Incision is taken on anterior aspect of elbow. Incision is taken 5 CM above flexion crease on medial side of Biceps. Curve incision is taken over front of elbow to avoid skin contracture. Distally the incision is along medial border of Brachioradialis. Neurovascular structures are identified and retracted. Bone mass excision is done. Intraoperative mobilization of elbow joint is done in which Flexion and Extension arc of motion is 0° to 130°. Sample is sent for Histopathological examination.



**Fig. 2** Showing Intraoperative Myositis Mass While Next Fig. Shows Histopathology Report.



**Fig. 3** Showing Specimen Of Myositis Ossificans



**Fig. 4** Showing Postoperative X-rays Of Elbow (Bone Mass Excised)

Post-operative mobilization started after 1 week. Patient is taught passive exercises, followed by active assisted exercises. Follow up examination done every two weeks for first 3 months and monthly follow up for next 9 months. Preoperative Broberg and Morrey score was 42 which increased to 90 Postoperatively.

Histopathological examination reveals mineralized trabeculae of bone separated by muscle and fatty tissue. Indomethacin post-operative prophylaxis is started for 3 months to prevent recurrence.

#### DISCUSSION:

Kransdorf [1] et al defined Myositis Ossificans as a benign, solitary, self-limiting, ossifying soft-tissue mass typically occurring within skeletal muscle. Kan et al [4] demonstrated that the cellular mechanism of heterotopic bone formation is the result of the dysregulation of local stem cells in response to tissue injury and subsequent inflammation. Thomas et al [6] demonstrated the role of ultrasonography in the early diagnosis of heterotopic bone formation. We discussed a case of post traumatic Myositis Ossificans aggravated by massaging. Kanthimathi et al [15] reported same case of post traumatic elbow massaging and bandaging. Li et al [16] reported a 9-year-old elbow Myositis Ossificans resulting from cellulitis. Due to the pain, swelling, and aggravated restricted movement, the mass was eventually excised. Garland et al [5] suggested surgical excision 6 months following traumatic Myositis Ossificans.

SAMUELSON and COLEMAN classification [7]:

- 1) Myositis Ossificans progressive – occurs in early age, progressive in nature, affects all skeletal muscles and leads to death.
- 2) Myositis Ossificans traumatic – Most common, due to severe trauma, including dislocations, operative procedures.
- 3) Myositis Ossificans associated with neuromuscular and chronic disease like poliomyelitis, burns, contractures, paraplegia, tetanus.
- 4) Non-Traumatic Myositis- no defined causative factor.

Myositis Ossificans traumatica is one of the most debilitating complications of muscle contusion resulting in gross limitations in joint function. Subsequent to trauma, organizing hematoma becomes calcified and then invaded by osteoblasts and in - growth of vascular, ossifying and fibroblastic tissue will eventually produce well

circumscribed palpable bony mass. Many children who have received native treatment and massage following elbow trauma present with myositis. The acute stage results in immobilization. Chronic myositis may present as a small hard mass in the brachialis muscle resulting in Elbow Joint Ankylosis. Surgical excision produced a satisfactory outcome.

#### CONCLUSION:

A good history and clinical examination with proper Radiological and Histopathology examination leads to diagnosis of Myositis Ossificans. Though it is a benign lesion, there is always a need to rule out malignancy. Surgical Excision is the best option in stiff elbow followed by postoperative physiotherapy to prevent recurrence. Follow up examination is must to rule out recurrence. Indomethacin prophylaxis to be given in cases of postoperative elbow surgeries, severe elbow trauma where rest is advocated. Post traumatic Aggressive Massaging is strictly prohibited.

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