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RESEARCH ARTICLE

Spectrum of Musculoskeletal tumors: Two year experience in tertiary centre:In Indore city

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Abstract

Material and Method: A prospective study of 26 cases of solid primary musculoskeletal tumors were managed in our department: 14(53%) were benign lesions and 12 (46%) were neoplastic. In primary bone tumors, 5 (41%) were malignant with higher incidence of osteosarcoma (40%) with male prepordance. In benign bone tumors(7) , a case of giant cell tumor (n =2) was managed with limb salvage with good postoperative results (1-3). Aggressive fibromatosis(n =1) was managed with excision of involved part of bone (4) and cavernous haemangima of muscle involving fibula was managed with segmental fibulectomy (5,6). Ameloblastoma of lower mandible was managed with free fibular graft(7-9) . The present study showes a higher frequency of osteosarcoma (40%) and lower frequencies of chondrosarcoma and Ewing sarcoma each with 13% (10-12). Out of 10 primary solid bone tumors registered in OPD, only two were operated with limb salvage (20%) and 2 taken up for amputation due to financial constrains and one patient was not fit under the criteria for limb salvage (13).

Introduction:-

Among all of human neoplasms, bone tumors are relatively uncommon 0.5% (10). There are various types of pathologic features ranging in their biologic potential from the benign to the high grade malignant tumor. This diversity makes it crucial to accurately diagnose, stage, and treat tumors appropriately so that patients can survive and lead a better life and maintain optimal rehabilitation. Bone sarcomas account for 0.2% of all neoplasm's (11). Despite the low incidence, bone sarcoma accounted for 46% of major limb amputations in the hospital out of all cases. In our institute most of the patients who presented with primary bone tumors were not fit for limb salvage due to late presentation or poor financial conditions. (13).

Material and Method: from Oct 2012 to Oct.2015 a prospective study was conducted in SAMCPGI. The parameters included pathological diagnosis, age, gender of the patients and location of the tumors. Tumors were classified according to the recent WHO classification of bone tumors (19). Locations were divided as primary soft tissue or bone. Total of 26 tumors specimens (Table 1), Patient's age ranged from 12 yr to 70years with an average age of 48.2 years (Table 1). All tumors categorized as benign or malignant and malignant tumors were staged as per final histopathology reports (Table 2). For primary malignant bone tumor lower end of femur was most common site for osteosarcoma (75 %). Aggressive fibromatosis of ulnar bone, cavernous haemangioma involving fibula were included in miscellaneous group.

Observation:-

Table: 1 Age and Histological description of various musculoskeletal tumors

Age and Histology	0-25	25-50	50-75	percentage
Benign primary tumor 1-Bone granuloma(index finger) (rare entity)			1(60)	(26%)
2-Osteoclastoma		1(50)		
3-Osteochondroma		1(45)		
3-Ameloblastoma			1(73)	
4- Aneurysmal bone cyst		1(38)		
5-Fibromatosis of ulna(rare entity)	1(22)			
6-Caverous hemangioma involving fibular(rare entity)	1(13)			
Bone Primary Malignant				19%
1-Osteosarcoma	1(24)	2		
2-Ewing sarcoma		1(38)		
3-Chondrosarcoma			1(68)	
Soft tissue sarcoma-				57%
1 -Upper extremity			1	
2- Lower extremity	2	2(40y)	1(70y)	
3- Trunk		1		
4- Benign tumor of skeletal muscle	2	4	1	

Table-2 stage and recurrence in various musculoskeletal tumors

Musculoskeletal malignancy	Stage1	Stage2	Stage3	Stage4	benign	recurrence
Primary bone tumor	0	2	2	1	7	1(20%)
Soft tissue sarcoma	0	3	4	0	7	2(28%)

Discussion:-

A prospective review of the diagnosis and surgical management of patients of bone tumors at the SAMC AND PGI was done between October 2012 to October 2015 .Bone tumor is relatively uncommon, constituting only 0.5% of the total world cancer incidence(10) .in our study have discussed various demographic and psychological issues with various advance modalities of treatment in central India .

Limb salvage for osteosarcoma is helpful when complete resection is possible anatomically, with neoadjuvant or adjuvant chemotherapy used accordingly. This is helpful not only for the functional limb itself, but also for the psychology of the patient. Associated pathologic fracture is often difficult to treat and results in a poor outcome (1-3). Pathological fracture is an absolute contraindication for Limb salvage. Out of total 10 primary bones malignant tumors registered in OPD 4(40%) were treated primarily with surgery followed by various modalities of adjuvant treatments. Out of these one case was managed with neoadjuvant chemotherapy followed by limb salvage surgery after proper surgical work up. Custom made mega prosthesis was used. The surgery was uneventful with no post operative complications. The patient was kept on regular follow up with meticulous work up to avoid recurrence(fig1).5 cases were planned for limb salvage surgery ,who lost follow up from oncology department without any surgical treatment. Most of them were having financial constrain. A case of Iliac bone sarcoma involving ala of sacrum was referred for palliative chemotherapy. One case of sternal tumor (Ewing sarcoma) was managed successfully with wide excision of sternal mass with meshplasty and adjuvant chemotherapy was planned (18) (fig 2). Odontogenic tumors are a group of lesions of diverse histopathological types and clinical behavior. In oral cavity, 9% tumors are odontogenic tumors, Ameloblastoma accounts for 1% of Odontogenic lesions. Its behavior has been described as benign but locally aggressive (7). In 20% of all cases the tumor can be found in the upper jaw, predominantly in the canine or molar region. Whereas in the mandible, 70% are located in the molar region or the ascending ramaus, 20% in the premolar region and 10% in the anterior part. (8) Ameloblastomas occur with equal frequency in both sexes. Benign case of Ameloblastoma involving left lower mandible are managed

successfully with free fibular graft with no post operative complications and good facial aesthetics (fig3). An intramuscular haemangioma is a rare, benign soft-tissue tumor extending up to the bone, which may resemble to periosteal or parosteal tumors from the plain radiographs, but the presence of a soft-tissue mass adjacent to the bone and the characteristic signal intensity on MRI gives the correct diagnosis. (1-4). *En bloc resection*, including the involved bone, reduces the incidence of local recurrence (5,6). In summary, a hemangioma in the periosteal region is rare, commonly adjacent to bones of the lower limb. Since lesion may mimic periosteal or parosteal tumours and are likely to be misdiagnosed, MRI is helpful for confirmation of diagnosis.

Rare cases of cavernous hemangioma involving fibula are managed with fibulectomy .A rare case of granuloma over dorsum of hand was managed with wide excision. Bone involvement in aggressive fibromatosis is very rare, a wide local excision with a cuff of normal tissue is most effective treatment in such cases. A margin of 2-3 cms beyond the tumor is usually advocated (4). The recurrence is very high in these *tumors. In our case a segment of involved ulnar bone was excised. There Is no sign of recurrence till date.*

Most of primary bone tumors were managed with amputation in our set up (13).50% cases of primary bone tumors which were fit for limb salvage surgery were lost during follow up due to financial constrain. Few cases were not taken up for limb salvage surgery as they presented late in the OPD (eg. Major Neurovascular bundle involve, skip metastasis in bone marrow, pathological fracture). Out of 20 benign cases in OPD 7(35%) were admitted and managed successfully. 2 (10%) cases of exoxtosis were managed conservatively under supervision.11 cases were lost during follow up (55%),most were asymptomatic. These tumors have been reported to have different patterns of clinical presentation and aggressiveness, hence there is variability worldwide in modes of surgical treatment. Indication for surgery of primary bone tumors are painful swelling; pathological fracture, restricted movement, and nerve Compression.Surgical procedures that are performed are simple excision, curettage, and stabilization; and 1-stage and 2-stage wide resection with reconstruction. Patients with significant bone defects are managed with autologous bone grafting or methylmethacrylate cement application. Amputation was necessary in one patient with a huge aneurysmal bone cyst .One, case of 45 yr giant osteoclastoma ,where curettage and bone cementing was not possible ,limb salvage surgery was planned with custom made prosthesis (14).limb movements were achieved post operatively after proper physiotherapy(fig2.)

Surgery is the standard treatment for soft tissue sarcoma with resectable disease, wide Excision is gold standard surgical procedure. The definition of wide remains unclear but an intact facial layer or 1cm of normal tissue is considered adequate. Where a wide excision is not possible due to anatomical constraints, a planned marginal excision plus radiotherapy may be an appropriate means of achieving tumor control while maintaining function. Occasionally amputation is the only suitable option to achieve adequate margins for patients with borderline respectable tumors, preoperative treatment with chemotherapy or radiotherapy should be considered depending on individual histology. Isolated Limb Perfusion may permit limb salvage in some cases where amputation is the only conventional surgical approach. Out of 30 cases of soft tissue tumor 12 cases (40%) were proven malignant, 7 cases admitted and managed surgically (23%) and adjuvant as per need. out of 18 benign (60%)cases 14 cases (46%) were managed surgically ,4 patients were not willing for surgery(9%).In case of malignant tumor wide margin with proper anatomical knowledge prevents future recurrence .2 cases developed lungs metastasis during follow up.

In this study primary bone tumor and soft tissue sarcoma have male preponderance (1.8:1)(10-12). Osteosarcoma constitutes the highest proportion (50%), followed by chondrosarcoma, osteoclastoma and Ewing's sarcoma which has (16%) equal incidence. Good team work is important for diagnosis and management of the lesion, counseling prior to amputation is equally important to support patient‘s psychology. Out of 5 patients, one (20%) patient of chondrosarcoma of shoulder joint was managed with four quarter amputation and developed lung metastasis during follow up.

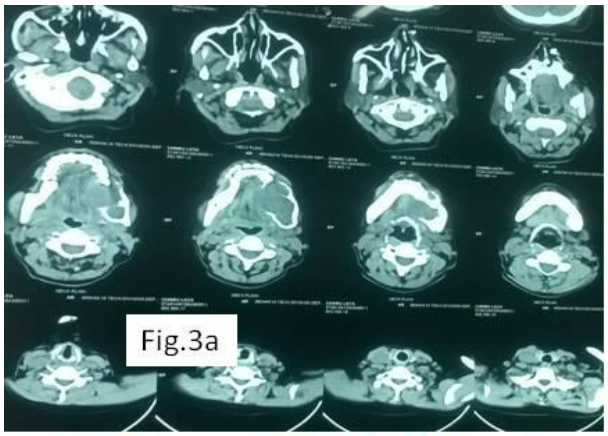


Fig.3a

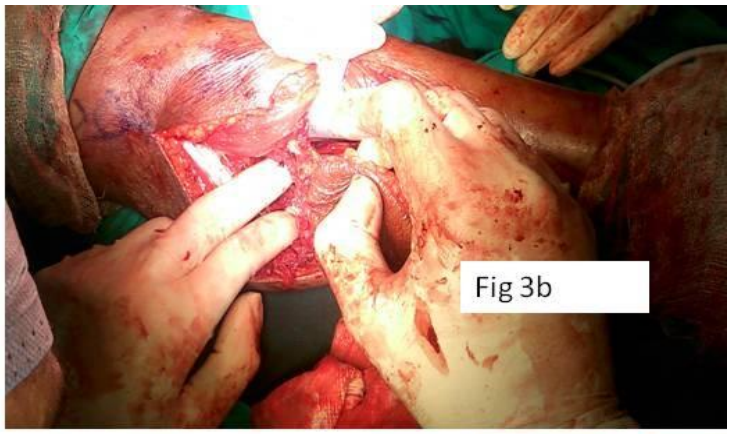
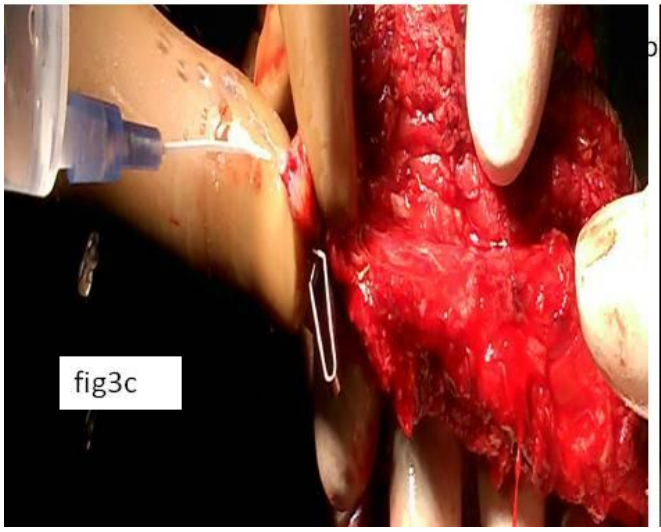


Fig 3b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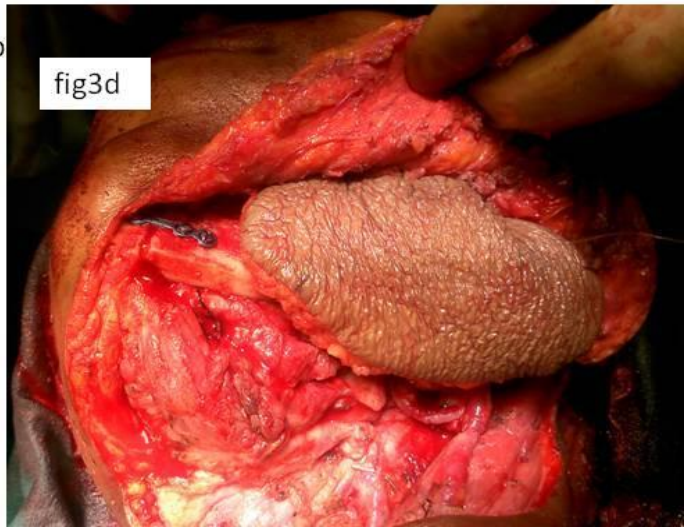
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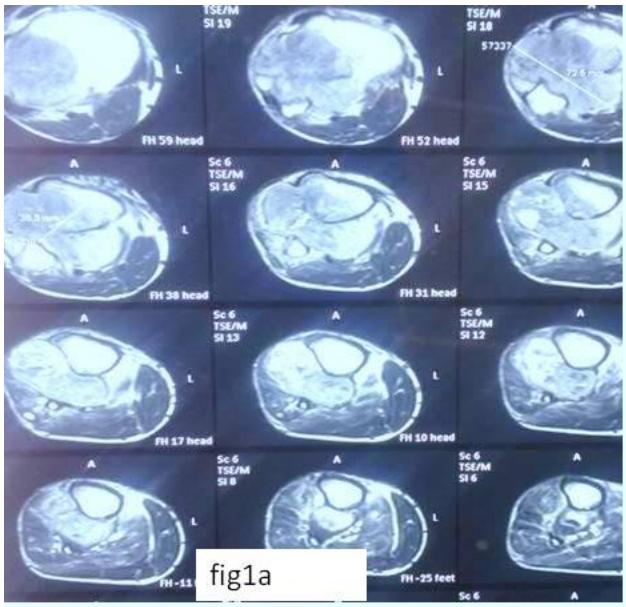

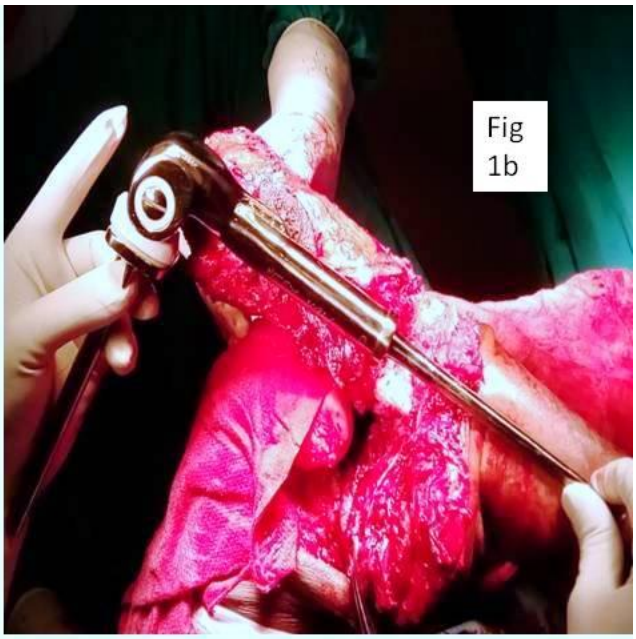

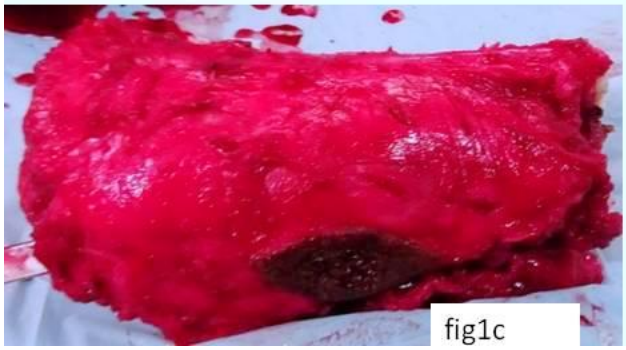

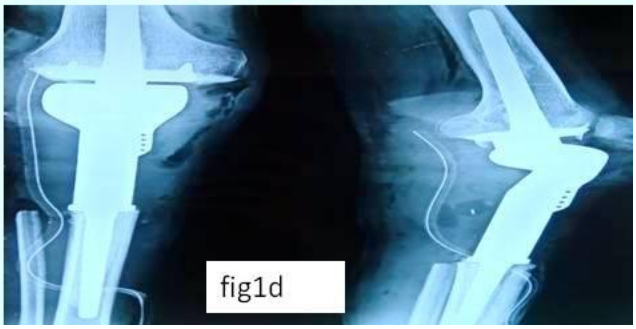

Conclusion:-

In our study out of 60 patients of musculoskeletal which came in the OPD, 19 patients were admitted and prepared for surgery. Out of these, 2 cases of primary bone tumor were managed with limb salvage surgery. Limb salvage has emerged as a new surgical technique. Financial constraint and late stage of presentation makes it difficult for salvage surgery and amputation is the only option left. In our set up benign tumors of different presentations are managed successfully with better result. Soft tissue sarcomas are managed with wide excision taking all anatomical parameters into consideration (15-17). One case of bone tumor and two cases of soft tissue sarcoma resulted in recurrence due to nature of disease. Good team work and regular follow up is helpful for better results.

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