

Outcome of Different Treatment Modalities for Cystic and Fibrotic Lesions in Paediatric Patients: A Case Series

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Introduction: Bone cysts are common pathologies observed in children and adolescents. The commonest of benign bone outgrowths are simple (unicameral) bone cysts and aneurysmal bone cysts. These pathologies are benign and have an unknown etiology therefore preventative measures and precautions are difficult to follow in order to prevent. Additionally, fibrotic lesions are common lesions ranging from non-ossifying fibromas to fibrous dysplasia. Aneurysmal bone cysts and fibrotic lesions have been an enigma amongst orthopaedic surgeons for the longest of times. Traditional treatment includes en bloc resection, percutaneous or extended curettage with the insertion of bone grafts, injection with methylprednisone, or even sclerotherapy. Future possibilities of treatment include monoclonal treatment with denosumab which may pave the way for future treatment modalities.

Setting: Orthopaedic Department at the Bahrain Defence Force (BDF) Hospital.

Methods: The case series started from 2001 to 2020, treating 20 children with a mean age of 10. Cysts were in the long bones of the arms and legs including; proximal humerus, proximal and distal radius. The cases comprised of simple bone cysts, aneurysmal bone cysts, non-ossifying fibromas, ossifying fibromas, and fibro-dysplasia's. Selected patients were treated percutaneously with minimally invasive techniques, percutaneous curettage with the addition of intermedullary nails, injections of methylprednisone, or observational management.

Results: Ten of the patients suffered from simple bone cysts, 2 patients of enchondromas, 4 suffered of aneurysmal bone cyst, and the remaining 4 suffered from; non-ossifying fibroma, fibro-dysplasia, or a cortical deficit. Nine suffered a form of recurrence. 3 patients refused treatment and with follow up the lesions were examined on each follow up an average of 5 years (5.06).

Conclusions: We believe that the insertion of the flexible intramedullary nails clinically improve overall bone healing and prevent the recurrence of bone cyst formation in the treated site, particularly in the management of aneurysmal bone cysts. However as technology and therapeutics develop, more effective treatments and management options may render traditional methods out-dated.

Table 1: All Patient Demographics

Name	Sex	Age at surgery	Clinical Presentation	Follow Up	Recurrence	Type of Cyst
AA	F	9.0 yrs	Proximal Radius Swelling/ Pain	3.0 yrs	Y	Fibrous Dysplasia
AA	M	13.2 yrs	PP Thumb Cyst Swelling	5.0 yrs	N	Enchondroma
AT	M	11.1 yrs	Index Metacarpal Swelling	4.7 yrs	N	Enchondroma
T	M	13.0 yrs	Proximal Radius Swelling/Pain	7.0 yrs	N	Aneurysmal Cyst
AA	F	11.0 yrs	Proximal Radius Swelling &Fracture	6.0 yrs	Y	Simple Cyst
EE	M	10.5 yrs	Proximal Humerus Swelling/ Fracture	4.0 yrs	Y	Simple Cyst
AM	M	9.70 yrs	Proximal Humerus Cyst Swelling	3.9 yrs	N	Aneurysmal Cyst
JB	F	10.0 yrs	Tibia Cyst Proximal and Distal (incidental)	6.2 yrs	Y	Nonossifying Fibroma
BM	M	11.3 yrs	Humerus Fracture	2.9 yrs	Y	Aneurysmal Cust
SF	M	8.3 yrs	Proximal Humerus Cyst Swelling	4.5 yrs	N	Aneurysmal Cyst
KL	F	10.0 yrs	Traumatic Pain	4.0 yrs	Y	Simple Cyst
AR	M	8.00 yrs	Incidental	5.0 yrs	N	Simple Cyst
BL	M	11.1 yrs	Traumatic Pain	3.3 yrs	Y	Aneurysmal Cyst
AJ	F	7.60 yrs	Trauma	6.0 yrs	N	Fibrous Dysplasia
AM	F	10.7 yrs	Incidental	5.3 yrs	N	Simple Cyst
KA	M	14.0 yrs	Traumatic Pain	3.7 yrs	N	Aneurysmal Cyst
TA	M	13.2 yrs	Pathological Fracture	4.0 yrs	Y	Simple Cyst
AB	M	11.1 yrs	Pathological Fracture	5.2 yrs	Y	Simple Cyst
YS	M	9.70 yrs	Traumatic Pain	6.1 yrs	N	Cortical Deficit
YQ	M	15.0 yrs	Trauma	6.5 yrs	N	Simple Cyst