



Non-union of fracture, chronic osteomyelitis of humerus, and humeral proximal physal arrest as series of complications in a fracture shaft of humerus in a one and half year old child.

KEYWORDS

non union of humerus , chronic osteomyelitis of humerus, proximal humerus physal arrest, complication in fracture shaft of humerus

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ABSTRACT A case of fracture shaft of humerus with infection and nonunion is a difficult scenario in management and here we discuss an experience at treating one such case in a one and half year girl child where the fracture non union in association with diaphysial osteomyelitis presented a challenge which ended with unfavorable outcome.

Case study

A one and half year girl reported to our department with a complaints of pain, swelling and abnormal mobility of left shoulder for four months. Initially she had an acute onset of pain and swelling of left arm and shoulder with features suggestive of sepsis for which she had undergone incision and drainage with oral antibiotic coverage. There was no preceding trauma or battering, mother noticed abnormal mobility of left arm with paucity of active movements. When patient was examined at our center she had healed surgical scar with deformed shoulder contour with poor deltoid outline. Abnormal mobility noted at proximal 1/3rd of shaft of humerus with thickened and broadened shaft with swelling, tenderness and warmth. X-ray of the humerus showed chronic osteomyelitis of humerus with gap non union. She had haemoglobin level of 11.9g/L, and total count of 21,600cells/cu.mm.

Treatment

Patient underwent immediate debridement of fracture site, freshened the fracture ends and fracture stabilized with Intra-medullary K-wire and plaster of Paris U slab. Slab and K-wire was removed at 6 weeks as callus was noted with bridging of gap and patient placed on gentle rehab mobilization exercises. She was on regular follow up for 2 years. The fracture had evidence of nonunion on evaluation with X-ray showed hypertrophic non union of fracture with gap and with no evidence of the infection on laboratory investigation. The next procedure performed was open reduction and internal fixation with 3.5mm LCP and autologous tibial shaft cortical graft used as a peg in medullary canal bridging the fracture fragments. After 1 year fracture showed healing with no exacerbation of infection and implant were removed. There was complete Range of Movements at shoulder and elbow, 2cm shortening of humeral segment and X-ray showed sound fracture union with physal arrest of left humerus head.

Discussion

The management of pediatric fractures encompasses the risk of infection and physal injuries, the incidence of which though less, are quite often associated with long term morbidity. The management of infected non union should be based on sound principles of adequate debridement and rigid fixation. We did achieve good infection clearance but failed having a sound fixation as kirshner wire was used in first treatment schedule, hence fracture

failed to unite. The usage of autologous bone graft like cortical bone of tibia as a peg graft in presence of good vascular bed and rigid fixation will help in fracture healing. The usage of alternate material like synthetic bone substitute, allogenic bone graft has been described.¹⁻³

Functional recovery with respect to joint movements in our case was satisfactory. But in view of physal arrest of proximal humerus she had arm length discrepancy of 2 cm noted at this juncture. As the functional capacity of this non dominant upper limb was not compromised, no attempt was made for correction of length discrepancy which will be continually monitored with growth of child.

At first presentation



wound debridement and k – wire fixation



After k – wire removal and suggestive callus formation



Finally fracture united and implant was removed



follow up after 1 and ½ year



Final follow up after suture removal and patient got normal range of movements compare to normal side



Wound debridement plus bone grafting and LCP fixation



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