
Bilateral Shaft Humerus Nonunion With Acceptable Function - Case Report And Review Of Literature

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Abstract

Nonunion of the humeral shaft is rarely seen and reported in literature. Possible etiology being osteoporosis, osteomalacia, anti-epileptics and other metabolic bone diseases with poor stabilization are sporadically reported in literature. Non-union of humerus leads to major disability of patient because of inability to perform day today activities and always demand treatment. We report a case of bilateral idiopathic nonunion of the humeral shaft in a 56 year old healthy female with acceptable function, who refused surgery and is doing fine at home .

Introduction

Proximal humerus fractures are known to occur in old age or are associated with violent trauma in young adults. Combination of this fracture with contra lateral shaft fracture is not common. Treatment for this type of injury is essentially surgical. Non union is always a possibility with various treatment methods described in literature. Non union leads to functional disability and warrant treatment .

We are reporting this case because of its rarity. Combination of shaft fracture with proximal humerus fracture developing in non union of humeral shaft bilaterally is rare to see in literature. More over acceptable function without any restriction of day to day activity with bilateral humeral shaft non union is not documented anywhere in literature.

Case Report(s)

Our patient is 56 years old female, who presented to us in emergency department in 2004 with fractures of proximal humerus on left side and right shaft of humerus. We managed these with LCDCP for shaft fracture and angled blade plate for proximal humerus. Post op x-rays (fig. 1) were fine showing good anatomical reduction. Sutures was removed at 14th

post op day and asked patient for regular follow up for physiotherapy and to watch for any complication if occurs. At latest follow up in March 2010, she presented to us with complaints of dull pain in both arms and difficulty in lifting weights and problem in carrying out her daily activities. On examination we found painless abnormal mobility in shaft of humerus both side. Implant was palpable on both sides. Radiographs taken this time were showing implant failure with broken screws with hypertrophic nonunion on right side and peri-implant fracture and atrophic non union on left side. Proximal humerus fracture was united well (fig. 2 and 3). We explained patient regarding need of revision surgery which includes implant removal and dynamic compression plating and bone grafting on both side. Patient returned home for preparation and discussion with other family members. On repeated calls, she now denies surgery stating that she has no great difficulty in carrying out her daily activities and she does not want any surgery for her little pain.

Discussion

Humeral shaft fractures account for approximately 1.3% of all fractures ¹. Bilateral fractures are even more rare. Nonunion of humeral shaft fractures are reported after both conservative and surgical management, incidence of this may be as high as 1-15% ²⁻¹¹. Non-union after surgical management of humeral shaft fractures is multi-factorial. Following factors may play a role in nonunion - inadequate fracture fixation with poor contact between the fracture segments, osteomalacia, osteoporosis, infection, devitalization of bone and many more ²⁻¹⁴. Compression plating with a 4.5mm plate and autogenous bone grafting has been considered the gold standard with a reported success rate greater than 90 percent ^{15, 16}.

In our case after surgery proximal humerus fracture united well but possibly because of stress on osteoporotic bone of this old female, stress fracture developed distal to angled plate that went in non union. Peri-implant stress fracture after angled plate

fixation for proximal humerus fracture is rare to find in literature. Possible cause might be osteoporosis or some metabolic bone disease^{17, 18}. We did not find any such obvious cause in our patient. After thorough review we reached to conclusion that in presence of senile osteoporosis and repeated minor trauma may cause this stress fracture and development of non union thereafter. Treatment should be plate removal and re-fixation with larger plate and bone grafting¹⁹. Conservative treatment is also described in literature for elderly high surgical risk patients who has little discomfort with this type of nonunion⁶.

Shaft fracture on other side also went into non union and pseudo-arthrosis at fracture site with breakage of some screws. Possible cause was a screw that was noted at fracture site in immediate post op radiograph.

We decided to operate upon her to deal with nonunion because of bilateral involvement leading to functional impairment and risk of development of other complications because of floating implant and broken screws in side. Plan was osteosynthesis with longer plate and bone grafting after implant removal but patient and her relatives refused for same. It was probably because of low demand of old poor female and acceptable functional out come even with bilateral humeral nonunion.

Conclusion

There is always some chance of developing non union in humeral shaft fractures. This is noted more in old age, so we should protect the fracture even after operative stabilization until fracture shows good evidence of union and regular follow up is also necessary to pick signs of impending nonunion or development of peri-implant stress fracture. In old age with low demands for carrying out day to day activities, it is always a possibility to learn to live with non union of a non weight bearing bone like humerus as in our case.

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Illustrations

Illustration 1

Post op radiograph showing adequate fixation of shaft of humerus fracture

Figures



Fig. 1

Illustration 2

Radiograph done on latest follow up showing non union with pseudo-arthritis of shaft fracture
Figures

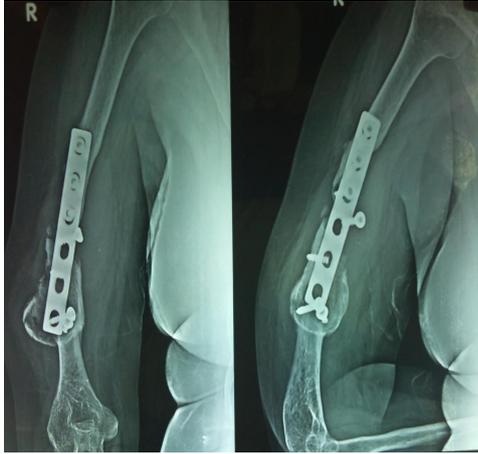


Figure 2

Illustration 3

Radiograph of left Shoulder with humerus showing peri-implant fracture evolved in nonunion
Figures

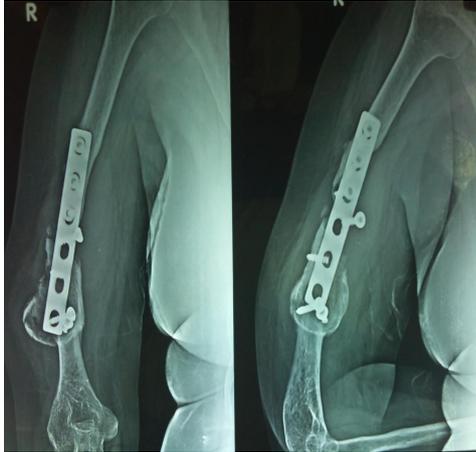


Figure 2

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