

Complications of Proximal Humerus Fractures

Orthopedics Grand Rounds

November 2nd / 2005

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Analysis of Functional Outcome of Proximal Humerus Fractures Treated by Closed Reduction and Percutaneous Fixation- A Prospective Study. Kumar, J Orthopaedics,2005

- 18 patients
- Functional outcome was evaluated using Neer scoring system
- Mean follow-up was up to 10 months
- 12 male , 6 female
- Average age 45 years

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- There was 6 patients with 2 part fracture, 11 with 3 part, and 1 with 4 part fracture
 - Fracture dislocation and head splitting fractures were excluded from the study
 - 15 patients had fixation with K-wires, 2 patients with Schanz screw for 3 part fracture and 1 patient had cancellous screw for 2 part fracture

Results

- 2 part fractures had 100% good outcome and 3 part had 83% good results
- Patients of age more than 60 had poor results
- Varus malunion did not affect the outcome unlike valgus malunion
- No incidence on avascular necrosis in their series

Conclusion

- The method of closed reduction and percutaneous fixation yields satisfactory results in 2 part and 3 part proximal humerus fractures and can be a treatment of choice

Complications of Humeral Head Replacement for Proximal Humerus Fractures. Plausinis, Instr Course Lect, 2005

- Many complications are likely to be underappreciated and underreported

- Infection
 - Superficial 0-6%
 - Deep <2%

- Preoperative nerve palsy

- Axillary 0-13%
- Radial <1%
- Median <1%
- Musculocutaneous Uncommon
- Brachial plexus 0-6%

- Postoperative nerve palsy

- Transient (Axillary 0-5%, Radial uncommon)
- Permanent uncommon

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- Intra-operative fracture uncommon
 - Instability
 - Excessive AP translation 0-7%
 - Dislocation 0-5%
 - Tuberosity problems
 - Intra-operative malpositioning
 - Detachment and migration
 - Resorption
 - Nonunion
 - Malunion

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- Rotator cuff tear or proximal migration 0-23%

 - Humeral component problems
 - Retroversion $>40^\circ$ 0-39.1%
 - Anteversion $>0^\circ$ 0%
 - Prosthetic height (humeral length)
 - Prosthesis >10 mm too long 0-26%
 - Prosthesis >10 mm too low 0-36%
 - Radiolucent lines 0-32%
 - Revision of aseptic loosening of cemented stem 0-1%

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- Heterotopic ossification
 - Brooker grade 1 or 2 0-17%
 - Brooker grade 3 or 4 0-7%

 - Glenoid degenerative changes
 - Radiographic changes 0-35%
 - Requiring revision 0-4%

 - Stiffness requiring release Uncommon

 - Reflex sympathetic dystrophy 0-4%

Tuberosity Malposition and Migration: Reasons for Poor Outcomes After Hemiarthroplasty for Displaced Fractures of the Proximal Humerus. Boileau, J Shoulder Elbow Surg, 2002.

- 66 patients
- Mean age was 66 years (31-85)
- Mean F/U 27 months (clinical & radiological)
- Initial tuberosity malposition was present in 18 patients (27%)
- Tuberosity detachment and migration were noted in 15 patients (23%)

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- Final tuberosity malposition occurred in 33 patients (50%) and correlate with:
 - Unsatisfactory results
 - Superior migration of the prosthesis
 - Stiffness or weakness
 - Persistent pain

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- Factors associated with failure of tuberosity fixation were:
 - Poor initial position of the prosthesis
 - Poor position of the tuberosity
 - Women over age 75 years

Nonunion of the Humeral Shaft; Long Lateral Butterfly Fracture-A Nonunion Predictive Pattern?
Castella, Clin Orth Related Res, 2004

- Retrospective review of 30 patients with nonunion of the humeral shaft treated from 1984-1999
- 9 patients had an initial long lateral butterfly fracture pattern

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- Humeral fractures originated at the junction of proximal and middle thirds of the diaphysis as an hemitransverse medial fracture that extends with a great lateral butterfly third fragment with its distal portion long and sharp



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- The mean age of the 9 patients was 66 years
 - All were women
 - The initial treatment was non-operative for 8 and IM nail for 1 patient

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- All fractures followed the same pattern
 - The proximal humeral fragment healed with the proximal portion of the third fragment, but an atrophic nonunion between the proximal humeral fragment, the distal humeral fragment, and the distal portion of the third fragment developed



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- Retrograde flexible IM nailing , cerclage wires, and bone grafts
 - The average duration of f/u was 25 months
 - All nine patients achieved healing
 - The average time for bone union was 19 weeks
 - The functional results were good in all patients except one

Conclusion

- Initial surgical treatment of this type of fracture is recommended using IM nailing and cerclage wire fixation
- Decortication and bone grafting is not necessary for fresh fractures