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= Abstract =

## Treatment of Long Spiral Comminuted Fracture of the Shaft of Humerus Using Multifilament Cerclage Cables and External Fixator.

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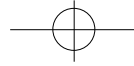
Long spiral comminuted fracture of the shaft of humerus, which is more common today than in the past, is one of the most difficult fractures to treat and remains challenge to orthopaedic surgeons. From Feb. 1995 to Nov. 1996, We have treated 6 cases of long spiral comminuted fracture of the shaft of humerus by internal fixation with multifilament cerclage cables combined with external fixation, and achieved bony union in all cases at average 4 months and good clinical results. The advantages of this operation method are minimal damage to the adjacent soft tissues by relatively small exposure, minimal internal instrumentation, early mobilization and the need of secondary operation for implants removal is eliminated. Also, It may be suggested that the author's operative method is one of the solutions for treatment of long spiral comminuted shaft fracture of humerus involving metadiaphyseal area.

**Key Words :** Humerus, Long spiral comminuted fracture of the shaft of humerus,  
Multifilament cerclage cable, External fixation.

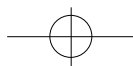
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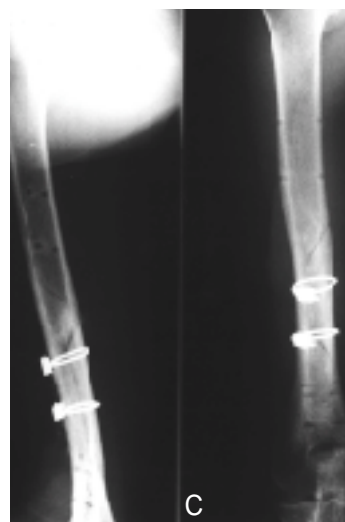
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**Fig 1-A.** Preoperative AP roentgenograph of a 31-years-old man with comminuted metadiaphyseal fracture of the right humerus.

**B.** Immediate postoperative AP and lateral roentgenographs.

**C.** AP roentgenographs at post-op 4 months showed bony union after external fixator was removed.

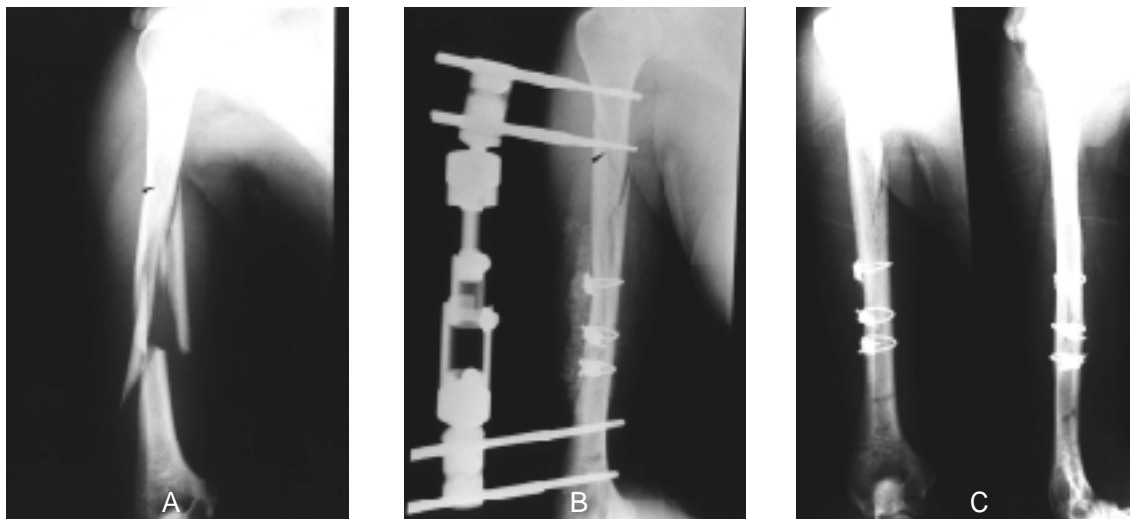
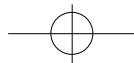
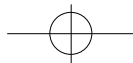


Fig 2-A. Preoperative AP roentgenograph of a 45-years-old woman with comminuted diaphyseal fracture of the right humerus.  
 B. Postoperative AP and lateral roentgenographs.  
 C. AP roentgenographs at post-op 4 months showed bony union after external fixator was removed.

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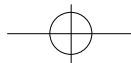
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## REFERENCES

- 1) . . . : , 24:489-496, 1989.
- 2) **Balfour GW, Mooney V and Ashley ME** : Diaphyseal fractures of the humerus treated with a ready-made fracture brace. *J Bone Joint Surg*, 64-A:11-13, 1982.
- 3) **Bell MJ, Beauchamp CG, Kellam JK and McMurtry RY** : The results of plating humeral shaft fractures in patients with multiple injuries. *J Bone Joint Surg(Br)*, 67:293-296, 1985.
- 4) **Brumback RJ, Bosse MJ Poka A and Burgess AR** : Intramedullary stabilization of humeral shaft fractures in patients with multiple trauma. *J Bone Joint Surg*, 68:960-970, 1986.
- 5) **Canale ST** : *Campbell's operative orthopaedics*. 9th ed. St. Louis, Mosby-Year book Inc : 1994, 1998.
- 6) **Cartner MJ** : Immobilization of fractures of the shaft of the humerus. *Injury*, 5:175-179, 1973.
- 7) **Christensen, S.** : Humeral shaft fractures: Operative and conservative treatment. *Acta Chir. Scand.*, 133:455, 1967.
- 8) **Dabezies EJ, Banta II CJ, Murphy CP and d' Ambrosia RD** : Plate fixation of the humeral shaft for acute fractures with and without radial nerve injuries. *J Orthop Trauma*, 6:10-13, 1992.
- 9) **Gregory PR and Sanders RW** : Compression plating versus intramedullary fixation of humeral shaft fractures. *J Am Acad Orthop Surg*, 5:215-223, 1997.
- 10) **Hall RF and Pankovich AM** : Ender nailing of acute fractures of the humerus. *J Bone Joint Surg*, 69-A:558-567, 1987.
- 11) **Heppenstall RB** : Fracture of the humeral shaft. In : Heppenstall ed. *Fracture treatment & Healing*. 1st ed.:424-437, 1980.
- 12) **Holm CL** : Management of humeral shaft fractures. fundamental nonoperative technics. *Clin Orthop*, 71:132-139, 1970.
- 13) **Hunter SG** : The closed treatment of fractures of the humeral shaft. *Clin Orthop*, 164:192-198, 1982.
- 14) **Mast JW, Spiegel PG, Harvey JP and Harrison C** : Fractures of the humeral shaft. A retrospective study of 240 adult fractures. *Clin Orthop*, 112:254-262, 1975.
- 15) **Reudi T, Moshfegh A, Pfeiffer KM and Allgower M** : Fresh fractures of the humerus-conservative or operative treatment?. *Reconstr Surg Traumatol*, 14:65-74, 1974.
- 16) **Rockwood CA, Green DP, Bucholz RW and**



- Heckman JD** : *Rockwood and Green 's Fractures in Adults*. 4th ed. Philadelphia, Lippincott & Raven Publishers : 1025-1053, 1996
- 17) **Sarmiento A, Kinman PB, Galvin EG, Schmitt RH and Phillips JG** : Functional bracing of fractures of the shaft of the humerus. *J Bone Joint Surg*, 59-A:596-601, 1977.
- 18) **Spak I** : Humeral shaft fractures-treatment with a simple hand sling. *Acta Orthop Scand*, 49:234-239, 1978.
- 19) **Stern PJ, Mattingly DA, Pomeroy DL, Zenni EJ and Kreig JK** : Intramedullary fixation of humeral shaft fractures, *J Bone Joint Surg*, 66-A:639-676, 1984.
- 20) **Vander GR, Tomasin J and Ward EF** : Open reduction and internal fixation for fractures of the proximal humerus. *J Trauma*, 17:29-37, 1977.
- 21) **Weseley MS, Barenfield PA and Eisenstein AL** : Rush pin intramedullary fixation for fractures of the proximal humerus. *J Trauma*, 17:29-37, 1977.