

Application of Loop-Plate Technique for the Fracture of Ulnar Coronoid Process in the Treatment for the Terrible Triad of the Elbow

Zhe Song; Kun Zhang, MD; Yangjun Zhu, MD

Honghui Hospital, Xian Jiaotong University, Xian, China, People's Republic of

Purpose: The goal of reconstruction of terrible triad injuries is to restore sufficient elbow stability to allow early mobilization within a stable elbow arc of motion. This study was conducted to investigate the surgical strategies of loop-plate technique for the fracture of the ulnar coronoid process, and its application value and clinical curative effect in the terrible triad of the elbow joint.

Methods: A retrospective study was conducted on 33 patients who had been treated for terrible triad of the elbow joint from January 2013 to June 2016. There were 21 males and 12 females, 26 to 68 years of age (mean, 38.6 years). Injury causes were fall injury in 21 cases, high-falling injury in 7 cases, and traffic injury in 5 cases. All the patients underwent surgical treatments, which were performed to repair the fracture of ulnar coronoid process, the fracture of radial head, and the lateral collateral ligamentous complex from the deep layer to superficial layer in turn. All the fractures of the ulnar coronoid process were treated with loop-plate technique; the fracture of radial head was fixed with tiny plate, anatomical plate, and hollow screws or replaced with the prosthesis; and the lateral collateral ligamentous complex was reconstructed with suture anchor without the surgical repair of the medial collateral ligamentous complex. All the patients were equipped with an adjustable brace postoperatively and performed the early function rehabilitation of elbow joint.

Results: 33 patients were followed for 18 to 24 months (mean, 20.2 months). All patients got the healing of bony and ligamentous structures. Mayo Elbow Performance Score (MEPS) of the last follow-up was ~55-100 with the average 85.8: elbow function was excellent in 19 cases, good in 8, fair in 3, and poor in 3, giving an excellent to good rate of 81.8%. Elbow stiffness occurred in 2 cases, heterotopic ossification occurred in 3 cases, and superficial infection occurred in 1 case that was healed with the treatment of the anti-infection and wound care. No other severe complications like neurovascular injury, loosening or breakage of internal implants, dislocation of elbow joint, fracture nonunion, and deep infection occurred.

Conclusion: The restoration of the fracture of ulnar coronoid process is the key factor. The loop-plate technique for the fracture of ulnar coronoid process in the treatment for the terrible triad of the elbow can obtain an excellent fixation of the coronoid process, restore the elbow joint stability, early functional exercise, and obtain the satisfactory clinical effects.