Letter to the Editor

Letter to the Editor: Surgical Technique: Tscherne-Johnson Extensile Approach for Tibial Plateau Fractures

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To the editor,

We read the study by Johnson and colleagues with great interest. The authors demonstrated the utility of the Gerdy's tubercle osteotomy approach for access to the difficult posterolateral tibial plateau quadrant [2].

(RE: Johnson EE, Timon S, Osuji C. Surgical technique: Tscherne-Johnson extensile approach for tibial plateau fractures. *Clin Orthop Relat Res*. 2013;471:2760-2767.) Each author certifies that they, or any member of their immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

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Posterolateral tibial plateau fractures can occur in isolation or combination. They have been a hot topic among orthopaedic trauma surgeons in recent years as CT scanning and three-dimensional (3-D) images are widely used to delineate the fracture features. Posterolateral fragments are covered laterally by the fibular head and posteriorly by the mass of muscle ligament and important neurovascular structures. A previous study [2] have addressed how to expose the fracture site while also reducing and fixing the fragments, including direct posterolateral approach without osteotomy, extensile posterolateral approach without osteotomy, lateral approach with Gerdy's tubercle osteotomy, lateral transfibular approach, fibular head partial osteotomy approach, medial inverted L-shaped approach, and using the assistance of arthroscopy.

We question Johnson and colleagues' indication of surgical treatment for posterolateral quadrant fractures. Indeed, not all fractures of the proximal tibial articular surface require surgery, and not all displaced intraarticular fractures need to be surgically reduced and fixed. We think this is especially true for the unicondylar posterolateral quadrant tibial plateau fractures. Although there are no recent

clinical reports on conservative management, an older study [4] could provide useful information. The tibial plateau can tolerate small to modest articular displacements, and in properly selected fractures, nonoperative treatment may result in good outcomes despite articular irregularities. With a good alignment on both radiographs and clinical examination, localized depression of up to 10 mm of the lateral plateau may result in stable knees and good outcomes when treated nonoperatively, provided the depression involves a small portion of the articular surface without structural defect [4].

Isolated posterolateral quadrant tibial plateau fractures are relatively common in China because of the wide use of low-speed (< 20 km/h) scooters. A previous study [3] examined the morphological features of the posterolateral fragments. Chang et al. [1] performed a CT-based measurement on eight patients and reported the average articular depression depth was 10.5 mm. Zhai et al. [6] studied the fragment morphology in 71 patients and found that the posterolateral articular depression was 10.78 ± 2.05 mm, and the fractured surface area was $22.63\% \pm 7.85\%$ of the total tibial plateau. Xiang et al. [5] studied 36 patients and

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demonstrated that the posterolateral articular depression was 10.5 ± 5.2 mm (range, 2 mm to 19 mm), and the fracture fragments comprised a mean $14.3\% \pm 6.3\%$ of the total articular surface (range, 8%–32%).

Stability in knee deep flexion is a major concern. However, to date, no data on biomechanical changes such as stress distribution and kinematic behavior following this fracture pattern are available.

Regarding isolated posterolateral quadrant fractures, it is our view that if (1) the fractured area is larger than the one-third of the lateral plateau, and (2) the articular depression is larger than 5 mm, operative treatment is

indicated. Otherwise, nonoperative treatment may be possible.

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