

Posterolateral fragment characteristics in tibial plateau fractures

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Dear Editor,

We read the article “Morphological characteristics of split-depression fractures of the lateral tibial plateau (Schatzker type II): a computer-tomography-based study” by Zhai et al. [1] with great interest. To the best of our knowledge, this report presents the largest number of case series concerning posterolateral tibial plateau fractures.

Posterolateral quadrant tibial plateau fractures are a hot topic in recent years in orthopaedic traumatology. This unique fracture pattern is relatively common in China because of the wide use of electric bicycles in daily life [2]. This kind of bicycle is a lower speed (<20 km/h) personal vehicle driven by storage battery. When riding an electric bicycle, the person is sitting with his/her knees relaxed in a 90° position. When the bicycle falls onto one side, an axial compression load with valgus force is applied to the posterior tibial plateau with the knee in flexed position, which is prone to result in posterolateral quadrant fracture of the lateral plateau. This is the reason why most clinical reports on this fracture pattern come from China [1–4].

Posterolateral quadrant fracture can occur in isolation (only involving the posterolateral quadrant) or in com-

bination (involving more than one quadrant). Several factors, such as the force direction, magnitude, and contact location, as well as the position of the knee at impact, may determine the fracture pattern, location, and degree of displacement. A thorough understanding of fracture morphology can help surgeons better understand the mechanism of injury and select an appropriate treatment plan. In recent years some authors [1–5], most from mainland China, investigated the fracture features and found the fracture patterns in posterolateral quadrants are usually depression or split-depression, the fragments are usually in conical shape with a relatively small articular surface area, short cortical split length and limited articular depression depth (Table 1). Isolated posterolateral quadrant fractures are usually low-energy trauma, while combined posterolateral fractures are high-energy trauma. The concomitant fibular head fracture is also an indicator of high-energy trauma and is significantly associated with greater displacement of the posterolateral fracture fragments.

With the large number of cases, in our opinion, Dr. Zhai et al. [1] can provide more detailed data in subgroups, for example, stratified by differentiation of fracture area involving only the posterolateral one quadrant (isolated pattern) from posterolateral and anterolateral two quadrants (combined patterns), and by fracture patterns with or without concomitant fibular head fractures. As such, the posterolateral fragment morphology may be more specific and useful for treatment strategy

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Table 1 Posterolateral fragment characteristics in tibial plateau fractures

Study	Year	Sample size	Fracture pattern	Presence of fibular head fracture; no. of cases (%)	Ratio of posterolateral fragments surface area to total plateau	Cortical split length (mm)		Articular depression depth (mm)	
						Average in total	With fibular head fracture	Average in total	With fibular head fracture
Chang et al. [2]	2009	8	All isolated	4 (50 %)	-	28, range 24–35	30.3	10.5, range 8–15	12
Yu et al. [3]	2012	15	All isolated	4 (26.7 %)	-	-	-	-	-
Zhai et al. [1]	2013	71	Isolated 24; combined 47	13 (18.2 %)	22.63±7.85 %	-	-	-	-
Xiang et al. [4]	2013	36	Isolated 7; combined 29	9 (25 %)	14.3±6.3 %, range 8–32 %	29±7, range 18–42	-	10.5±5.2, range 2–19	-
Solomon et al. [5]	2013	16	Not mentioned	Not mentioned	-	-	-	16.1, range 7.5–30	-

selections, such as operative or nonoperative, and different surgical approaches and fragment fixation modes.

Yours faithfully,

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