

A Technique for Planning the Application of Buttress Plate in the Medial Tibial Plateau Using the Preoperative CT Scan

Authors : P. Panwalkar, K. Veravalli, R. Gwynn, M. Tofighi, R. Clement, A. Mofidi

Abstract : When operating on tibial plateau fracture especially medial tibial plateau, it has regularly been said “where do I put my thumb to reduce the fracture”. This refers to the ideal placement of the buttress device to hold the fracture till union. The aim of this study was to see if one can identify this sweet spot using a CT scan. Methods: Forty-five tibial plateau fractures with medial plateau involvement were identified and included in the study. The preoperative CT scans were analysed and the medial plateau involvement pattern was classified based on modified radiological classification by Yukata et-al of stress fracture of medial tibial plateau. The involvement of part of plateau was compared with position of buttress plate position which was classified as medial posteromedial or both. Presence and position of the buttress was compared with ability to achieve and hold the reduction of the fracture till union. Results: Thirteen fractures were type-1 fracture, 19 fractures were type-2 fracture and 13 fractures were type-3 fracture. Sixteen fractures were buttressed correctly according to the potential deformity and twenty-six fractures were not buttressed and three fractures were partly buttressed correctly. No fracture was over buttressed! When the fracture was buttressed correctly the rate of the malunion was 0%. When fracture was partly buttressed 33% were anatomically united and 66% were united in the plane of buttress. When buttress was not used, 14 were malunited, one malunited in one of the two planes of deformity and eleven anatomically healed (of which 9 were non displaced!). Buttressing resulted in statistically significant lower mal-union rate ($x^2=7.8$, $p=0.0052$). Conclusion: The classification based on involvement of medial condyle can identify the placement of buttress plate in the tibial plateau. The correct placement of the buttress plate results in predictably satisfactory union. There may be a correlation between injury shape of the tibial plateau and the fracture type.

Keywords : knee, tibial plateau, trauma, CT scan, surgery

Conference Title : ICOTS 2022 : International Conference on Orthopaedic Trauma Surgery

Conference Location : Barcelona, Spain

Conference Dates : June 09-10, 2022