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A morphological study of anatomical plates for Acetabular posterior column

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The prognosis of acetabular fracture is closely related to the reduction in quality. Restoration of articular congruity with stable fixation is the most significant predictive factor of the occurrence of post-traumatic osteoarthritis. The objective of this work is to explore the morphological characteristics of the acetabular posterior column using digital technology, in order to develop anatomical plates for internal fixation of acetabular posterior column fractures. Three-dimensional reconstruction models of the pelvis were developed from computed tomography scan data of 111 adult patients. From them, the diameter (D) of the femoral head, three approximate arcs along the acetabular posterior column plate path with corresponding radius of curvature R1, R2 and R3, as well as an angle α , was measured. A statistical analysis was used to determine the most feasible method of designing anatomical plates according to the data. The results showed that R1, R2 and R3 had no correlations with D, and they also exhibited no statistically significant differences between genders. By examining the correlations between four morphological parameters of the acetabular posterior column, the results showed R2 increased along with R1, α was inversely proportional to R1 and R2, and R3 was independent with little variation. Taking R1 as the reference, the data were divided into three groups and three types of anatomical plates were designed according to the three groups of data. Overall, the anatomical structure of the acetabular posterior column exhibits great individual differences. Anatomical plates designed in this study have higher accuracy than those conventional ones and also can be conveniently used in clinic.

Biography

Qinghua Liu has completed his MD at the age of 32 years from Southern Medical University and postdoctoral studies from Hong-Hui Hospital, Xi'an Jiaotong University College of Medicine. He is the director of Department of Orthopaedic Trauma, Hong-Hui Hospital. He has published more than 15 papers in reputed journals and serving as an editorial board member of repute.

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