

Are the Anatomical Landmarks Adequate for Central Guide Insertion in Shoulder Arthroplasty?

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Kim and Min (Clin Shoulder Elbow 2018;21(3):113-9) reported an emerging study to find a relationship between an intraoperative anatomical landmark and the scapular plane and perpendicular plane to the glenoid plane in Korea because of the few reports on this topic. Selecting the correct glenoid central insertion point is most important step in total or reverse shoulder arthroplasty because it affects the long-term outcomes of arthroplasty. This study defines it well through various anatomical landmarks. Three-dimensional-computed tomography (3D-CT) was used to estimate the glenoid version and its relationship with the surrounding anatomical landmarks, which is an important step in shoulder arthroplasty.

In that paper, there were several important terms: scapular plane, fulcrum axis, and perpendicular plane to the glenoid plane. Two landmarks (tip of the coracoid and the posterolateral corner of the acromion), which was found easily on the body surface, were connected by a line called the 'fulcrum axis'. Braunstein et al.^{1,2)} suggested that this fulcrum axis may be used for preoperative planning and intraoperative evaluations of the glenoid version while performing total shoulder arthroplasty. They suggested that 'as the fulcrum axis and the plane of the glenoid fossa are approximately parallel, the fulcrum axis can be used to position patients for performing a true antero-posterior x-ray'. Furthermore, Le et al.³⁾ reported that a glenoid-targeting guide based on the relationship of the fulcrum axis and glenoid version could be used to accurately estimate the central scapular axis and provide an accurate and reliable tool intraoperatively, aiding in glenoid component placement to within 5° of the ideal version, irrespective of the glenoid deformity.

This is the only study to reveal a relationship between the scapular plane, perpendicular to glenoid plane and with a fulcrum axis. They have a reasonably good number of patients in

this study and compare their 3D-CT scan of the shoulder. On the other hand, it is difficult to understand these terms, such as the fulcrum axis, scapular plane, or glenoid version. Moreover, shoulder replacement is performed mainly for osteoarthritis in older patients; therefore, they need to focus on older patients. In this study, patients over 50 years of age were excluded. The mean age of these patients was 39 ± 3.1 years (range, 20–49 years). The need for shoulder arthroplasty occurred mainly in the 6th to 8th decade of life. During this age, there are remarkable changes in the anatomical and physiological aspects of the human body. Hence, there is some difficulty in obtaining the correct glenoid version. Its anatomy is different from that of a patient aged in their 40s. Statistical analysis is also good and they covered many references in their study. Moreover, the patient-specific guide system should be considered. These guide systems are used for the glenoid deformity. Recently, the patients' specific guide was commonly used for the glenoid component implantation in shoulder arthroplasty. Walch et al.⁴⁾ reported the reliability and precision of preoperative planning software and patient-specific guides for glenoid component placement in total shoulder arthroplasty. These studies could be helpful for this simulation study.

The 3D-CT was used to estimate the glenoid version and its relationship with the surrounding anatomical landmarks. On the other hand, the findings of this study were similar to previous studies that concluded that the fulcrum axis could be used to obtain information on the version of the glenoid from the anatomical landmarks. They did not consider the glenoid inclination, and other methods to determine the central point on the glenoid articular surface were very simple and included the inclination. Such high demanding calculations have no more significant clinical relevance than other simple methods. It's a

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different method to establish that relation. that relationship. On the other hand, an examination of the reference point for better glenoid fixation will be needed for the longer-term survival of the glenoid component.

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