

Correlation Between Clinical Findings and CT Scan Parameters for Shoulder Deformities in Birth Brachial Plexus Palsy

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Purpose The shoulder is the most common site of secondary deformities after birth brachial plexus palsy. The severity and the pattern of deformity vary in patients and have implications for clinical decision making. This study aimed to find the correlation between clinical findings and computed tomography (CT) scan parameters for these deformities.

Methods This prospective study included 75 patients aged 3 to 23 years. The clinical parameters included age, extent of involvement (nerve roots affected), degree of shoulder abduction, active and passive external rotation, and Mallet score. These were correlated with 3 CT scan parameters: elevation of the scapula above the clavicle, relative glenoid version, and percentage of the humeral head anterior to the scapular line.

Results There was a significant correlation between lack of active and passive external rotation and relative glenoid version and humeral head subluxation. There was a significant correlation between active abduction and elevation of the scapula above the clavicle. There was no significant correlation between age or Mallet score with any of the CT scan parameters.

Conclusions These results suggest that presence of active and passive external rotation beyond 10° is associated with significantly lesser shoulder deformity irrespective of the degree of shoulder abduction. Hence, a patient with more than 10° external rotation does not need a screening CT scan evaluation regardless of the degree of shoulder abduction present. Conversely, a lack of external rotation beyond 10° strongly suggests relative glenoid retroversion and posterior subluxation of the humeral head and should be considered a clinical indicator of shoulder deformation. (*J Hand Surg* 2013;38A:1557–1566. Copyright © 2013 by the American Society for Surgery of the Hand. All rights reserved.)

Type study/level of evidence Diagnostic II.

Key words Birth brachial plexus palsy, CT scan shoulder, correlation, secondary shoulder deformity.

DESPITE ADVANCES in obstetric care, birth brachial plexus palsy (BBPP) remains a potential consequence of difficult delivery, even in developed countries. The incidence reported in the litera-

ture ranges from 0.4 to 1.6 per 1,000 live births.¹ Controversy remains regarding both the natural history of spontaneous recovery and optimal timing of surgical intervention for BBPP, although a broad consensus

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