## *Preoperative Multislice Computed Tomography Evaluation of Shoulder Deformities in Brachial Plexus Birth Palsy Patients Undergoing Tendon Transfer*

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INTRODUCTION:
Brachial plexus birth palsy (BPBP) refers to a birth related paralysis of the upper extremity. The current study was designed to evaluate the efficacy of CT in the assessment of humeral head posterior subluxation and glenoid retroversion preoperatively and to evaluate whether or not bony deformity correlates with functional improvement (based on Modified Mallet Score) following tendon transfer in brachial plexus birth palsy patients.
METHODS:
This prospective study included 30 patients, 15 below 4 years and 15 above 4 years old, with a mean age 3.65± 1.39 (range 2-8) years old. Thirteen patients were males (43.3%) and 17 were females (56.6%). The left side was affected in 13 patients (43.3%), while the right in 17 (56.7%). The Modified Mallet Score was used for clinical assessment of the shoulder function. A multislice CT scan with 3D reconstruction was used as a preoperative radiological assessment of the shoulder. An electromyography (EMG) of the muscles around the shoulder was performed. All patients were operated upon by anterior release of the internal rotators to improve the external rotation range of motion and by transfer of teres major and latissimus dorsi to improve the abduction motion through one anterior deltopectoral incision and a small posterosuperior incision. Postoperatively, the range of shoulder abduction and external rotation had been assessed after shoulder spica removal and till the end of follow up.
RESULTS:
Fourteen patients (46.7%) had a normal glenoid version angle (normal range from -12° to 2°) and normal range of articulation with the glenoid (42.3% to 71.4%) and 16 patients (53.3%) had an abnormal glenoid version angle and abnormal range of articulation with the glenoid. According to the Modified Mallet Score, there was a statistically significant difference in the mean value of global abduction, external rotation, hand to mouth, hand to neck and hand to spine between the pre- and post-operative assessment of all patients. There was a statistically significant difference in the mean value of postoperative Modified Mallet Score between the patients under the age of 4 years and those above the age of 4 years. There was no statistically significant difference between the patients with normal CT angles and those with abnormal CT angles. There was no statistically significant difference in the mean value of glenoid version angle and percentage of humeral head articulation between the patients below the age of 4 years and those above 4 years.
DISCUSSION AND CONCLUSION:
The study concluded that the glenoid version angle (RV) and humeral head articulation percentage (HHA) do not negatively affect results of the tendon transfer around the shoulder in patients of upper brachial plexus birth palsy.