INTRODUCTION

Brachial plexus birth palsy (BPBP), or obstetric birth palsy, occurs when the brachial plexus is injured during birth. Reports on the incidence of the injury vary, but range from 0.38 to 1.56 per 1,000 live births. The mechanism of injury is forced lateral flexion of the head and the neck which produces traction and injury to the brachial plexus. The primary cause is shoulder dystocia during a cephalic vaginal delivery, with numerous additional predisposing factors, including macrosomia, multiparous pregnancies, prolonged labor, assisted and difficult deliveries, and a history of a previous birth with shoulder dystocia. During difficult breech or cesarean section deliveries BPBP may also occur ***(Anderson et al., 2006).***

Most children will recover fully during their first months of life; however, it is estimated from longitudinal studies that between 5% and 19% of them will present a degree of residual dysfunction. One of the most frequent problems in this group of children is the development of an internal rotation contracture at the shoulder. This is primarily due to an imbalance between antagonist muscles, with a weakness of external rotators and abductors due to the failure of neuromuscular recovery. There may also be a degree of associated muscular and periarticular tightness secondary to the initial trauma, pulling the shoulder further into adduction and internal rotation ***(Newman et al., 2006)***.

Residual brachial plexus birth palsy often results in an internal rotation contracture. The constant position of internal rotation leads to

glenohumeral joint deformity that progresses over time. In the older child, the glenohumeral joint deformity is advanced, and the joint cannot be reduced ***(Kozin, 2007).***

The prevalence of shoulder contracture in children with obstetrical brachial plexus palsy is high. ***Hoeksma et al., (2003)*** found that shoulder contracture greater than 10 degrees occurred in at least one-third of children with delayed recovery of more than 3 weeks and at least two-thirds of children with incomplete recovery ***(El-Gammal et al., 2006)***.

Children with an established internal rotation contracture and glenohumeral joint deformity are unlikely to regain optimum shoulder function without intervention ***(Pedowitz et al., 2007).***

Consequently, a number of procedures have been developed attempting to improve shoulder function in these cases. Muscle transfers were first described by ***L'Episcopo in 1934*** and may be performed with or without simultaneous musculotendinous lengthenings to modify muscle balance in favor of external rotation and restore function. Humeral osteotomy has also been applied to correct the internal rotation deformity. The first surgical treatments reported in the treatment of Erb's palsy consisted of anterior releases of the muscle and/or tendon contractures such as those described by ***Fairbank in 1913*** and later by ***Sever in 1927.*** More recent variants of this procedure include those by ***Carlioz and Brahimi, (1986), Gilbert et al., (1991) and Pearl, (2003)*** the latter using an arthroscopic approach. At present, there is a lack of consensus on which procedures offer the best outcome for mobility and function, and what the precise indications are for each type of surgery, along with a

large variation in practice between centers. This is further compounded by the heterogeneity in assessment methodology between different studies, which renders their comparison all the more difficult ***(Newman et al., 2006)***.