

Treatment of Forearm Longitudinal Deficiencies for Paediatric Patients

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Introduction. Congenital anomalies are rare, affecting 1–2% of the new-born and only 10% of them have upper limb defects. Incidence of forearm longitudinal deficiencies is 1:55,000–1:100,000 live births which means that 1 case in every two to four years can be expected in Latvia. Centralisation surgical procedure was the main treatment option until 2008, but it had the worst functional outcome (as literature data also show). Starting from 2010, several new surgical techniques like microvascular metatarsophalangeal joint transfer, epiphyseal fibula flap transfer and wrist radialisation had been performed in the Microsurgery Centre of Latvia.

Aim. The aim of this retrospective study is to collect and assess functional outcomes of different types of surgeries.

Material and Methods. 5 patients (7 hands) with radial club hand deformity, one ulnar club hand deformity and one ulnar dimelia were treated in the Microsurgery Centre of Latvia from 2012 to 2014. The Paediatric Evaluation of Disability Inventory (PEDI) was used to evaluate functional outcome in children. ROM (range of motion), pinch and grasp forces were measured to establish wrist motion and stability. Visual analogue scale (VAS) was used to evaluate parents' satisfaction.

Results. 3 patients (5 hands) were selected for the trial. Two patients (3 hands) were not evaluated as thumb reconstruction is not done yet. Patients had a small (10–25°) reoccurrence of radial deviation after centralisation and radialisation procedures, whereas MTP (metatarsophalangeal) joint transfer patients had straight wrists. Wrist joint functionality in MTP patients was as follows: extension of 10–35° and flexion of 20–90°. In MTP transfer patients, PEDI score was 56–58 for daily activities (normal score – 50), 69–70 for mobility (normal score – 63). VAS score was greater for MTP joint transfer patients.

Conclusion. Radial and ulnar deficiencies are rare and reconstructions should be done at the age 2–4 years, because late reconstructions are more complicated due to stiffness of the radial fingers. Radialisation procedure is the first choice for wrist stabilization, but, in some cases, MTP joint transfer or vascularised fibular head transfer can provide a better functional outcome in radial club hand patients.