Partial wrist arthrodesis in cerebral palsy patients

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Severe fixed wrist flexion deformity in spastic children causes hygiene problems, impairment and poor cosmesis, sometimes associated with pain. Soft tissue procedures alone have not been successful and total wrist arthrodesis is reserved for skeletally mature patients. This study evaluates the outcome of a partial arthrodesis for the treatment of spastic wrist deformities.

METHODS

- 11 CP children (12 wrists) with a severe flexion deformity of the wrist were treated by a mid-carpal fusion.
- Results were assessed clinically (resting posture, ROM), radiographically (union rate changed from an average of 54º to 47º and delay, growth disturbance), and functionally (House scale, VAS satisfaction).

RESULTS

- 9 boys and 2 girls.
- Mean age at the time of surgery was 12 years (range 8 – 20 years).
- All non-functional hands (House 0-1), only two had some active motion.
- The goal of surgery was hygiene, comfort, and/or appearance.

The surgical technique involved a mid-carpal dorsal wedge osteotomy, fixed with two cross K-wires.

Associated procedures included:
- 9 muscle-tendon lengthening, 1 tendon transfers and 2 hyperselective neurectomies.
- The mean follow up was 20 months.

- The resting posture improved from 78º to 21º of flexion.
- The average passive range of motion changed from flexion 88º/extension minus 40º, to flexion 47º/extension 9º.
- The total arc of passive motion changed from an average of 54º to 47º.
- The union rate was 100% at an average of 6.7 weeks. No significant complication was reported.

No worsening of the growth disturbance was noted at 20 months post-op, although this proved very difficult to assess due to the initial deformity.

The goal of surgery was reached in all cases, and in addition the function of the hand was improved in 3 cases (House 1 to 3). VAS satisfaction was high (average 7.8).

CONCLUSIONS

Dorsal carpal wedge osteotomy is an effective technique for the treatment of fixed wrist flexion deformity in skeletally immature patients, allowing to improve the resting position and to preserve some wrist motion.