Wrist arthroscopy in children with multiple hereditary osteochondromatosis and enchondromatosis.

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Introduction

Deformities of the forearm by MHO and enchondromatosis:

1) Relative shortening of the ulna
2) Bowing of the radius and/or ulna
3) Ulnar tilt of the distal radial epiphysis (19%)
4) Ulnar deviation of the hand (20%)
5) Ulnarward translocation of the carpus (20%)
6) Dislocation of radial head (14%)
Sequelae of the forearm deformities

- Cosmetic displeasure
- Limited forearm rotation
- Limited wrist motion
- Elbow pain and limited motion by radial head dislocation
Treatment strategy of MHO/ENCHO of the forearm
1) Early excision/curettage of the exostoses/enchondroma
2) Lengthening of the ulna by R/U discrepancy >1 cm
Purpose of the study – wrist arthroscopy by MHO/ENCHO

1) To evaluate the wrist morphology
2) To correlate the morphology to the different length of the ulna
3) Wrist arthroscopy in childhood - not previously published
Material and Methods
2000-2003, wrist arthroscopy without distraction
7 boys, 7 girls (16 wrist joints)
MHO.................................................................10 patients
Enchondromatosis.................................4 patients
Age range 7.5 - 18.5 years
Technique of arthroscopy and following procedures

Conventional 2.7 mm arthroscope

III/IV, MC and VI/R – portals

High pressure of Ringer’s lactate solution 12 times in combination with:

- Excision of the exostoses
- Curettage and grafting of the enchondroma
- Corticotomy and external fixator for ulnar lengthening
X-ray of the forearm and wrist (Burgess, JBJS 1993)

Radial articular angle
- $< 30^\circ$ .......5
- $> 30^\circ$ .......11

Carpal slip
- $< 50\%$ .......12
- $> 50\%$ .......4

Ulnar shortening
- $< 1\, \text{cm}$ .......4
- $> 1\, \text{cm}$ .......12

Dislocation of radial head
- partial .. 2
- complete..... 0
Results
1. Wrist arthroscopy
- sufficient information about wrist anatomy in children
- possibility to continue with the surgical procedure
2. Arthroscopic findings in RC and MC joint:
   - Normal in 11 wrist joints
   - 1 patient - bilateral scapholunate dissociation
   - 1 patient - changes of the cartilage in RC and MC
Results

3. Articular disc of triangular fibrocartilage complex of the ulna (TFC) failed in 9 wrists:
- ulnar shortening > 5 mm
- ulna was not centred to the incisura radii by lengthening
Results
4. Normal or slightly reduced articular disc - 7 wrists
   a) Ulna was not significantly shorter (5 wrists)
   b) Normal position of head of ulna was re-established (2 wrists)
Results

5. No direct correlation between discus anatomy and Radial articular angle and Carpal slip
6. No complications were associated with wrist arthroscopy
Conclusions
Arthroscopy of the wrist by MHO and enchondromatosis:
1. Ulnar shortening leads to elimination of the articular disc of TFC
2. Ulnar lengthening to distal radioulnar joint leads to re-establishment of the articular disc of TFC.
3. Arthroscopy evaluates the wrist anatomy and function and the results of the ulnar lengthening in children of school age and enables any surgical procedure in the same session.