



Treatment of finger overlap due to proximal phalange rotational malunion in the pediatric population. Case report and review of the literature.

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INTRODUCTION

The hand is the most often traumatized part of a child body with phalangeal fractures to take the first place. Although most hand fractures in the pediatric population are stable and can be reduced and treated conservatively, some fractures like the phalangeal fractures needs special attention. Unstable proximal phalanx fractures can lead to malunion.

Finger overlap due to proximal phalange rotation malunion may cause pain, functional disability as well as unacceptable cosmetic appearance. This deformity can be treated by phalangeal or metacarpal rotational osteotomy. However postoperative complications mainly the contracture of the proximal interphalangeal joint remains as challenging issue.

PURPOSE

In this paper we review the literature, and present our case of a young boy with post-traumatic little finger overlap treated with rotational proximal phalanx osteotomy and double ray plate. We will try to discuss, comprehensively, the surgical techniques, complications and limitations of both osteotomies.

MATERIAL AND METHODS

A 13-year-old, competitive swimmer, have been treated at the emergency clinic of our hospital for an oblique fracture of the proximal phalanx of his left little finger. An aluminum sling was used. Two weeks later, in the subacute phase, we noticed displacement of the fracture, and a close reduction attempt failed. Five weeks later, the phalange malunited in an obvious rotation with pain and contracture to the PIP joint. After two more weeks physiotherapy, we performed a rotation osteotomy of the proximal phalange, proximal to the fracture region, and stabilized it with double ray plate. Early range of movement was encouraged. We followed up the patient for 12 months. We searched Google scholar for articles related to rotational malunion of long fingers related to proximal phalange fractures. We excluded articles of rotational malunions of the adult population, those due to metacarpal fractures and those of the thumb.

RESULTS

Our patient 12 months postoperatively has full extension and 95° flexion of the PIP joint, normal sensation and no pain and normal appearance of his left little finger as compared to his right little finger it looks identical with no overlap.

CONCLUSION

Proximal phalange fracture in a child when unstable or lose reduction at the acute or subacute stage must be stabilized by closed reduction and pinning or ORIF. Prevention of malunion, and gaining time for the patient to return to his previous activity can be done if surgical intervention is done at the acute (7-10 days in children and 2-21/2 weeks in adults) or the subacute stage(between the acute stage and full healing).

Metacarpal osteotomy dose not disturb the extensors and flexor mechanisms of the digit and allow early movement but it cannot reduce rotational deformities >20°. We aim to have stable osteosynthesis after osteotomy at the level of the proximal phalange using a double ray low profile mini plate to allow early PIPJ range of movement. Doing the osteotomy proximal to the fracture region preserve the distal physis and prevent the interference in the distal phalange growth plate and the possibility of avascular necrosis of the condyles. Putting the plate under the periosteum and reservation of the peritenon lessens the possibility of symphysis between the extensors mechanism and the plate.

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Figure 1. Intraoperatively.



Figure 2. Intraoperatively.



Figure 3. Intraoperatively.



Figure 4. 10 months postoperatively.



Figure 5. 12 months postoperatively - full extension.

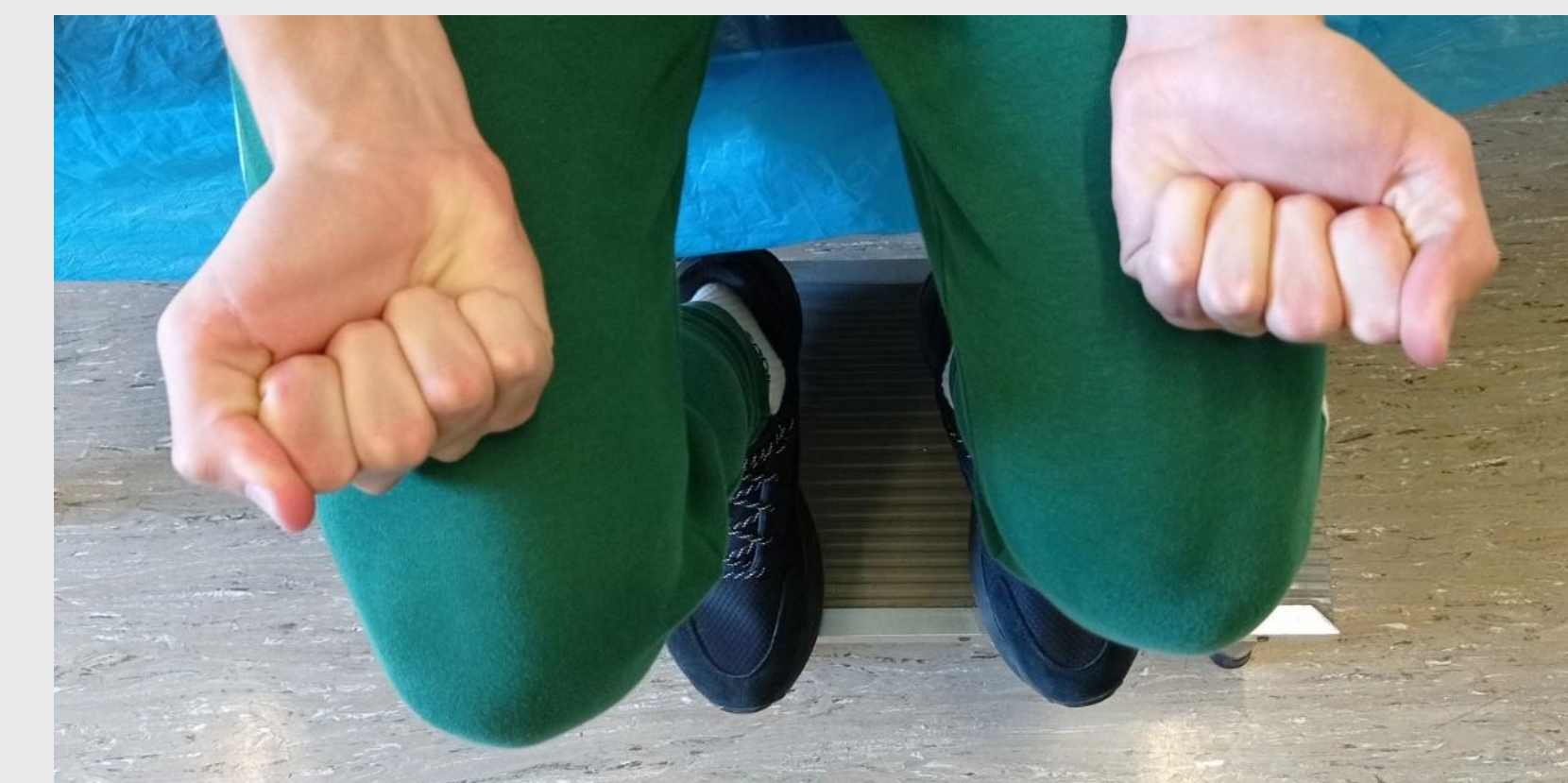


Figure 6. 12 months postoperatively - 95° flexion of the PIP joint.