

## **Reverse Wedge Osteotomy for Congenital Deformity of Index Finger: Clinodactyly**

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### **Abstract**

Clinodactyly are relatively common congenital anomalies affecting about 1% to 2% of the general population. Functional loss is uncommon other than in severe cases, patients affected do present very often for correction. There are many type of surgeries available these all depend upon the type of deformity. They range from simple release of the flexor digitorum sublimis (FDS) to more complex small muscle transfers, rebalance etc. In this case report we will depict that reverse wedge osteotomy for clinodactyly is an extremely reliable surgery for adults after the fusion of epiphysis with out any complication.

**Key words:** Clinodactyly, Reverse Wedge Osteotomy, Index Finger

### **Introduction**

Clinodactyly represents 1-2% of all the congenital deformity [1]. Incidence of 19.5% is seen in a non-Caucasian population [2]. It is reported in about 1% of normal newborns and 10% of abnormal newborns [3].

Clinodactyly of the little finger is inherited in an autosomal dominant fashion and usually presents bilaterally. [4] Estimates regarding the incidence of clinodactyly range from 1% to 20%. [5] The next most common sites of occurrence are the thumb and ring finger, with involvement of the middle and index fingers being relatively uncommon. [6]

Surgical correction has been recommended for severe clinodactyly. Operative treatment consists of either segmental resection of the longitudinal epiphyseal bracket to allow for correction with continued longitudinal growth or an osteotomy to directly realign the digit. Our case describes the clinodactyly of index finger in adults in which there was no family history and there was shortening and angulation of proximal phalanx. He was managed by reverse osteotomy with K-wire fixation. There was no progression of shortening post-operatively.

### **Case summary**

A 19 years old male patient presented with complaints of lateral deviation of index finger left hand since birth. He had difficulty in carrying out routine activities. Radial deviation of index finger was approximately 60 degrees. Flexion and extension degree of movements on metatarsophalangeal and inter-phalangeal joints. Handgrip strength was 50 % of his normal hand. There was 2.5 cm shortening of the index finger as compared to the normal hand. Surgical Management – He was managed by reverse osteotomy of proximal phalanx and was fixed by cross K-wires. Post-operatively he was given splint to avoid lateral bending. Splint kept the finger in overcorrected position. After 1 month of follow up K-wires were removed and mobilization was started. He could perform all the daily activities and the deformity was corrected and there was no shortening.

## Discussion

Osteotomy for small bone of the hand has been discussed sparsely in the literature. The sagittal plane deformity of the phalanges has been treated with closing wedge, opening wedge, and combined or “reverse” osteotomies. We described reverse osteotomy for the proximal phalanges of index finger.

Vickers [7] described physiolysis or resection of the mid-zone of the longitudinal epiphyseal bracket with a fat interposition graft in 6 patients. Postoperative splinting was not required, and he found improvement in length and angulation with growth.

Caouette-Laberge and colleagues [8] described their experience with 35 fingers in 23 children and found a mean angular correction of 18 in children who had surgery before 6 years of age. Fingers with more severe preoperative angulation (greater than 40) were observed to have more significant angular correction (mean 20) compared with fingers with less than 40 of preoperative angulation (mean 7.5). Closing wedge, opening wedge, and combined or “reverse” osteotomies have all been advocated for surgical correction.

Closing wedge osteotomies have the advantage of relative technical simplicity, but carry the risk for further shortening an already shortened digit.[9] Light and Odgen pointed out that a reverse osteotomy may allow the formation of a bony bridge that crosses both physes and thus limits further growth.[10] Opening wedge and combined procedures allow for length maintenance, but may require extensive dissection or local soft tissue rearrangement. [11,12] We did reverse wedge osteotomy for the correction of the deformity and there was correction of angulation and there was no further shortening of the phalanx.

## Conclusion

Our study concludes that reverse wedge osteotomy for clinodactyly is an extremely reliable surgery for adults after the fusion of epiphysis as there is no complication and there is no post-operative complication like shortening and angulation. As there is very less data reported for clinodactyly in adults. So we report clinodactyly of index finger in an adult who was managed with reverse wedge osteotomy.

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### FIGURES



Figure 1. Pre-operative clinical picture of the patient showing radial deviation and shortening of the index finger of left hand.



Figure 2: Pre-op x-ray of hand suggestive of Shortening of proximal phalanx and radial deviation of index finger with deformity at proximal phalanx index finger.



Figure 3: X-ray showing Radial deviation –  $48.04^{\circ}$



Figure 4: Immediate Post-operative clinical picture of the patient after the surgical management showing correction of the deformity.



Figure 5: Immediate Post-operative xray showing correction of deformity and the wedge fixed by 2 K-wires.



Figure 6: Post-op Xray after 1 month after removal of K-wires showing correction of deformity and the wedge in place.



Figure 7: Clinical picture after 1 month showing the correction of deformity and no further shortening of the finger.