

Congenital incomplete failure of separation of Proximal Phalanx of middle & ring finger: An Unknown case

IRFAN MALIK

*Assistant Professor, Department of Orthopaedics
Govt. Medical College & Associated Hospital, Rajouri (J&K) India*

RUHI KHAN¹

*Assistant Professor, Department of Pediatrics
Govt. Medical College & Associated Hospital, Rajouri (J&K) India*

SYED SHUJA AKHTAR QADRI

*Assistant Professor, Department of Community Medicine
Govt. Medical College & Associated Hospital, Rajouri (J&K) India*

Abstract

Complex syndactyly or Synostosis can be described as a condition in which inter digital bony fusions is seen. We are presenting a case of synostosis of proximal phalanx of third and fourth finger. Synostosis of distal phalanx of hand is described in literature but synostosis of proximal phalanx of hand has not been mentioned in the literature.

Keywords: synostosis, proximal phalanx of middle and ring finger

INTRODUCTION

Syndactyly is one of the most common congenital differences of the upper limb. It may present as an isolated anomaly, may be associated with other soft tissue and skeletal anomalies of the hand or may present as a part of a syndrome. It can be described as simple, complex and complicated.

In simple syndactyly, the interdigital connection consists of only skin and fibrous connections and is further divided into complete and incomplete depending upon the degree of webbing along the length of the digit. Complex syndactyly contains abnormal osseous or cartilaginous skeletal unions. The term complicated syndactyly is reserved for those with more than simple side to side bony fusions.

CASE REPORT

A two and half year male child reported to the OPD with congenital hand deformity at middle and ring finger. On clinical examination it was found that there was congenital non-separation of middle and ring finger of right hand. There was fusion of proximal part of middle and ring finger. It was extending from palm to PIP joint with severe

¹ **Corresponding author:-** Dr Ruhi Khan, Assistant Professor, Department of Pediatrics, Govt. Medical College & Associated Hospital, Rajouri (J&K) India. E-mail: ruhi.khanjammu2000@gmail.com. Mob:-7889682249

ulnar deviation of middle phalanx of ring finger with obliteration of web space. He was also having Syndactyly at 2nd and 3rd toe in right foot. No other congenital abnormality was found. On asking family history his maternal uncle was having similar syndactyly at 2nd and 3rd toes in both the feet.

Dorsal crease of middle and ring finger at PIP joint are under developed. Palmer crease at both finger were normal. There was ulnar deviation of middle phalanx (MPX) of a ring finger 40° with rotation deformity. Nail was rotated toward the middle finger at the angle of 30°. Stiffness in flexion of both PIP joint present with extensor lag 30° at middle finger and 45° at ring finger. Rest of the parameter were found normal

DIAGNOSIS AND MANAGEMENT

X-RAY

A P view showed normal metacarpals. Proximal phalanx of middle and ring finger were fused at base proximally up to the middle. Proximal articular surface of proximal phalanges of middle and ring finger were fused. Distal half as well as head of proximal phalanges of both the fingers were not fused. Middle finger was aligned. The middle phalanx was severely deviated towards the ulnar side at 80°. Proximal interphalangeal joint subluxation with ulnar deviation of MPX of ring finger 40° with rotation deformity. Distal interphalangeal joint was aligned at both the finger.

MANAGEMENT

Three plans were considered:

1. Exploration and separation of incomplete fusion with PIPJ deformity correction of ring finger and MCPJ reconstruction of both fingers with SOS tendinous and neural reconstruction.
2. Exploration and separation of incomplete fusion with disarticulation at MCPJ of Ring Finger and MCPJ reconstruction of middle finger.
3. Exploration and separation of incomplete fusion with ray amputation of ring finger and digital transposition of little finger.

The patient's father opted for plan 1

Operative management

Under GA and tourniquet control

1. Skin incision- rectangular flap on dorsum and zigzag on the volar side (shown in figure-1). Intra operatively, on exploration there was no abnormality of soft tissue except the common MCP joint of ring and middle finger was found.
2. After dissecting the soft tissue the fused bones were exposed. Inverted V shape wedge Osteotomy, open proximally (6 mm) at the base was done with osteotome including separation of articular surface.
3. The alignment of PIP joint of ring finger was done by manipulation and soft tissue release. Minimal deformity at ring finger persisted therefore straight K-wire fixation was done.
4. Reconstruction of adjacent surface of metacarpophalangeal joint (MCPJ) of ring finger and middle finger was done.

After suturing two lateral areas left which were covered by medium thickness split skin graft.

Post operative dressing

- Non adhesive dressing done below and elbow POP volar slab was done.
- Ist dressing done on 3rd post operative day where it was found that graft and suture line both were healthy.
- Second dressing done on 6th post operative day-Split Skin Graft maturing and flap was healthy. Regular dressings were done thereafter. Graft was taken up completely with suture line and Flap healthy.
- K-wire removal done on 3rd week.
- Post operative splintage and physiotherapy: Intermittent strapping of the middle finger and ring finger was done and mobilization of all joints was started by physiotherapist.
- Post operative follow up: In post operative period after three months there was complete flexion and extension at MP joint of middle finger and ring finger. Range of motion of PIP joint of middle finger was almost near normal but it was almost 90% for ring finger.

DISCUSSION

This congenital deformity of this type is not seen before and it is not possible to classify this deformity according to the classifications being used till now. Here we are taking reference from the world's most acceptable classification by the American Society for Surgery of the hand and the International Federation of Societies for surgery of the hand (IFSSH). This system is based on grouping conditions according to the anatomic parts that have been primarily affected by certain embryonic failures. In this classification (Table 1), the synostosis of the phalanges has been mentioned, but this type of synostosis is usually seen in the distal phalanges of the finger of hand. To our knowledge the synostosis of the proximal phalanges has not been mentioned in the literature. Moreover the routinely seen cases of syndactyly are acro or complete syndactyly but in this case, the fusion was at the base of proximal phalanx and heads of proximal phalanx was not fused. Bony fusion was reverse as compared to the routine synostosis.

I.	Failure of formation
	A. Transverse arrest
	B. Longitudinal arrest
II.	Failure of differentiation
	A. Soft tissue involvement
	B. Skeletal involvement
	a. Shoulder level
	b. Elbow level
	c. Forearm
	d. Wrist and hand
	i. Synostosis of carpal bones
	ii. Synostosis of metacarpal bones
	iii. Synostosis of phalanges (osseous syndactyly, complex syndactyly)
	1) Radial (1 st -2 nd rays)
	2) Central (2 nd -3 rd -4 th rays)
	3) Ulnar (4 th -5 th rays)
	4) Mitten hand
	a. Apert syndrome
	b. Others
	iv. Symphalangia
	v. Congenital deviation (Clinodactyly)
	vi. Hypersegmentation
	C. Congenital tumorous anomalies
III.	Duplication
	A. Whole limb
	B. Humerus
	C. Radius
	D. Ulna
	E. Digit
IV.	Overgrowth
	A. Whole limb
	B. Partial limb
	C. Hand
V.	Undergrowth
	A. Whole limb
	B. Forehand and hand
	C. Hand alone
	D. Metacarpal
	E. Phalangeal
VI.	Constriction ring syndrome
VII.	Generalized syndromes

Table 1. Classification adopted by congenital Committee of the International Federation of Societies for surgery of the hand.

CONCLUSION

So we strongly recommend modifying this classification system. We further suggest that the synostosis of the proximal phalanges should be added in the literature as separate entity and should further be divided into complete and partial or incomplete congenital failure of separation of the proximal phalynx. Although the management of this case was not very difficult but the possibility of assuring excellent function of the fingers after separation are not expected and are explained to the parents of the child

REFERENCES

1. DRINKWATER, H. (1915-16). *J. Anat. and physiol.* Vol. L, p. 177.
2. THOMSEN, O. (1926-7). *Acta Scandinavica*, vol. LXV, P.609; VOL. LXVI, P.588.
3. COCKAYNE E.A. (1931-32). *Journal of Anatomy*, Vol. LXVII, part 1 p.165.