

## A Digital Malformation: Case Report

**Ghannam Abdelaziz<sup>1\*</sup>, Haouzi Mohamed Amine<sup>1</sup>, Khairi Achraf<sup>2</sup>, Boufettal Moncef<sup>1</sup>, Bassir Reda Allah<sup>1</sup>, Kharmaz Mohamed<sup>1</sup>, Lamrani Molay Omar<sup>1</sup> and Berrada Mohamed Salah<sup>1</sup>**

<sup>1</sup>Department of Orthopaedic Traumatology, CHU Ibn Sina, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco

<sup>2</sup>Department of Plastic and Reconstructive Surgery, CHU Ibn Sina, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco

**\*Corresponding Author:** Ghannam Abdelaziz, Department of Orthopaedic Traumatology, CHU Ibn Sina, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco.

**Received:** May 13, 2021; **Published:** June 30, 2021

### Abstract

Syndactyly is a very common malformative abnormality of the hand. The diagnosis is most often made at birth. We report an exceptional case of a 33 year old women consulting for the first time for a bilateral complex syndactyly.

**Keywords:** Syndactyly; Digital Malformation; Malformative Abnormality

### Introduction

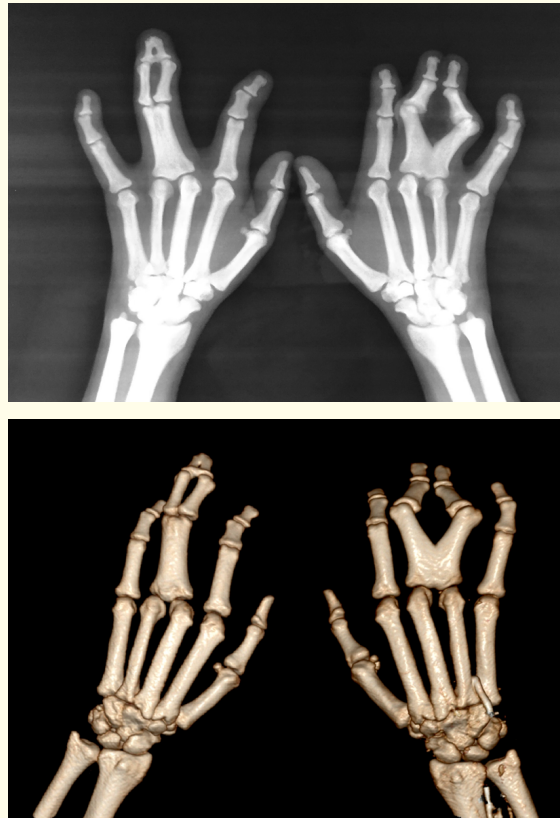
Syndactyly is a very common malformation of the hand. Diagnosis is most often made at birth or antenatally. Syndactyly may be isolated or part of a malformative syndrome. Imaging is essential to assess associated anatomical damage.

### Case Report

A 33-year-old female patient, with no previous history, was presented with a congenital malformation of both hands. She presented with a fusion of the 3<sup>rd</sup> commissures, between the 3<sup>rd</sup> and 4<sup>th</sup> fingers bilaterally with a flexion deformity of the latter (Figure 1). Clinical examination revealed complete fusion of the third and fourth fingers with significant functional limitation, raising suspicion of underlying skeletal anomalies. The rest of the examination did not reveal any associated malformation. The symptomatology dated back to birth. Due to tribal and ethnic beliefs, the patient had not previously sought medical attention. A standard X-ray and CT scan of both hands were performed (Figure 2), showing bilateral complex syndactyly.



**Figure 1:** Bilateral syndactyly. The right hand shows syndactyly of the 3<sup>rd</sup> commissure, between the 3<sup>rd</sup> and 4<sup>th</sup> fingers, in irreducible flexion, the skin separation is continuous from the base to the digital tip. On the left side, syndactyly also involves the 3<sup>rd</sup> commissure with a distal unguis overlap. The skin separation is not individualised.



**Figure 2:** Standard X-ray (a) and three-dimensional CT reconstruction (b) of the hands, showing partial fusion of the first phalanges of the 3rd and 4th fingers on the right and complete fusion of the first phalanges of the 3rd and 4th fingers on the left. Note the presence of distal fusion bridges in the distal phalanges on the left side.

## Discussion

Syndactyly is the partial or complete fusion of adjacent fingers. This malformation may involve the skin covering, bone, tendons and vascular and neural elements to varying degrees. It may be isolated or part of a malformative syndrome [1].

The isolated form is most often secondary to autosomal dominant familial transmission with variable expression. Our patient's case was isolated in her family, no similar cases were found.

Pathophysiologically, syndactyly is secondary to a defect in the separation of the digital rays as a result of an abnormality in the programmed apoptosis process that is designed to separate the digits during the sixth week of embryonic development [2,3].

The diagnosis is clinical and is made at birth (antenatal diagnosis being difficult, especially for isolated forms). The examination must be bilateral and comparative, involving the upper and lower limbs. The syndactyly must be analysed morphologically and the impact on mobility must be assessed [2].

Complex syndactyly is characterised by skeletal fusion which may be distal or proximal, whereas simple syndactyly involves only the skin covering.

Imaging is then essential to analyse the bone connections. Standard X-rays or CT scans can be used to characterise the fusion points. The fusion may be total or partial, affecting the proximal or distal phalanges or both.

In our patient, on the right side, the fusion was proximal, involving only the first phalanges, in a partial manner, whereas on the left side, the fusion was disto-proximal, with a complete reunion of the proximal phalanges and the existence of fusion bridges between the distal phalanges.

Ultrasound coupled with colour Doppler is useful for analysing tendon structures and vasculo-nervous pedicles before undertaking any surgical repair [2]. Indeed, tendon abnormalities are common in complex syndactyly with abnormal insertions, supernumerary or absent tendons. The vascular anatomy is often altered, such as an abnormal division of the common digital artery, a single artery, or even an absence of a vessel in the affected commissure [4].

The management of syndactyly is surgical. The aim of surgery is both functional and aesthetic and consists of recreating a harmoniously shaped commissure while avoiding retractile bands and residual deformities [5]. The ideal age for surgery is around 1 year [6]. Syndactylies of the first and fourth commissures, joining fingers of different lengths, result in lateral deviation of these fingers. They should be released early, as early as the third or fourth month, to avoid these deformities. Complex syndactyly should be operated on late at the age of 3 years [7].

Resurfacing of the synostosis separation zone involves a number of techniques ranging from composite grafting combining skin and subcutaneous cellular tissue to complex flap techniques (e.g. Buck-Gramck pulpal plasty) [8]. Simple forms have a good prognosis. In complex forms, the prognosis depends on the associated skeletal, tendon, muscle and joint anomalies. In our patient, age, joint stiffness and bony abnormalities are poor prognostic factors that may impair active mobility even if the fingers were separated.

### Conclusion

The diagnosis of syndactyly is most often made at birth. The surgical planning of the procedure depends on the bony, tendino-ligamentary and vascular parameters associated with the syndactyly, hence the essential role of imaging.

### Bibliography

1. Rypens F, *et al.* "Obstetric US: watch the fetal hands". *Radiographics* 26.3 (2006): 811-829.
2. Samson P and Salazard B. "Syndactylies". *Chirurgie de la Main* 27S (2008): S100-S114.
3. Gilbert A and Samson P. "Lamaladie amniotique". In: Tubiana R, *Traité de chirurgie de la main*. Tome 6. Paris: Masson (1999): 431-438.
4. Mantero R, *et al.* "Les syndactylies: recherches angiographiques". *Ann Chir Main* 2 (1983): 62-65.
5. Sommerkamp TG, *et al.* "The pulp plasty: a composite graft for complete syndactyly fingertip separations". *Journal of Hand Surgery* 17 (1992): 15-20.
6. Golash A and Watson JS. "Nail fold creation in complete syndactyly using Buck-Gramcko pulp flaps". *Journal of Hand Surgery* 25 (2000): 11-14.

7. Buck-Gramcko D. "Congenital malformations: syndactyly and related deformities". Hand Surgery. New York: Thieme Medical Publishers (1988).
8. Ger E. "Syndactyly". In: Buck-Gramcko D, editor. Congenital malformations of the hand and forearm". London: Churchill Livingstone (1998): 131-140.

**Volume 12 Issue 7 July 2021**

**©All rights reserved by Ghannam Abdelaziz., et al.**