BILATERAL FEET NON-SYNDROMIC SYNDACTYLY IN A YOUNG ADULT –

A RARE CASE REPORT

Dahiya Roopali, Bhardwaj Akshay*, Jain Sumit

Abstract

Syndactyly is one of the most common hereditary limb malformations, depicting fusion of certain fingers or toes. Clinically, it is one the most heterogenous developmental deformity which may occur as an isolated entity or component of more than 300 syndromic anomalies. Case Report- 38 years old male presented to outpatient department with acute onset pain in left foot due to twisting injury of the foot. The uncharacteristic syndactyly was an incidental finding on the x-ray. We report a rare case of non-syndromic syndactyly of great toe and second toe which cannot be classified by any of classification systems in literature.

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INTRODUCTION

Syndactyly or webbing of toes is a digital malformation in which adjacent fingers and/or toes are webbed because they fail to separate during limb development. Albeit, majority of the times, the cause is idiopathic, it is believed to be due to the failure of differentiation between adjacent digits by the absence of apoptosis in the interdigital mesenchyme during the second month of gestation. This condition is usually bilateral and has a male predominance [1,2]. We hereby report a rare incidental case of bilateral non-syndromic syndactyly in a young adult.

CASE REPORT

A 38 years old gentleman presented to orthopaedic outpatient department with complains of pain in the left foot following a twisting injury. On examination, the patient had deformed toes in both the feet since birth. The deformity was not associated with any other complains. There was no familial history of the same. General and systemic examination of the patient was within normal limits. There was no history of any congenital condition which might point towards any syndrome.

In detailed local examination of Left foot, the patient had a single great toe which was broader than the right great toe. The skin condition was normal. The second toe was completely absent while there was cutaneous syndactyly in third and fourth toes, starting from the web till the toe tip (Fig. 1). There was an accessory nail tip projecting from the medial aspect of the third toe. The fifth toe was normal but shorter. The rests of the nail beds were normal.

Examination of the right foot showed that there was cutaneous syndactyly in first and second and third and fourth toes respectively. The skin condition of all the toes was within normal limits. There was an accessory nail over the medial aspect of the third toe same as that of left foot. The fifth toe was completely normal (Fig. 1).

Radiological examination revealed that there was a mild hallux valgus with some bony fusion at the tip of the distal phalynx of first and second toes of left foot. (Fig.2) of the left foot showed that there was no bony fusion between the bones of 1st and 2nd toes. There was an accessory bony appendage present on the medial aspect of third toe bilaterally. Rest of the bones in both the feet were within normal limits (Fig. 2). No further treatment...
was given as there was no acute/chronic deformity.
complain associated with the mentioned

Figure 1: Broad but morphologically normal great toe in left foot and accessory nail arising from 3rd toe bilaterally.

Figure 2: Antero-posterior radiograph of bilateral feet
Discussion:

Syndactyly is defined as a congenital or acquired deformity in which webbing persists between adjacent digits from birth or secondary to injury. It is one of the most frequently encountered congenital anomaly affecting 1/2000 people \cite{3,4}. It is caused by rapid arrest of the embryological development from sixth to eighth week of intrauterine life. Because the webbing between the second and third toes is the last to disappear, this area is most sensitive to intrauterine insult \cite{5-7}. Genetic factors have been implicated as the cause of this condition \cite{8}.

The anomaly can be classified as either complete or incomplete, depending on the extent of fusion of adjacent digits. Complete syndactyly is the one in which the fingers are joined from the web to the tip. Incomplete syndactyly denotes a type where the fusion of the web spaces occurs only at a point between the web and the tip. Simple syndactyly defines a subtype in which only the skin is involved while complex syndactyly involves bone, the neurovascular bundle and nail structure \cite{8}.

Clinically, it may be unilateral or bilateral, symmetrical or asymmetrical, inter and intrafamilial phenotypic variability, even same individual may exhibit asymmetrical phenotypes in right or left; upper and lower limbs.

Various classification systems have been used to describe this anomaly, but the most frequently used are Davis-German \cite{3} and Temtamy-McKusick \cite{9}. Davis and German classification primarily divides this anomaly as incomplete or complete and simple or complicated depending upon the soft tissue and bony component involvement. There was a fifth type which included a combination of the aforementioned types (Table 1).

Temptamy and McKusick \cite{9} is usually based on the phenotypic presentation, which includes the site and the nature of the digit involved, as well as the pattern of disease segregation in larger families. There are two major class namely, Isolated syndactyly and syndromic syndactyly. Isolated syndactyly is furthersub-divided into five phenotypic types while the syndromic syndactyly has two sub-groups (Table 2).

Off late, Malik et al \cite{10} have described an exhaustive classification which is a combination of clinical, genetic and molecular approaches. However, our case is unique and doesn’t fit in that classification too.
Table 1: Davis-German classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Incomplete</td>
<td>Webbing does not extend to the distal most aspect of involved digits</td>
</tr>
<tr>
<td>Complete</td>
<td>Webbing extends to the distal most aspect of involved digits</td>
</tr>
<tr>
<td>Simple</td>
<td>Soft tissue connection present. No phalangeal involvement</td>
</tr>
<tr>
<td>Complicated</td>
<td>Phalangeal bones are abnormal in size, shape number or arrangement.</td>
</tr>
<tr>
<td>Combination</td>
<td>Complete-Simple, Complete-Complicated, Partial-Simple, Partial-Complicated</td>
</tr>
</tbody>
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Table 2: Temtamy-McKusick classification

<table>
<thead>
<tr>
<th>Type 1- Zygodactyly</th>
<th>Consists of complete or incomplete webbing of the third and fourth fingers and/or the second and third toes. Other digits may be involved.</th>
</tr>
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<tbody>
<tr>
<td>Type 2-Synpolydactyly or Polysyndactyly</td>
<td>Consists of fusion of third and fourth fingers and associated with a partial or complete reduplication of the third or fourth fingers within the web. In the feet, it is manifested by a fusion of the fourth and fifth toes with duplication of fifth toe</td>
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<tr>
<td>Type 3- Ring finger-Small finger Syndactyly</td>
<td>Consists of webbing of the fourth and fifth fingers. The feet are not affected.</td>
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<tr>
<td>Type 4- Haas Type</td>
<td>Complete syndactyly of all fingers. No foot involvement.</td>
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<tr>
<td>Type 5</td>
<td>Syndactyly associated with metacarpal/metatarsal fusion.</td>
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CONCLUSION

Although syndactaly is fairly common, bilateral association in non-syndromic case is rare. No treatment is further anticipated in asymptomatic cases. However, prompt diagnosis with treatment for the underlying cause is required in few patients.

Conflict of Interest Statement-
There is no conflict of interest.
Informed consent was taken from the patient.

REFERENCES: