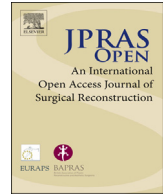




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## Case report

# Thumb reconstruction using congenital syndactylised toes in a child with transverse arrest of digits

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## ABSTRACT

An absent thumb with transverse arrest of digits and multiple toe syndactylies is an uncommon occurrence. Surgical options are limited and hence treatment may not be standard. We report a case whereby microsurgical transfer of syndactylic second and third toes for thumb reconstruction was performed for an 18-year-old boy with thumb absence and multiple congenital deformities of the fingers and toes.

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In a majority of children with an absent thumb, pollicisation of the index finger is the preferred treatment.<sup>1</sup> However, this may not be functionally and cosmetically ideal in patients in whom there is transverse arrest of several fingers in addition to the thumb. Microsurgical reconstruction of the thumb with a single-stage toe transfer is an attractive option for this problem.<sup>2</sup> The donor site may pose a problem when there are coexistent toe anomalies. Our report describes the transfer of syndactylic second and third toes for thumb reconstruction in an 18-year-old boy with an absent thumb, associated with transverse arrest of several digits and multiple toe syndactylies.

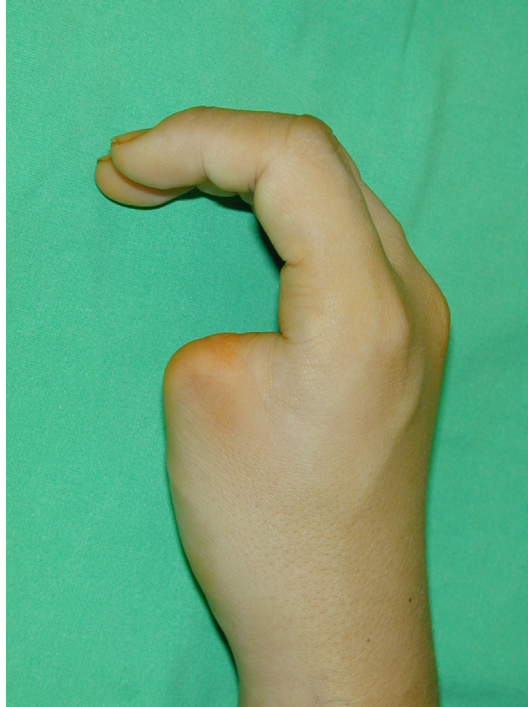
The patient was referred to our service for the problem of bilateral hand and foot deformities since birth. Physical examination of his right hand revealed thumb absence at the metacarpophalangeal level ([Figure 1](#)) and transverse arrest of his right ring and little fingers, as well as transverse arrest of his left second, middle and ring fingers. He also had multiple syndactylies affecting his right second, third and

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**Figure 1.** Preoperative appearance of the right hand.

fourth toes (Figure 2), as well as transverse arrest of his left second to fifth toes with hypoplasia of his left great toe.

Radiographs showed only the base of the thumb proximal phalanges to be present. The right ring and little fingers were amputated at the levels of the middle phalanges. There was no synostosis of the right second, third and fourth toe phalanges. Magnetic resonance angiography of the right foot revealed a single pedicle artery to both the second and third toes.

Double toe to thumb microsurgical transfer was performed in this patient using his syndactylic right second and third toes. Intraoperatively, we found abnormal anatomy of the radial artery and absence of radial carpal arch vessels in the right hand. We identified the dorsal arterial perforating branch of the hand and a cutaneous vein as the recipient artery and vein, respectively. The radial sensory nerve was also identified as the recipient nerve.

In the right foot, the toes were harvested, based on the first dorsal metatarsal artery (FDMA) and a cutaneous draining vein, together with the long flexor, long extensor and two sensory nerves (one plantar nerve and one dorsal digital nerve). The second metatarsal bone was obliquely osteotomised through the metatarsal head leaving the plantar portion intact.

The toes were then transferred to the hand. The metacarpophalangeal and carpometacarpal joints were transfixed with two 0.8-mm Kirschner wires. The tendon transfers, vessel anastomoses and nerve coaptation were then performed in standard fashion. All wounds, including the donor site, were primarily closed (Figure 3).

Post-operatively, the patient was given a short-arm splint. Kirschner wires were removed at 4 months. At 6 months, secondary procedures, including the separation of the combined toes, the trimming of the third toe and debulking of the thenar eminence, were carried out.

On follow-up, the patient was very satisfied with the final appearance. The static two-point discrimination was 7 mm. The active motion of the thumb and index finger–thumb pinch strength were decreased, as compared to the normal hand. The patient could perform many daily activities

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