Short Report Letter

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Complex macrosyndactyly: the long-term functional results of staged reconstruction in two cases

Dear Editor,

Macrodactyly of the hand is a rare congenital disorder of three-dimensional overgrowth that accounts for less than 1% of all congenital hand differences (Cerrato et al., 2013; Waters and Gillespie, 2016). When severe, macrodactyly is functionally limiting and can cause functional impairment to the unaffected digits. No tissue involved in macrodactyly is normal. Osteochondral changes found near the interphalangeal joint render improvements in motion difficult, if not impossible. The digital artery is generally the same size as that of a normal digit, resulting in relative under-perfusion of the enlarged digit (DeValentine et al., 1981), and thus, potentially a higher risk for healing problems after surgery. The presence of syndactyly adds the challenge of digit separation and skin coverage. Early ray resection is often recommended (Waters and Gillespie, 2016) since reconstruction would entail multiple stages, each with the possibility of wound healing complications and ultimately unpredictable functional and aesthetic results. However, despite counselling, some parents may not accept amputation due to social, cultural, or personal reasons. Moreover, in cases of severe macrosyndactyly of the two central fingers, ray resection would either leave an aesthetically unpleasing cleft or, with cleft closure, would narrow the span of the palm and limit the ability to grasp large objects.

We present the long-term functional outcomes of two cases of staged reconstruction of severe complex macrosyndactyly. Both patients initially presented before 1 year of age with complete syndactyly of the enlarged middle and ring fingers with synonychia (Figure 1). There were no remarkable prenatal or postnatal events. Plain radiographs showed fused distal phalanges. Treatment options were discussed, and both families declined ray resections. Therefore,

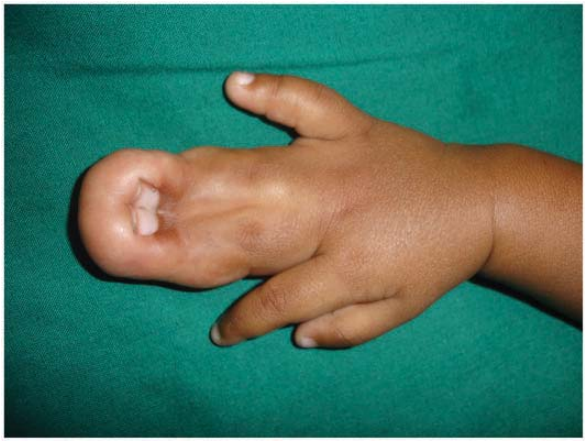

Figure 1. Case 1 before operation.

staged reconstruction was performed. In the first stage, the syndactylized digits were shortened. A dorsal incision was used to excise the enlarged distal and middle phalanges to the level of the tips of the normal fingers, preserving a sufficient volar flap for coverage. Free nail bed grafts from the distal amputated part were placed on de-epithelialized dermis at the appropriate recipient position (Sabapathy et al., 1990). In the second stage, syndactyly separation was performed using a dorsal skin flap to reconstruct the web commissure, interdigitating flaps on the lateral aspects of the digits to avoid scar contractures, and full-thickness skin grafts over exposed fat. Subsequent stages focused on debulking the width of the digits, which involved cortical thinning of the phalanx, reduction of the width of the nail bed, and extra-articular wedge resections to correct angular deformities. No wound healing or flap complications occurred. At final follow-up, 11 and 7 years after reconstruction, Patient-Reported Outcomes Measurement Information System Upper Extremity score was 57 and 41, respectively. Paediatric Outcomes Data Collection Instrument global function score was 99 and 100, respectively (Figure 2). Using the aesthetic domain of the Michigan Hand Outcomes