TISSUE EXPANSION FOR RECONSTRUCTION OF AN UNUSUAL FORM OF COMPLEX SYNDAC TLY

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Tissue expanders can be used over the dorsum of hand and fingers to increase available tissue for flap coverage after release of syndactyly. Herein, we presented an 18-year-old man who had an unusual complex syndactyly in the middle and ring fingers of his right hand. He had also complete fusion of the proximal phalanges. In this report, we described the application of tissue expander to cover separated exposed bones.

Keywords: Complex syndactyly • dorsal flap • tissue expansion • zigzag incisions

Introduction

Surgical reconstruction of complex syndactyly, in a way to have good functional and esthetic results, has been a matter of debate. Usually, local flaps and grafts are enough to cover the defect.1, 2 There are, however, more difficulties in case of bone fusion.3 In case the proximal bones are fused, due to soft tissue shortage, local flaps are not available and skin graft is not feasible.4, 5 In such unusual cases, tissue expanders can be used to provide enough soft tissue for coverage of the exposed bone.6

Herein, we described a patient with complete complex syndactyly who was treated with application of tissue expander.

Case Report

An 18-year-old man was admitted to our hospital for an unusual complex syndactyly between the middle and ring fingers of his right hand. He had several previous operations to release the long web of both right and left hands. His aunt had also syndactyly. Physical examination and X-ray investigation showed that the proximal phalanges of the middle and ring fingers were longer than normal, fused completely, and made a unified wide bone (Figure 1). The middle phalanges were attached only with a narrow soft tissue web. The distal phalanges were free at the distal halves and severely deviated outwardly (Figure 2). He could not flex or extend his proximal and distal interphalangeal joints of these two fingers; there was only nonfunctional contractions.

Creation of a new web space and coverage of bony surfaces after separation of fingers required...
an unusual technique. Since there was not enough skin and soft tissue over the fused phalanges to be used as local flap, we inserted a 30-mL rectangular tissue expander at dorsal aspect of the proximal part of the fused fingers through an incision along the second web space and expanded it over two months at weekly intervals. At the time of the second operation, it was overexpanded to 50 mL (Figure 3). Finally, based on Trassel-Fanda technique, we marked a dorsal trapezoid flap and zigzag incisions on the expanded skin and also volar aspect of the fingers (Figures 4 and 5[A and B]). The expander was removed through the same incision (Figure 6). We separated the fused proximal phalanges with an air power saw and corrected the ulnar deviation of the ring finger with a closing wedge osteotomy. We were able to cover completely all sides of the fingers including exposed bones and newly created web by local flaps without requirement for any skin graft as illustrated in the Figure 7.

The postoperative course was without any complication and the end-result, three months after operation, was acceptable.

Discussion

Syndactyly is one of the two most common congenital anomalies of hand. It can be classified on the basis of the degree of webbing (complete or
incomplete) and presence or absence of skeletal abnormalities.1, 2

Our patient had an unusual form of complex syndactyly and made us confused on how to classify his problem. The proximal phalanges of the middle and ring fingers were fused completely and shortage of skin and soft tissue was obvious. In complex syndactyly, the joint may become stiff or its movement may become restricted.2

The accepted policy about the time of surgery is to do it before one year of age. Under such circumstances, the normal prehensile function of hand will develop and skeletal deformities will be avoided. The purpose of treatment is to restore function and create a cosmetically-accepted appearance.1, 2 Unfortunately, our patient was referred to us too late so that the functional recovery of his fingers seemed to be not satisfactory.

Soft tissue deficiency is a particular problem of complex syndactyly. Although the vast majority of experience in tissue expansion in hand is related to trauma cases,3’ 5 recent reported series of its application in syndactyly is encouraging.6, 9 In this case, after separation of the proximal phalanges, large raw surfaces of the bones and the new web space were covered by flaps created after two months of tissue expansion. Recently, some researchers believe that rectangular tissue expanders are more effective in tissue expansion.10

The technique presented here made it a very useful procedure in congenital hand anomalies for its feasibility, low complication rate, and lack of drawback due to skin graft.

References