The "seagull" flap for syndactyly

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Summary—A technique is described for the treatment of post-burn syndactyly using a seagull shaped flap to produce a realistic commissure that does not subsequently advance distally. It can release volar digital contractures at the metacarpo-phalangeal level and import skin with tactile "adherence" into the distal palmar area.

Numerous operations have been described for the treatment of congenital syndactyly. Few authors have written about post-burn syndactyly in which the main problem is not the separation of the fused digits but rather the creation of a realistic commissure that is wide enough to allow adequate digital separation when grasping large objects. We believe that the dorsal "seagull" flap technique achieves this object.

Technique

Two volar incisions are made starting in what would be the proximal flexion crease of the two involved digits and then proceeding distally to the volar edge of the syndactyly web. The digital vessels and nerves and the deep transverse and superficial palmar ligaments can be easily exposed and identified through this approach (Figs. 1 and 2).

On the dorsal surface of the syndactyly web a "seagull-like" flap is designed, so called because the dorsal curvature of the digits makes the wing-like portions of the flap look like seagull wings when looking into the web from the finger tips. In fact this flap could be regarded as a combination of two flag flaps placed side by side, the width of the pedicle being at least one third of the total width of the flap (Fig. 3). The flap is elevated superficial to the paratenon of the extensor expansion (Fig. 4) and then passed into the web space after release of all the burn scar in the interdigital cleft. The flap is then sutured into the defect left by the volar release (Fig. 5). It should be noted that there is no transverse scar across the web margin and such transverse scar as may be produced will lie well proximal to the web margin.

The secondary defects on the dorsal aspect of the digits are then grafted, preferably with non-hairy full-thickness grafts from the inguinal region (Fig. 6). A tie-over bolus dressing is applied and the hand is splinted with the fingers extended and abducted for ten days. To illustrate the technique we show the result two years after operation in a patient who had sustained a palmar burn complicated by post-traumatic syndactyly. There had been dense scar tissue across his distal palmar pads which interfered with his ability to grip and reduced his span. The "seagull" flap produced a commissure that maintained its depth, looked normal when viewed dorsally and provided the patient with distal palmar skin that was capable of sweating (Fig. 7). This last feature is important in maintaining the patient's ability to retain objects on attempting a power grip. The ability to adhere especially in the distal palm adds considerably to the restoration of function.

Discussion

Since 1808, many methods of treating the commissure in congenital syndactyly have been described and were reviewed by Brown (1977). The aims of treatment are threefold: to create a commissure using a local flap; to separate the conjoined digits by a volar zig-zag approach and to avoid tension by skin grafting all secondary defects.

Less has been written about the treatment of post-burn syndactyly. The dorsal or palmar aspect of the web may be involved. If there is a linear band of scar tissue, the double opposing Z-plasty or the inter-digital butterfly flap described by Shaw et al. (1973) may be useful. Dorsal scarred areas producing web contractures can be treated with skin grafts carefully inset into darts at the web sites. Beasley (1981), Tanzer
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Fig. 1 Post-traumatic syndactyly affecting the base of the index and middle finger. The line of the volar incision is shown.

Fig. 2 The volar incision has been made and the tissues elevated proximally.

Fig. 3 Dorsal view of a patient with post-traumatic syndactyly. The "seagull" flap is outlined. The width of its proximal pedicle should be at least one-third of the total flap width.

Fig. 4 The "seagull" flap has been elevated.

(1948) and MacDougal et al. (1976) have used flaps from the uninvolved sides of the fingers to release dorsal web contractures. Flaps from the sides of the digits are only applicable to minimal web space syndactyly which does not extend too far distally. For extensive syndactyly some authors advocate large sheet grafts within the web space (Bailey, 1980).

In burns involving the palm there may be extensive scarring over the distal palmar pads. Skin grafting with web space darting is unsatisfactory at this site and does not provide the
Fig. 5 Palmar view to show how the wings of the flap are inset across the volar surfaces of the metacarpo-phalangeal joint and how the proximal margin of the flap is well away from the edge of the interdigital web.

Fig. 6 The flap has been introduced into the commissure and the secondary defects are skin grafted.

Fig. 7A. This patient two years previously had a post-burn syndactyly released in this web space. The edge of the pedicle of the "seagull" flap is outlined, as it plunges volarly. In the adjacent web a new "seagull" flap is planned to release a similar syndactyly. B. The volar surface of the same patient with the "seagull" flap outlined in place. The web between the middle and ring fingers has been released and good skin cover now provides tactile adherence on the volar surface of the palm.
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distal palm with durable skin. Palmar flaps to release the syndactyly are rarely feasible as the scarred tissues will not transpose easily and may not survive. If they are used at all the flaps should be short and thick (Krizek et al., 1974). Dorsal flap techniques which may leave a distal transverse scar on the volar margin of the new web may restrict the interdigital span and do nothing for the scarred distal palmar pads.

Our experience has shown that the "seagull" flap is well suited to the treatment of web contractures extending as far distally as the PIP joint where the dorsal skin is not scarred. It corrects the post-burn syndactyly and improves the function of the hand by creating a natural looking wide commissure that will not migrate distally; introducing durable skin the palm, particularly skin with tactile adherence into an area important in power grasp; providing the ability to release simultaneously any volar contractures affecting the metacarpophalangeal joint's extension.

To date most of our patients have presented with post-burn syndactyly, but we see no reason why this technique should not be used in the wider field of congenital syndactyly. In the post-traumatic victims of syndactyly on whom we have used this procedure no secondary revision of the commissure has been required.

References


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