THE THENAR FLAP
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In a paper published two years ago I strongly recommended the use of the palmar or thenar flap (Flatt 1955); indeed, the phrase “we have yet to have an ungrateful patient” was used. Such firm advocacy provoked a lively correspondence, and this paper discusses the details of the procedure and some of the ways by which ungrateful patients may be produced.

SELECTION OF CASES

This is a well established operation with limited but clearly defined indications. The ideal case is that in which the finger has lost the skin and pulp of the terminal phalanx but has the major part of the nail and bone intact (Fig. 1). In such a case virtually a normal fingertip can be produced (Figs. 2 and 3) and the donor site rapidly settles down and is not troublesome (Figs. 4 and 5). The greater the amount of bone that is lost the less likely is it that a flap will give a reasonable finger. If the major part of both the phalanx and the nail bed are destroyed it is pointless to do a flap operation, because the two rigid structures that could give any support to the fat and skin have been lost and a flabby patulous fingertip can alone result.

THE OPERATION

The operation is carried out as follows. The injured finger is covered with a finger stall, and the hand and forearm, excluding the injured finger, are cleaned with Cetavlon and spirit. A two-inch square area on the forearm, the base of the injured finger, and the general area from which the flap is to be raised are infiltrated with local anaesthetic solution.

FIG. 1
The type of skin and pulp loss which should be treated by a thenar flap.
From the forearm a medium-thickness split-skin graft is cut and the donor area is dressed with tulle gras, dry dressing and a crepe bandage. The graft is kept in a damp saline swab.

The injured finger is cleaned and the skin edges and nail are trimmed. The finger is bent over so that the raw tip leaves an imprint of blood on the thenar eminence. It is at this site that the proximally based flap must be cut. The length of the flap should not be more
than twice its width. About two-thirds of the thickness of the subcutaneous fat should be
carried on the flap, the remaining fat being left as a bed for the graft (Fig. 6).

The split-skin graft is sewn into the defect created and turned up on to the raw surface
of the flap at its base.

The finger is flexed and the flap sutured into the defect, being attached at its distal end
to the edge of the nail bed. A firm attachment can be obtained by passing the sutures through
the nail, which should be cut back about a tenth of an inch to allow accurate contact of the

Fig. 6
A flap raised to show the fat left on its under-surface.

soft-tissue edges (Fig. 7). A few side sutures are permissible, but no attempt should be made
to close fully the two sides of the defect. To do this would stretch the flap transversely and
might obliterate the vessels that run longitudinally.

A small wedge-shaped gauze dressing is wrapped in tulle gras and placed between the
palmar surface of the finger and the split-skin graft, thereby ensuring the necessary pressure
to ensure take of the graft.

The finger is immobilised by a long malleable aluminium splint, padded with foam rubber
on its contact surface, which passes over the finger and proximal to both surfaces of the
wrist (Fig. 8).

POST-OPERATIVE CARE

The dressing in the palm is changed every fourth day.

On the fourteenth day the base of the flap is severed after an injection of local anaesthetic,
and the flap is sutured in place of the fingertip. Active movements are encouraged.

The forearm donor site should be left untouched for at least ten days and preferably
for fourteen days. When the dressing is removed at this time, the area should be epithelialised
and no further dressings are necessary.

The sutures in the finger should be removed seven to ten days after separation of the flap.
FIG. 7
Two flaps to show method of attachment and the 90-degree angle at the base.

FIG. 8
A simple but effective method of immobilisation.
Figure 9—The donor site on the thenar eminence for the four fingers—each having been marked individually.

Figure 10—The result of using ill advised donor sites. Note how the little finger is attempting to take up the normal anatomical position.

Figure 11—The flap was detached from this finger after one week: only a small part near the nail survived.

Figure 12—The greatest extension possible in a finger in which the flap was left attached for four weeks.
POSSIBLE CAUSES OF IMPERFECT RESULTS

Site of flap—The vital point in the procedure is the selection of the donor site for the flap. If each finger is flexed in turn so that it touches the thenar eminence, it will be seen that a very small area of thenar skin is actually touched (Fig. 9). Although the actual sites of contact vary in different individuals, it must be stressed that this general area is the correct donor site and that the areas touched by the fingertips when all are flexed together are not the ones from which flaps for the individual fingers should be cut. There is a natural radial deviation of the flexed fingers and to force a finger, or fingers, into an unnatural position will produce so much tension on the flap that it will pull away, infection will result, and the operation will fail (Fig. 10).

To attempt to close the palmar donor site by direct suturing is, I believe, an error in technique which will frequently cause disaster. An actual epithelial defect has been created in the inelastic palmar skin and it should be closed only by grafting and not by suturing under tension.

Position—The actual position of flexion of the finger is important. The finger should lie with medium flexion of all three joints. If it is tightly flexed at all joints a too distal donor site will be selected, and if the distal interphalangeal joint is extended the flap will probably bend back on itself and obliterate its blood supply. The ideal position is one in which the flap is at right angles to the thenar skin (Fig. 7).

Time—An arbitrary time of two weeks’ attachment is suggested. Experience has shown that this is long enough to allow a satisfactory blood supply to grow in from the finger. To separate the flap at a week will inevitably lead to loss of most of the flap (Fig. 11). To leave the flap attached for a longer period will not improve the blood supply and will invite a stiff finger (Fig. 12).

COMMENT

The title “thenar” flap was deliberately used to stress the most suitable donor site, and its use in correctly selected cases will produce a better functioning finger in one month than can be achieved in a longer time by any other method. Badly done, the operation can cripple a hand.

The photographs are largely the work of Mr R. F. Ruddick, A.I.B.P., A.R.P.S., and Miss P. Burgess, A.R.P.S., of the London Hospital Photographic Section, and I am indebted to them for their valuable assistance.

REFERENCE