Abdominal Pedicle Flaps To The Hand And Forearm

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A thin flap for reconstruction of the palm:

A flap for the palm must be thin to be effective. A superiorly based flap is often used and the hand and wrist must be held in full supination with the use of a Kirschner wire through the radius and ulna. Because the distal ulna is small it is always better to place the Kirschner wire through the ulna first then into the radius while they are held in the desired degree of supination/pronation. A suction drain is frequently helpful because of the concavity of the palm.

Case No 1:

A 31-year-old man caught his right dominant hand in a printing press roller. Examination revealed a distal based ulnar avulsion flap extending up onto the dorsum of the hand on the ulnar side. Most of this was nonviable (see photos 10.1A, B).

Stage I. He was taken to surgery. His wounds on the hand were debrided and W's were made along the borders of the wound. The dorsal wound could be covered with a split thickness skin graft (see photo 10.1C). A large flap based superiorly was designed by tracing the recipient wound of the palm on a sterile plastic drape.

It was raised and thinned leaving the base of the flap full thickness (see photos 10.1D, E). At the end of the procedure, the relatively thin flap can be seen with the full thickness stem of the flap (see photo 10.1F).
Stage II. Twenty-two days later the flap was divided carrying some additional tissue along the ulnar side and dorsally. Final photos show the result at 2 years postop (see photos 10.1G, H).

The use of internal fixation with abdominal flaps in complex injuries:

Kirschner wires can be used in a variety of ways to hold the hand in the position of function while undergoing the flap reconstruction. The Kirschner wire can be used to hold the hand in various positions of supination and/or pronation by drilling a 0.62 inch Kirschner wire across the ulnar and into the radius while the wrist and hand are in the desired position. The Kirschner wires can be bent into a bayonet shape to hold
space where there has been significant bone loss. The bayonet Kirschner wire can also be frequently used as a spreader to maintain the distance in the thumb index web space (see examples in drawing 10.1.).
Case No. 2:

An 18-year-old female suffered a punch press injury to her left hand. She suffered significant degloving of the skin of the thumb as well as severely crushed index finger and complete absence of the metacarpal III presumably lost by the mechanism of the injury. There was also severe degloving of much of the palm as well as the dorsal surface of the hand.

Stage I. the patient was taken to surgery where extensive debridement was performed, fractures were stabilized and the metacarpal III bone loss was splinted and the space maintained with a bayonet Kirschner wire (see photos 10.2A, B).

A large abdominal flap based inferiorly was designed to cover both the dorsal and volar areas of skin loss. The flap incorporates both superficial inferior epigastric vessels as well as the left superficial circumflex iliac vessels. In the photo the anterior superior iliac spine is noted with the "X". The design of the flap and planning is noted on the glove wrapper paper (see photos 10.2C, D).

The flap is seen in its final application to the hand with the stem of the flap wrapping around the metacarpal and other remnants of the thumb (see photos 10.2E, F).
Stage II. One month later the stem of the pedicle was transected, excess fat excised and closed.

Stage III. Two months later or three months following the injury, the flap was revised to a minimal degree.

Stage IV. Four months later or seven months following the injury along the finger remnants were transferred to the thumb remnants, amputating the thumb metacarpal at the big portion and amputating the long finger through the middle of the proximal phalanx (see photos 10.2G, H, I) Using a peg type bone graft, fusion of the proximal phalanx to the thumb metacarpal was performed (see drawing 10.1).
Final result at ten years with excellent function (see photos 10.2J, K, L).