

Unique Techniques or Approaches in Microvascular and Microlymphatic Surgery

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KEYWORDS

- Microsurgical flaps • Arm transplant • Toe-to-hand transfer • Microlymphatic surgery
- Breast reconstruction

KEY POINTS

- Strategies for treating donor-site-depleted patients who require transfer of soft tissue or bone.
- Fillet flaps from a severely traumatized lower extremity can be implanted to the forearm for temporary storage and transferred back to cover the amputated stump of the lower extremity.
- Updates and summaries of arm transplant and postsurgical treatment.
- The cosmetics of toe-to-hand transfer can be improved through insertion of free tissue transfers to the volar aspect of the transferred toe.
- Diagnostic images and surgical treatment of breast lymphedema.



Video content accompanies this article at <http://www.plasticsurgery.theclinics.com>.

INTRODUCTION

Half a century after the advent of microsurgery, limited opportunities for straightforward innovations remain. However, many challenging clinical problems persist. Some of those difficult problems have been overcome with novel techniques and approaches. The lead editor (JBT) of this issue invited a panel of senior surgeons known for innovation to discuss their unique techniques and approaches to topics not covered by independent

articles in this issue. The editor is pleased to present the wisdom, technique, and experience of these well-reputed surgeons.

FLAP PREFABRICATION FOR DONOR-SITE-DEPLETED PATIENTS

Jin Bo Tang: for years you and your colleagues have faced some of the most difficult situations in reconstructive microsurgery and treated those patients with innovative approaches. Can you

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summarize your current approaches for donor-site-depleted patients who have already undergone multiple microsurgical transfers, for whom lack of good donor tissues presents a problem?

Pedro Cavadas and Alessandro Thione

Complex reconstruction usually entails the use of specialized tissues. Such patients often have already been operated on, and optimal donor sites may be depleted. Flap prefabrication may allow the use of the required specialized tissues when the native donor areas are not available. Flap prefabrication comprises vascular induction with a vascular carrier, flap preassembly (mainly skeletal), and pregrafting (or prelamination). First described in the early 1990s, flap prefabrication has never become popular, in part because of its technical difficulty.¹ Pregrafting has been well described and is not discussed here.

Vascular induction

Vascular induction is a modality of prefabrication that exploits natural wound healing and spontaneous vascular reconnection around vascularized tissue. The vascular carrier is usually thin microvascular subcutaneous tissue with a long pedicle, implanted under the surface to be transferred.² Radial forearm or dorsalis pedis flaps are the most useful carriers; anterolateral thigh (ALT) flaps do not have a pedicle long enough for most indications. The pedicle should be planned to allow pedicled transfer of the prefabricated flap if possible. In facial reconstruction this is usually the case. The pink supraclavicular skin, the submental beard, or the hairy scalp can be transferred as a prefabricated flap for facial resurfacing in unfavorable cases. The external nose can be reconstructed with a prefabricated supraclavicular flap in the absence of frontal donor areas, using a radial forearm flap as a carrier (**Fig. 1**). The entire nose can be



Fig. 1. (A) A patient with severe facial burn, after previous unsuccessful attempts at nasal reconstruction resulting in infected and exposed alloplastic material and depletion of both frontal forehead flaps. (B) The supraclavicular pink skin was used for flap prefabrication. A subcutaneous radial forearm flap was placed subdermally and anastomosed to the facial vessels. (C) Two months later the prefabricated flap was elevated and transferred as a pedicle flap for nasal external coverage. The remnants of the local flaps were recycled for internal lining. (D) End result after nasal reconstruction. The perioral area was reconstructed with submental flaps.

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