

Expert Commentary

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Reconstructive microsurgery has progressed from its initial ability to achieve a wound coverage using free tissue transfer to new levels of sophistication in regard to restoration of function and aesthetics when dealing with acquired or congenital problems in all body regions. The ability to select optimal reconstructive procedure, concerning suitable donor tissue and to transfer them directly to the sites of the tissue or/and functional defects has permanently altered many reconstructive methods and has expanded the indications for microsurgery. Advances in anatomy, concerning vascular and nerve supply, established the unique role of free tissue transfer in reconstructive surgery. However, in my experience in order to select the optimal reconstructive procedure, the following guidelines have to be taken into consideration:

1. Definition of reconstructive requirements according to assessment of damaged or missing structures based on:
 - a. Anatomical requirements (localization, extent of soft/bone loss-size and depth, extent of nerve injury, quality of vascular supply, presenting infection ...)
 - b. Functional requirements (restoration of sensibility, mobility ...)
 - c. Aesthetic requirements (skin color/texture, volume ...)
2. Etiology of the defect
 - a. Trauma (complexity, full spectrum of severity ...)
 - b. Tumour resection/radiation
 - c. Infection
 - d. Congenital anomalies
 - e. Vascular disease

3. Flap features (characteristics)
 - a. Size, color, bulk, pliability, durability
 - b. Composite flap possibilities (tendon, nerve, bone ...)
 - c. Sensibility
 - d. Functional motor units
4. Donor site morbidity
5. Time of reconstruction
 - a. Primary/immediate
 - b. Primary delayed
 - c. Secondary
6. Needs for secondary procedure
 - a. Tendon, nerve, bone repair
 - b. Implant use ...
7. Age and general condition of the patient
8. Capability of the surgical team
9. Equipment available in the hospital.

The goal in reconstructive microsurgery today is to obtain the best possible result regarding function and aesthetics, with minimal donor site morbidity. It is known that the major role of free flaps remains the coverage of difficult wounds. However, after the first successful functioning neurovascular muscle, the work in this area has led to exciting concepts on the capability of functioning muscle to restore facial expression, to improve extremity flexion or extension, or to replace paralyzed urinary bladder detrusor. Functional reconstruction is a most fascinating challenge.

 **Access Tables 3.1 to 3.5 online at**
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