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<b>A Global View of Digital Replantation and Revascularization</b>	<b>189</b>
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Survival rates of digital replantation vary in different regions and countries, and Asian surgeons see more challenging cases and have developed some unique methods. Replantation of multiple digits in one or both hands can follow a structure-by-structure method or a digit-by-digit method. For replanting all 10 digits, 3 or 4 teams should be organized. Flow-through flaps, often venous flaps, can be taken from the distal forearm or lower extremity to repair defects of soft tissues and arteries. A pedicled digital artery flap from the adjacent digit can also repair tissue defects and supply blood to the replanted digit.

<b>Exploring New Frontiers of Microsurgery: From Anatomy to Clinical Methods</b>	<b>211</b>
Zeng Tao Wang, You Mao Zheng, Lei Zhu, Li Wen Hao, Ya Bin Zhang, Chao Chen, Li Feng Xia, and Lin Feng Liu	

This article presents the authors' understanding and experience concerning anatomic studies and clinical methods in microsurgical hand reconstruction. The 4 parts of this article include anatomic study of the hand for developing new flaps; application of mini-flaps from the hand, including clinical experience with 8 unique flaps in the hand; anatomic and clinical considerations concerning several flaps from other parts of the human body; and our experience with vascularized free toe joint transfer.

<b>Severe Crush Injury to the Forearm and Hand: The Role of Microsurgery</b>	<b>233</b>
Francisco del Piñal, Esteban Urrutia, and Maciej Klich	

The main goals of treating severe crush injuries are debriding away devitalized tissue and filling any resultant dead space with vascularized tissue. In the authors' experience, the most ideal methods for soft tissue coverage in treating crush injuries are the iliac flap, the adipofascial lateral arm flap, and the gracilis flap. Accompanying bone defects respond very well to free corticoperiosteal flaps. Digital defects often require the use of complete or subtotal toe transfer to avoid amputation and restore function to the hand.

**Medial Femoral Trochlea Osteochondral Flap: Applications for Scaphoid and Lunate Reconstruction**

257

James P. Higgins and Heinz K. Bürger

Vascularized osteochondral flaps are a new technique described for the reconstruction of challenging articular defects of the carpus. The medial femoral trochlea osteochondral flap is supplied by the descending geniculate artery. This osteochondral flap has shown promise in the treatment of recalcitrant scaphoid proximal pole nonunions and advanced avascular necrosis of the lunate. The anatomy, surgical technique, and results are discussed, with clinical cases provided.

**Vascularized Small-Bone Transfers for Fracture Nonunion and Bony Defects**

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Ai Dong Deng, Marco Innocenti, Rohit Arora, Markus Gabl, and Jin Bo Tang

Vascularized small-bone grafting is an efficient and often necessary surgical approach for nonunion or necrosis of several bones in particular sites of the body, including scaphoid, lunate, distal ulna, and clavicle. The medial femoral condyle is an excellent graft source that can be used in treating scaphoid, ulna, clavicle, or lower-extremity bone defects, including nonunion. Vascularized bone grafting to the small bones, particularly involving reconstruction of damaged cartilage surfaces, should enhance subchondral vascular supply and help prevent cartilage regeneration. Vascularized osteoperiosteal and corticoperiosteal flaps are useful for treating nonunion of long bones.

**Compound or Specially Designed Flaps in the Lower Extremities**

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Bruno Battiston, Davide Ciclamini, and Jin Bo Tang

Novel and combined tissue transfers from the lower extremity provide new tools to combat soft tissue defects of the hand, foot, and ankle, or fracture nonunion. Flaps can be designed for special purposes, such as providing a gliding bed for a grafted or repaired tendon or for thumb or finger reconstruction. Propeller flaps can cover soft tissue defects of the leg and foot. In repairing severe bone and soft tissue defects of the lower extremity, combined approaches, including external fixators, one-stage vascularized bone grafting, and skin or muscle flap coverage of the traumatized leg and foot, have become popular.

**Complex Microsurgical Reconstruction After Tumor Resection in the Trunk and Extremities**

299

Omar N. Hussain, M. Diya Sabbagh, and Brian T. Carlsen

Reconstruction of soft tissue defects following tumor ablation procedures in the trunk and extremities can challenge the microsurgeon. The goal is not just to provide adequate soft tissue coverage but also to restore form and function and minimize donor site morbidity. Although the principles of the reconstructive ladder still apply in the trunk and extremities, free tissue transfer is used in many cases to optimally restore form and function. Microsurgery has changed the practice in soft tissue tumors and amputation is less frequently necessary.

**Pediatric Microsurgery: A Global Overview**

313

Ali Izadpanah and Steven L. Moran

As microsurgical expertise has improved, allowing for the safe transfer of smaller and more refined flaps, free tissue transfer has continued to gain popularity for the

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