Microsurgical flow-through flaps for reconstruction of volar tissue defect of fingers

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Background: Composite tissue defect of the volar surfaces of fingers are frequently associated with digital vessel damage. Different reconstructive methods were used for such injuries, like digital artery flap from adjacent finger, A-A typed flow-through venous flap, or vein graft combined with a regional flap. Flow-through glabrous flaps can provide esthetic tissue coverage as well as revascularization.

Methods: Between June 2010 and April 2017, we prospectively studied the use of Microsurgical flow-through glabrous flaps to achieve simultaneously digital revascularization and soft tissue coverage in 20 fingers of 17 patients who experienced volar injuries, comprising 7 great toe fibular flaps, 4 medial plantar flaps, 2 pedismedialis flap, 3 hypothenar flaps and 4 thenar flaps. The nerve passing through the great toe fibular flap or medial plantar flap was used to repair digital nerve defects.

Results: All flaps survived completely. During a mean follow-up period of 13.6 months, the majority recovered excellent appearance and function. The flaps had the characteristics of normal finger volar skin: hairless, with similar texture and color. The sensation of finger pulp which repaired with neurovascular flap gained satisfactory recovery.

Conclusions: Glabrous flow-through flaps provide excellent reconstruction for fingers with volar injuries associated with digital vessel damage. The great toe fibular flap and the medial plantar flap are reliable and useful options for complicated finger injuries associated with digital vessel and nerve injuries. Flow-through thenar flap is our first choice if the patient denied to harvest flap from foot.

Biography
Chao Chen is an attending doctor in Department of Hand and Foot Surgery of Shandong Provincial Hospital affiliated to Shandong University. He graduated from Shandong University, School of Medicine and got a master degree of orthopedic in 2012. He got a PhD degree of Clinical Anatomy at Southern Medical University in 2015, and his major research subject during PhD’s study is microsurgical anatomy, which dramatically improves his level of microsurgery. Chen has been a microsurgeon since he finished orthopedic training in 2014. His department is one of the most famous microsurgical centers in China, and he got good microsurgical training with a guide of Professor Zengtao Wang and Dr Liwen Hao. His specialties including hand surgery, limb re plantation, thumb and finger esthetic reconstruction, vascularized tissue transplantation. He can successfully anastomose small vessel with caliber of 0.2 mm. He has performed over 150 super microsurgeries (including fingertip replantation and mini-flap transplantation) and has total success rate more than 90%. Of all his more than 100 vascularized tissue transplantation surgeries, only one case failed.

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