

Commentary on “The risk factors for failure of an upper extremity replantation: Is the use of cigarettes/tobacco a significant factor?”

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Traumatic amputation of fingers or hand is not uncommon. Because of the advance in microsurgical technique and aftercare, replantation has been one of the commonly performed microsurgical procedures in emergent settings. In our previous retrospective study with multilevel generalized linear regression model, smoking did not increase the risk of replant failure [1]. The survival of replants was not affected by underlying medical issues such as diabetes or hypertension either. However, the success rate of replantation was significantly affected by the age of the patient and the mechanism of injury. Patients older than 50 years and those with avulsion or crush injuries tended to have a higher risk of replant failure. Our results do not mean that smoking has no adverse effect on replantation; its effect might be outweighed by that of patients' age and trauma mechanism.

Previous study by Black et al., demonstrated that nicotine magnifies the vasoconstrictive effect of norepinephrine and impairs endothelium-dependent skin vasorelaxation in isolated perfused human skin flaps [2]. In our clinical practice, for healthy young vessels, smoking did not greatly affect the results of replantation. The recipient and proximal arterial stumps are usually dissected for a distance of 1 to 1.5 cm with removal of adventitia, so that there is a distance of arterial run-off, which is important to prevent or reduce arterial spasm. However, if the patient is old with rigid arterial wall, then the removal of adventitia has

limited effect, and vasospasm may be aggravated in these aged patients with a smoking habit. Similar vasospastic condition happens in cases with crush or avulsion injuries, and smoking might further aggravate vasospasm; therefore, compromise the result of replantation.

In order to overcome vasospasm during replantation, other than adventitiectomy, release of the pressure around the digital arteries could be performed by lateral skin incision of the finger at 3 and 9 o'clock direction with division of Cleland's and Grayson's ligaments, which is a concept similar to compartment release in crush injuries of extremities. In addition, Professor Tsu-min Tsai has advocated ulnar tunnel release and sympathectomy of ulnar artery during replantation if significant vasospasm happens. Since replantation is usually under emergent setting and we could not pick our patient most of the time, these techniques could help us to optimize the result and to reduce operation time.

References

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