A Study of the Post-Op Lymphedema of Prefabricated Flaps and its Prognosis

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Introduction: The post-op flap edema results in the insufficient blood supply, delay in the healing process and even necrosis of flaps. It is considered to be one of the main causes of surgical failure. [1,2] The published literature mainly focused on the edema in axial flaps, and the studies of the edema in prefabricated flaps are lacking.[3,4] The aim of the article is to analyze the nature of the post-op edema in prefabricated flaps, to determine whether it is lymphedema, and to study the prognosis of the edema.

MATERIALS AND METHODS: From 2011 to 2014, 15 cases of post-op edema in superficial temporal fascia prefabricated flaps were studied and each case was followed for 5 months. We used ultrasound and indocyanine green (ICG) fluorescent lymphography to study the nature of the edema. Apart from that, we monitored the recovery process of the post-op edema by a) measuring the horizontal diameter of flaps by a tape, b) measuring the thickness of flaps by the ultrasound, c) monitoring the condition of edema by ICG and d) monitoring the reconstruction and recanalization of the lymphatic system by ICG and calculating the average velocity of ICG moving in the lymphatic vessels of flaps.

Results: As for the nature of the edema, the ultrasound conducted 3 days post-op was consistent with lymphedema(Figure 1). The ICG florescent lymphography immediately after the operation showed that the lymphatic vessels in flaps were obstructed. As for the recovering process of the edema, the thickness and the diameter of flaps reduced significantly from 3 days to 6 days post-op. The fluorescence image of ICG in the flaps 12 days post-op appeared to be stardust (mild to medium lymphedema), and at the point of 3 weeks post-op it appeared to be splash（subclinical to mild lymphedema). The velocity of ICG moving in the lymphatic vessels of the flap increased during the 5 months. ICG started to drain into the robust collected lymphatic vessels and lymph nodes in the neck after 5 months post-op(Figure 2).

Conclusion: The post-op edema in the prefabricated flaps is lymphedema. The lymphatic drainage system recovers in 6 days after the operation. It is reconstructed along the lymph nodes. The edema disappears in 2-3 weeks post-op, the reconstructed the lymph system matures in 5 months.

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FIGURE LEGEND:

Figure 1. The ultrasound image of prefabricated flap 3 days post-op. The five-pointed star shows the lymphedematous area.

Figure 2. Indocyanine green (ICG) fluorescent lymphography for the prefabricated flap 5 month later. Double arrows point at the robust collected lymphatic vessel. Single arrow points at the lymph node in neck.


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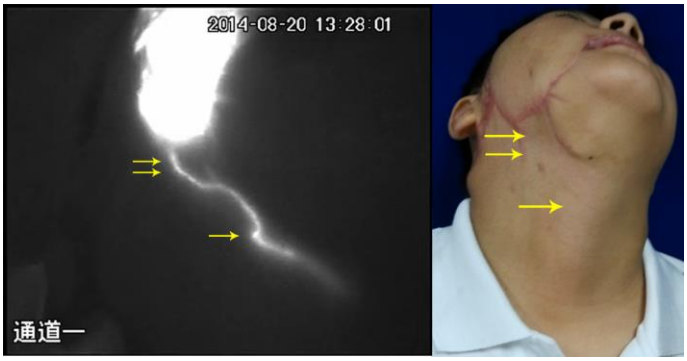
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