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De-Epithelization of Free Flaps with a Diamond-Coated Round Burr in Head and Neck Reconstruction: A Novel Technique

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De-epithelization of free flaps is useful for contour correction and filling up of the dead space, essential in head and neck reconstruction and, at times, done in other areas of reconstruction using pedicled or free flaps.

We have developed a safe and faster de-epithelization technique of flaps with minimal risk of injury to the subdermal plexus. We recommend using a diamond coated round burr of size 3.5 mm to 5 mm mounted over a micromotor at 30,000 rpm to de-epithelize flaps under loupe magnification (►**Fig. 1**, ►**Video 1**). Partial necrosis of the flap is a significant risk factor seen after de-epithelization due to injury to the subdermal plexus, particularly when the thickness of the skin is too thin. Thus, direct visualization of the dermal plexus under loupe magnification is required. While using burr, normal saline should be constantly irrigated to prevent overheating and damage to the dermal plexus. Irrigation also helps in the gliding movement of the burr over the skin. Razor blades, scissors or conventional scalpel blades are regularly used for de-epithelization. Still, they carry the risk of injury to the subdermal plexus and take a longer time when large areas are to be de-epithelized. De-epithelization with burr takes not more than 2 to 5 minutes, depending on the size of the area to be de-epithelized. This technique involves less surgical assistance than the classical approach in which traction and countertraction are needed and is more effortless, handy, and requires less skill. This

Fig. 1 Flap de-epithelisation with burr.

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technique prevents over-thinning, compensating for filling up the dead space created due to resection. Authors sometimes faced difficulty during de-epithelizing the flap margins, which is overcome by trimming the margins by 2 to 3 mm after de-epithelization of the marked area is over. The other minor issue is that a minuscule amount of skin is left behind at points near the hair follicle, which has never caused any problems at follow-up. We have experience with more than 30 cases with this technique without any complications. Thus, we recommend this technique to reconstructive surgeons for faster, effortless, and more effective de-epithelization of flap skin paddle.

Video 1

Demonstration of flap de-epithelisation procedure. Online content including video sequences viewable at: https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0042-1759694.

