

Optimizing Intraoperative Evaluation of Mastectomy Skin Flap Viability

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Sir,

Breast reconstruction is one of the most commonly performed operations by plastic surgeons, with a majority of cases being performed immediately at the time of mastectomy.¹ A key factor in the success of immediate breast reconstruction is mastectomy skin flap (MSF) viability. MSF necrosis can lead to infection, implant extrusion, reoperation, and reconstructive failure.² Our ability as reconstructive surgeons to intraoperatively assess MSFs upon implant placement is critical because this allows the excision of nonviable skin at the index surgery with the goal of preventing MSF necrosis postoperatively (Fig. 1).

The use of intraoperative laser-assisted indocyanine green dye (ICG) angiography has been found to be cost-effective, reducing postoperative complications and reoperations, and to be more efficacious at predicting MSF necrosis than by clinical examination.^{2,3} ICG angiography is used to identify threatened MSFs and to determine whether an implant should be immediately placed. Surgeons frequently perform ICG angiography at the end of the mastectomy, before the implant placement. However, this may provide misleading information, as MSF perfusion decreases with an increasing pressure from an inflated tissue expander (TE) or implant.⁴ The authors present a novel technique of simulating the increased tension in the MSFs before performing ICG angiography without having to commit to placement of a TE or sizer. The authors believe that placing the MSFs under a temporary stretch allows for a more accurate assessment of perfusion, providing improved surgical decision-making.

TECHNIQUE

Following mastectomy, hemostasis is achieved, the wounds are copiously irrigated, and the skin flaps are evaluated clinically. The mastectomy defect is then packed with saline-dampened laparotomy pads. In the senior author's experience, each moistened laparotomy pad corresponds to 60–90 ml of TE fill. The MSFs

are temporarily closed with skin staples, the skin flaps are clinically evaluated again, and the ICG angiography is performed. Areas for debridement based on clinical examination and the ICG angiography are identified and excised. The TE is then prepared on the back table inflating with air.⁵ The quantity of air is based on the laparotomy pad estimation. Acellular dermal matrix is commonly used for prepectoral reconstructions, and when used, it is secured to the expander and chest wall. The TE is placed into the mastectomy defect, the skin is again temporarily closed, and ICG angiography is performed a second time. Additional debridement is performed as needed, the wounds are again irrigated, and the skin is closed in layers over a closed suction drain. Nitroglycerin ointment is placed on the skin flaps and covered with an occlusive dressing for 3 days postoperatively. Perioperative antibiotics are used up to 24 hours only. A similar technique is performed for delayed reconstruction. Temporary closure over the moistened laparotomy pads in delayed reconstruction allows for tissue “creep,” which requires additional operative time. The final volume of air inflated into the TE is typically less than that required for immediate reconstructions due to decreased compliance of the MSFs. With these techniques, the senior author has noted decreased MSF necrosis and minimal infection and TE loss.

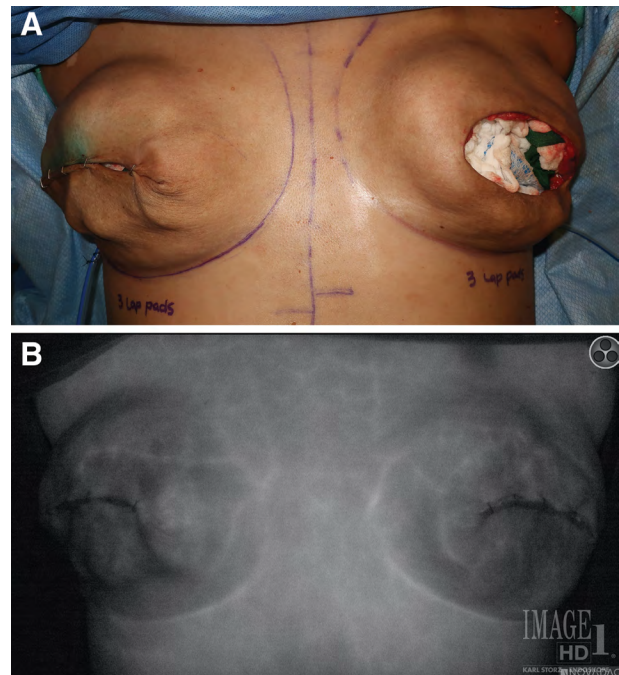


Fig. 1. Laparotomy pad packing technique. A, Temporary fill of MSFs with laparotomy pads and closure with skin staples before ICG angiography. B, ICG angiography of MSFs filled with 3 laparotomy pads on both sides.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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