

Importance of Cadaveric Dissections and Surgical Simulation in Plastic Surgery Residency

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As plastic and reconstructive surgeons, our intimate knowledge of anatomy enables us to operate with confidence across the human body and allows us to engage with colleagues across multiple surgical disciplines to solve complex problems. This also poses a significant challenge to operating surgeons, as they must be adept with the surgical anatomy of the entire human body to deliver optimal surgical outcomes. Precise knowledge of anatomy is an absolute prerequisite for surgical success.

Historically, surgical training was supplemented with embalmed cadaveric dissections, as this foundation proved to be an important adjunct to intraoperative education.¹ This was thought to be essential because it provided early exposure to human anatomy in an environment where residents could explore without time constraints and could also ask questions to faculty without worry of morbidity to patient care. Recently, ACGME residency guidelines have been amended through work hour restrictions and strict faculty supervision that limit resident independence in the operating room. This has far-reaching implications, as limited operative independence may lead to decreased resident confidence and a diminished surgical skill set.² The erosion of resident autonomy has forced our surgical educators to search for practical solutions to augment resident education and, in turn, operative skill set. As we know, the fear of surgery is the fear of anatomy, and this proverb underscores the importance of utilizing surgical simulation and cadaver dissections to achieve these goals.

Multiple institutions have implemented a cadaver-based curriculum showing promising results. Srinivasan et al³ and Askari et al⁴ developed curriculums at their respective institutions with the goal of standardizing exposure to fundamental skills to improve resident autonomy.^{3,4} They found that their cadaveric curriculum increased resident autonomy, as both residents and faculty had improved confidence in the trainee's operative skills. In addition, faculty observed an increase in knowledge of anatomy

and in technical skill ability amongst all resident cohorts. Faculty members surveyed at the conclusion of the course also believed that the residency program should continue cadaver-based studies and simulations.^{3,4} Additional benefits of surgical simulation or cadaver dissections include the potential to identify poor technical knowledge and poor surgical techniques early in training, which allows for individualized educational plans for struggling residents.³ Conversely, skilled junior residents will obtain the opportunity to refine more complex surgical skills.

In conclusion, although cadaveric dissections and surgical simulation models will never be a complete substitute for operative experience, history has shown us the importance of using these resources as an adjunct in residency training (Fig. 1). In today's landscape for surgical education,

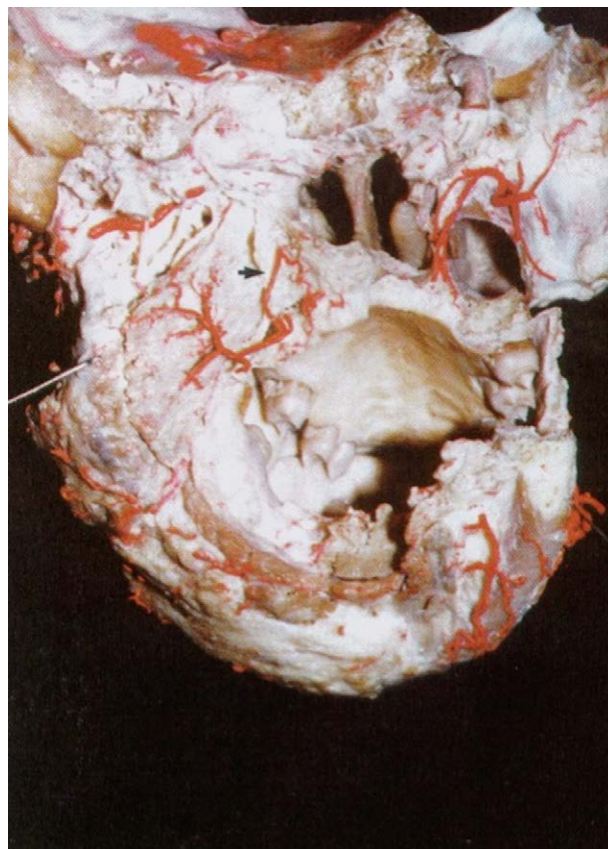


Fig. 1. Landmark anatomical study by Siebert et al⁵ describing the blood supply to the LeFort 1 maxillary segment. From Siebert JW, Angrigiani C, McCarthy JG, et al. Blood supply of the Le Fort I maxillary segment: an anatomic study. *Plast Reconstr Surg.* 1997;10 (Supp. 1):843–851. © 1997, Wolters Kluwer Health. Used with permission. The Creative Commons license does not apply to this content. Use of the material in any format is prohibited without written permission from the publisher, Wolters Kluwer Health, Inc. Please contact permissions@lww.com for further information.

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utilization of these resources could translate to more faculty entrustment, increased resident confidence, and increased autonomy in the operating room. Although this model may be cost-prohibitive, there have been multiple strategies employed to mitigate this issue, such as outreach to program alumni, business and industry sponsorship, or creating collaborative relationships amongst departments.¹ Furthermore, we recognize the differences in access to cadaveric models in international training programs and hope to reconcile these disparities to achieve widespread access to cadaveric dissections. While surgical simulation and cadaver studies in the current literature have focused on technical skill acquisition, we need to begin to validate patient outcomes and safety benefits, trainee confidence levels, and degree of achieved autonomy to supplement the literature.

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