

RESEARCH LETTERS

Deep-Plane Face-lift as an Alternative in the Smoking Patient

Over the past 30 years, face-lift surgery has progressed from a more limited skin elevation with no treatment of the superficial muscular aponeurotic system (SMAS)¹ to more extended elevation of the skin and SMAS.² Hamra³ popularized the traditional deep-plane technique lifting the SMAS and skin as a compound unit with a thicker, well-vascularized flap. This flap is elevated in a sub-SMAS dissection in the inferior cheek and superiorly transitioning to a supra-SMAS plane just superficial to the zygomaticus muscles in the superior medial cheek.

The effects of nicotine on wound healing and flap viability have been associated with superficial skin necrosis and hematoma in the patient undergoing a face-lift.⁴ The risk of complications is increased with extensive subcutaneous face-lifts. There have been numerous studies examining the detrimental effects of smoking and wound healing (eg, Rees et al⁴ and Mosely and Finseth⁵). The major effect of nicotine on wound healing is that it increases platelet adhesiveness and increases blood viscosity, leading to an increase in thrombotic microvascular occlusion and eventually tissue ischemia.

The survival of a face-lift flap depends on adequate blood supply and oxygenation. Most surgeons consider smoking a relative contraindication to performing any type of face-lift. To decrease the chance of skin necrosis, some have adjusted their techniques by performing more limited undermining of the skin. This compromises the degree of correction of facial laxity and long-term results. Smoking can double the chances of hematoma collection postoperatively.⁶ The purpose of our study is to show that a deep-plane face-lift with extensive undermining can be performed safely in smokers with limited postoperative complications.

Methods. We reviewed the medical records of 181 consecutive patients who had undergone a deep-plane face-lift from November 2008 to November 2010. The senior author (A.A.J.) was the primary surgeon for all patients. This factor minimized the variance in technique. The extent of subcutaneous undermining progressed anteriorly to the deep-plane entry point. A line that extends from the angle of the mandible to the lateral canthus marks this entry point. The subcutaneous flap and SMAS are dissected as 1 compound unit from this point anteriorly in a sub-SMAS plane in the inferior cheek and superi-

orly transitioning to a supra-SMAS plane just superficial to the zygomaticus muscles in the superior medial cheek. The zygomaticus-cutaneous ligaments are lysed during this dissection connecting the 2 pockets. All patients were advised to quit smoking at least 2 weeks preoperatively and to continue abstinence for 2 weeks postoperatively; however, if a patient did not stop smoking she still underwent a deep-plane face-lift. There were no patients lost to follow-up.

Results. A deep-plane face-lift was performed in 183 consecutive patients. The mean age of the patients undergoing a deep-plane face-lift was 57.8 years old (range, 36-75 years). Sixteen of the 183 patients (7.7%) were smokers who chose not to quit smoking preoperatively and continued their habit postoperatively. The mean age of the smokers was 54.6 years (range, 48-67 years). All patients who were smokers were female. The 16 patients smoked an average of 0.94 packs per day (ppd). The length of their habit was not recorded. The patient number, age (years), and packs smoked per day were as follows:

1/56/1.0	9/48/1.0
2/59/1.0	10/61/1.0
3/62/0.5	11/47/1.0
4/62/1.0	12/51/1.0
5/55/1.0	13/58/0.5
6/53/2.0	14/49/0.5
7/48/1.0	15/50/0.5
8/48/1.0	16/67/1.0

Of the smoking group who chose not to quit smoking perioperatively, there were no cases of superficial epidermolysis, full-thickness skin slough, postoperative infection, or dehiscence. One of the 16 patients formed a hematoma on postoperative day 1 and was taken back to the operating room (**Figure 1**). All patients healed with minimal scarring.

There were 167 patients in the nonsmoking group. There were 3 cases of hematoma (1.8%) on postoperative day 1. Two patients were treated by being taken back to the operating room, and the third was treated with serial fine needle aspiration. There was a 1.2% rate of skin necrosis, with 1 case of superficial epidermolysis and 1 case of full-thickness skin slough. There were no cases of postoperative infection or dehiscence.

Comment. This study was initiated to determine the safety of a deep-plane face-lift in smokers. Clinical and scientific data substantiate that the risk of complications are directly correlated with the rate of smoking. Most surgeons performing face-lifts view smoking as a relative contraindication to performing the procedure. Many surgeons will



Figure 1. A 62-year-old woman (patient 3) who underwent deep-plane face-lift, upper blepharoplasty, and lower blepharoplasty with orbital fat transposition while continuing to smoke. Preoperative (A, B, C) and postoperative (D, E, F) views. The procedure duration was 4 hours. The patient was discharged 1 hour after surgery. Note significant upper neck submental laxity, bilateral platysmal banding, jowls, marionette grooves, and midface ptosis. Note better definition of the mandibular line. This patient developed a hematoma on postoperative day 1 requiring a return to the operating room. There was no evidence of skin necrosis postoperatively.

alter their technique in smokers by limiting the subcutaneous dissection pocket in order to decrease the chances of hematoma formation and skin slough. This compromises the degree of improvement in facial ptosis and longevity of results. We perform a deep-plane face-lift to achieve a superior result while minimizing complications.

In our study, the hematoma rate for smokers was 3 times the rate for nonsmokers (6.3% vs 1.8%, respectively). This is consistent with conventional wisdom that smoking increases the rate of hematoma during a face-lift.

Rees et al⁴ showed that of all the patients who had skin slough in a sample size of 1186 patients, 80% admitted to smoking more than 1 ppd. According to this study, a patient undergoing a face-lift who smokes has a 7.5% chance of experiencing skin slough compared with a 2.7% chance in a patient who does not smoke.⁴ Another prospective study⁷ of 83 consecutive patients who underwent face-lift examined the dermal microvasculature of skin that was cut away during a face-lift. These data showed significantly

greater nonreversible occlusive and degenerative vascular changes in the dermal microvasculature of smokers when compared with data for nonsmokers.

In our study, there was a low rate of skin slough compared with rates reported in previous studies. Skin slough rates were 0% and 1.3% for smokers and nonsmokers, respectively, compared with the study by Rees et al⁴ in which the rates were 7.5% and 2.7%, respectively. The low rate of skin slough in our study is likely due to the thickness of the flap in a deep-plane face-lift and the limited residual subcutaneous pocket at the conclusion of the procedure (**Figure 2**). Interestingly there were fewer skin sloughs in the smoking group, but this is likely due to the small sample size of smokers (16 patients).

Deep-plane face-lifting is safer in smokers because the blood supply to the deep-plane flap is less compromised when compared with other techniques of face-lifting. Schuster et al⁸ examined the vascular anatomy of the flap in 3 different rhytidectomy techniques. These 3 tech-

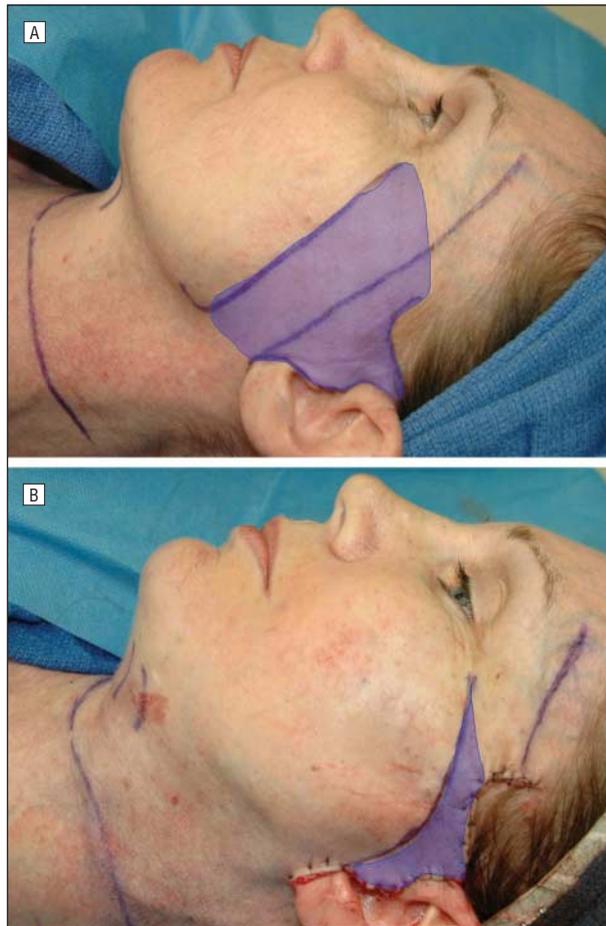


Figure 2. Photographs demonstrating relocation of the deep-plane entry point. Preoperative (A) and postoperative (B) views. The area marked represents the subcutaneous pocket. Note the limited subcutaneous pocket in the postoperative photograph.

niques were a separate subcutaneous and sub-SMAS dissection, a composite (deep-plane) rhytidectomy, and a subperiosteal face-lift. The results showed that the separate subcutaneous and sub-SMAS dissection interrupts the rich continuous anastomotic network between all these vessels. Arterial continuity is best maintained with the composite lift and the subperiosteal face-lift.⁸ The most significant arterial contribution of the face-lift flap is from the transverse facial artery perforator.⁹ This perforator has a constant anatomic location at 3.1-cm lateral and 3.7-cm inferior to the lateral canthus. This vessel is not disturbed in a deep-plane face-lift.¹⁰

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The C-Ring Complex: Defining the Parameters of Nasal Tip Anatomy

The human nose arises from the frontonasal prominence during the 4th to 10th weeks of gestation. Migration of neural crest cells into these soft tissues gives rise to the olfactory placodes. Invagination of the central placode epithelium within the proliferating mesenchymal tissue allows for the development of the nasal pits and the medial and lateral nasal prominences. In time, these prominences fuse to form the associated soft, muscular, and cartilaginous tissues of the paired external nares. The lateral prominence gives rise to the lateral nasal wall and ala while the medial prominence develops into the nasal septum, columella, and nasal tip.¹ Each of the lower nasal cartilages is formed within a C-shaped fusion of these embryonic prominences.

Considerable attention has been given to the architecture and surgical management of the lower lateral cartilages. The current medical literature is replete with discussions involving nasal tip rotation, projection, and soft-tissue alteration and refinement. Unfortunately, there is limited integration of nasal embryology and anatomic studies involving the tissues of the nasal base. In our surgical experience we have noted significant, posterior extensions of the lateral crus of the lower lateral nasal cartilages that may be of considerable importance in the treatment of the nasal base.