

Six Steps to the “Perfect” Lip

Deborah S. Sarnoff MD FAAD FACP^a and Robert H. Gotkin MD FACS^{b,c}

^aRonald O. Perelman Department of Dermatology, New York University School of Medicine, New York, NY

^bLenox Hill Hospital—Manhattan Eye, Ear & Throat Institute, New York, NY

^cNorth Shore—LIJ Health Systems, Manhasset, NY

ABSTRACT

Full lips have always been associated with youth and beauty. Because of this, lip enhancement is one of the most frequently requested procedures in a cosmetic practice. For novice injectors, we recommend hyaluronic acid (HA) as the filler of choice. There is no skin test required; it is an easily obtainable, “off-the-shelf” product that is natural feeling when skillfully implanted in the soft tissues. Hyaluronic acid is easily reversible with hyaluronidase and, therefore, has an excellent safety profile. While Restylane[®] is the only FDA-approved HA filler with a specific indication for lip augmentation, one can use the following HA products off-label: Juvéderm[®] Ultra, Juvéderm Ultra Plus, Juvéderm Ultra XC, Juvéderm Ultra PLUS XC, Restylane-L[®], Perlane[®], Perlane-L[®], and Belotero[®]. We present our six steps to achieve aesthetically pleasing augmented lips. While there is no single prescription for a “perfect” lip, nor a “one size fits all” approach for lip augmentation, these 6 steps can be used as a basic template for achieving a natural look. For more comprehensive, global perioral rejuvenation, our 6-step technique can be combined with the injection of neuromodulating agents and fractional laser skin resurfacing during the same treatment session. .

J Drugs Dermatol. 2012;11(9):1081-1088.

INTRODUCTION

In virtually all women, since the beginning of recorded history, full lips have been associated with youth, beauty, and voluptuousness. Robust, pouty lips are considered to be sexually attractive by both men and women. According to market research firm NPD Group, US sales of lip color reached \$290 million for 2011, an increase of 13% from 2010, while sales of lip-gloss were approximately \$182 million.¹ Even in a period of economic downturn, women continue to buy products to adorn their lips. The “lipstick index,” a term coined by Leonard Lauder, Chairman Emeritus of Estee Lauder, Inc., in 2001, describes the phenomenon of increased lipstick sales during an economic downturn.² Women would rather spend on little luxuries when purse strings are tighter and the economy is uncertain. Lipstick is that one affordable luxury that makes women feel pampered and more confident. Women with beautiful lips *feel* more beautiful and are likely to be more optimistic.

In youthful Caucasian lips, the ideal vertical height ratio of the upper lip to the lower lip is 1:1.6 (Figure 1).³ The fundamental proportions of the lips change as one ages, however, with lengthening of the cutaneous portion of the upper lip and volume loss and thinning of the upper lip vermilion (Figure 2). Genetics, intrinsic aging, sun exposure, smoking, and repetitive pursing of the orbicularis oris muscle produce angular, radial, and vertical “lipstick bleed lines” (Figure 3). Gravity, osteoporosis, dental changes, maxillomandibular bony resorption, and further soft tissue volume loss at the oral commissures cause the commissures to turn downward in a perpetual frown (Figure 4). Midfacial aging with ligamentous laxity in the cheeks causes the formation

of jowls and vertical geniomandibular (“marionette”) lines that extend downward from the oral commissures to the mandible. In addition to this hard and soft tissue volume loss, the lip margin itself may become blunted with flattening of the philtrum columns and loss of projection of the Cupid’s bow (Figure 5).^{4,6} Aging also leads to pallor of the vermilion that results in the loss of sharp vermilion-cutaneous junction demarcation.

While aging Caucasian men and women have similar hard and soft tissue volume loss with thinning of the vermilion and cutaneous portions of the lips, men generally do not develop rhytides of the upper and lower lips. This is because men have thicker skin with more subcutaneous fat surrounding terminal hair follicles (as opposed to the fine vellus hairs in women).

Certain ethnic groups, such as Blacks, genetically have greater volume in their lips. The increased melanin in their skin is protective throughout their lives. Consequently, their skin is less prone to solar elastosis. They rarely develop radial rhytides in the lips and their vermilion tends to retain its volume throughout their lives.

The volume and, therefore, the vertical height of the vermilion of the upper and lower lips should fit within the framework of *Phi*—the Divine Proportion or the Golden Ratio—1:1.618. This begins with DaVinci’s classic proportions of the lips relative to the rest of the face. These basic artistic principles from hundreds of years ago still apply today. One can summarize these proportions as follows:

FIGURE 1. In youthful Caucasian lips, the ideal vertical height ratio of the upper lip to the lower lip is 1:1.6.

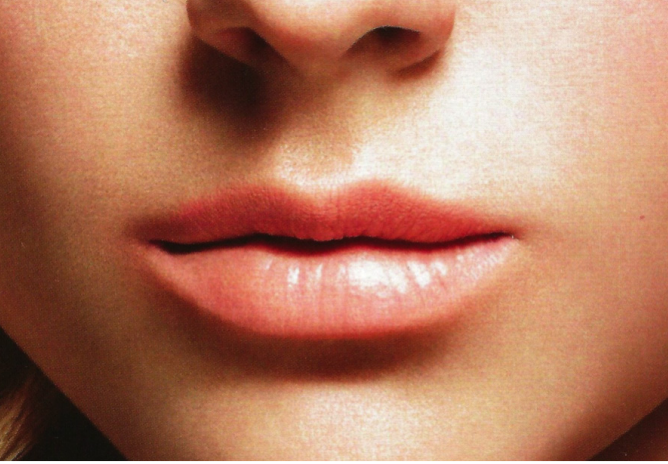


FIGURE 2. Lengthening of the cutaneous upper lip, volume loss, and thinning of the vermilion of both upper and lower lips occurs with age.



FIGURE 3. Angular, radial, and vertical rhytides of the lips are often the result of both intrinsic and extrinsic aging: genetics, sun exposure, and smoking. Note the solar elastosis grossly evident in **b**.



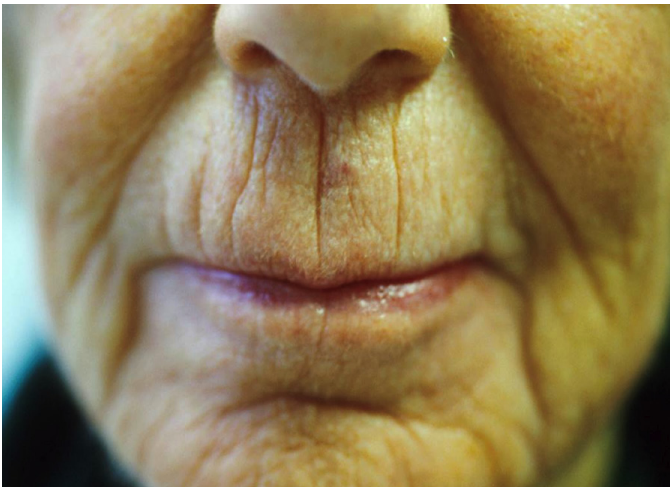
FIGURE 4. Gravity, maxillomandibular bony resorption, and accompanying soft tissue volume loss cause the oral commissures to turn downward in a perpetual frown.



FIGURE 5. The upper lip margin becomes blunted with flattening of the philtrum columns and loss of projection of Cupid's bow.



FIGURE 7. Lengthening of the cutaneous upper lip with effacement of the vermilion is readily evident.

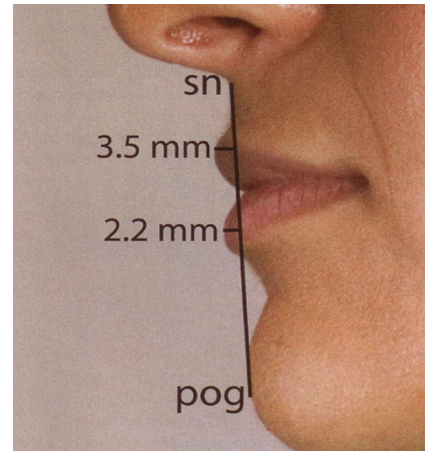


1. The face is divided vertically into thirds: upper third, middle third and lower third of the face—all equal in vertical height (Figure 6).
2. The lower third of the face is also divided vertically into thirds: upper third corresponding to the upper lip and the lower two thirds corresponding to the lower lip and chin. In youth, with more correct vertical proportions, the upper/maxillary teeth show during speech. With aging, it is very common to observe a lengthening of the cutaneous portion of the upper lip while the vermilion becomes thinner and almost completely effaced (Figure 7). It is common to no longer be able to observe the maxillary teeth during speech in an older individual. If the upper lip has lengthened so much, no degree of augmentation will correct this and the patient should be considered for a lip shortening procedure.

FIGURE 6. Used with permission: Perkins and Sandel, Anatomic considerations, analysis, and the aging process of the perioral region. (*Facial Plast Surg Clin N Am.* 2007;15:403-407.)



FIGURE 8. Used with permission: Perkins and Sandel, Anatomic considerations, analysis, and the aging process of the perioral region. (*Facial Plast Surg Clin N Am.* 2007;15:403-407.)

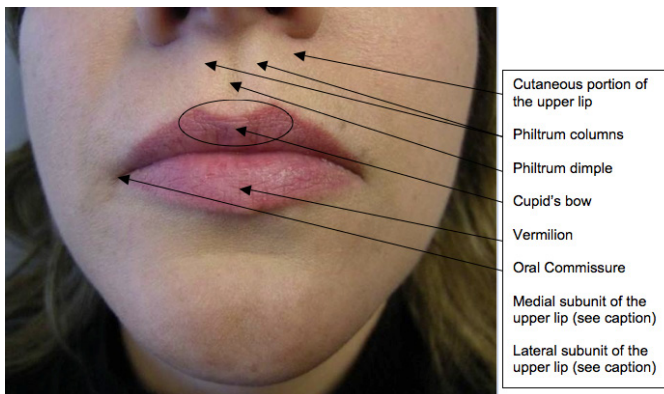


3. On the lateral view, if a straight line is drawn from the subnasion to the pogonion, the upper lip should project 3.5 mm anterior to the line and the lower lip should project 2.2 mm; the upper lip should project slightly greater than the lower lip—again about 1.6:1 (Figure 8). An exaggeration of these proportions or the wrong ratio can lead to a “duck-like” or “trout-pout” appearance. Under no circumstances should the lips enter the room before the individual (Figure 9)!
4. On frontal view, the ideal upper lip: lower lip ratio is 1:1.6. The vertical height of the upper lip should be less than that of the lower lip. Women will often present requesting augmentation of the upper lip alone, without considering the balance between the upper and lower lips. It is incumbent upon the physician to educate the patient regarding this ideal ratio. “Sausage” or “duck” lips (Figure 10) do not merely occur

FIGURE 9. Exaggeration of the correct anterior projection proportions of the upper lip and lower lip relative to underlying craniofacial landmarks can lead to a “duck-like” appearance.



FIGURE 11. The medial subunit of the upper lip extends from the midline to the philtrum column; the lateral subunit extends from the philtrum column to the oral commissure. Cupid's bow is that central area of the upper lip vermilion and vermilion-cutaneous junction that traverses the philtrum columns and dimple. It has the central tubercle flanked by subtle indentations. From the height of each arch of the bow, the philtrum columns extend upward to the base of the columella.



from overcorrection, but also from a poor understanding of the delicate contours of normal lip anatomy (Figure 11). Millard, in the first of his three volume *Cleft Craft*,⁷ described in great detail the normal surface anatomy of the upper lip. The subtleties of this surface anatomy must be understood by the physician attempting to artistically augment the lips.

The objective in treating the upper lip is to artistically create a form that harmonizes with the patient's unique facial features and takes into account the age and ethnic background of the patient. The goal in treating the lower lip is to create bulk and greater prominence and artistic projection of the vermilion. The physician must establish appropriate guidelines and patient expectations for augmentation relative to normal lip proportions in order to avoid a bizarre, cartoon-like appearance.

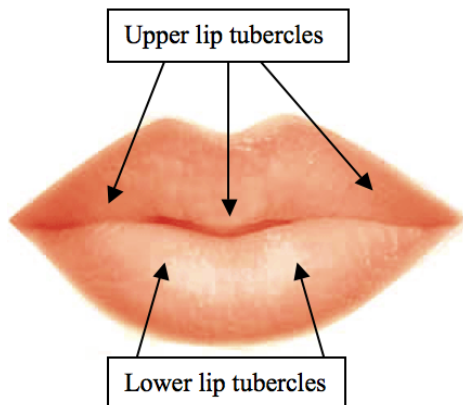
FIGURE 10. “Sausage” or “duck” lips do not merely occur from overcorrection, but also from a poor understanding of the delicate features of lip anatomy.



Any physician performing lip augmentation should recognize that temporary fillers can cause permanent stimulatory effects in tissues.⁸ After 2 or 3 sessions of lip augmentation, full correction may be obtained and persist indefinitely. Patients may return for additional filler merely because a certain amount of time has elapsed since their last injection, but the physician must evaluate the proportions of the lips to truly determine if additional filler is warranted. It is helpful to have a hand mirror for the patient to observe her lip proportions as the doctor seeks to determine whether more filler is needed. It is also beneficial to show the patient her lips from the lateral view; digital photography is extremely useful in this regard.

While there is no single prescription for a “perfect” lip, nor a “one size fits all” approach for lip augmentation, there are some basic tenets to follow that will help guide the novice injector in creating attractive, artistic, and aesthetically pleasing results: 1) Keep in mind the areas that have a natural prominence or protuberance (Figure 12): there is a tubercle just lateral to the midline

FIGURE 12. The tubercles of the upper and lower lips are natural areas of prominence that should be enhanced during lip augmentation.



on each side of the lower lip, a tubercle laterally on each side of the upper lip, and one tubercle in the midline of the upper lip. Maintaining these landmarks will help give the often-coveted “pouty” look. 2) Listen to what the patient wants and make sure it is reasonable; unrealistic expectations may be a sign of body dysmorphic disorder. Act ethically and do not be afraid to refuse treatment. 3) Lips do not swell symmetrically. Treat each side of the lip in each step before going on to the next step. Keep track of exactly how much filler is implanted at each location, so you can inject the same amount to each side. If there is pre-existing asymmetry, you will have to deviate from this rule in order to correct for the asymmetry. 4) In most patients, approximately 1 cc to 1.5 cc of HA filler will be adequate to augment the lips and achieve aesthetically pleasing results. Do not feel compelled to use the entire syringe if it is not warranted.

MATERIALS AND METHODS

Pre-Treatment Considerations

1. Have the patient sign informed consent.
2. Review the expected downtime with the patient prior to treatment. Warn the patient that even with the best technique, there likely will be significant edema and ecchymosis. Point out that the lips are highly vascular; the trauma from the manipulation of the needles alone causes swelling and bruising. Furthermore, HAs are hydrophilic and, therefore, enhance this swelling. The edema may be asymmetric and the immediate post-treatment results are not the results she will have in one week.
3. Determine which HA filler will be used for augmentation.⁹ In 2011, Restylane received FDA approval for lip augmentation;¹⁰ the other HA fillers can be used “off-label.”
4. Administer antiviral medication in patients with a known history of HSV I.

5. Take frontal and lateral preoperative photos.
6. Make the patient aware of any pre-existing asymmetries and explain that you will try to correct for them during your injections.
7. Have hyaluronidase and nitrol paste available in case of inadvertent arterial injection or external arterial compression.
8. Be aware of a patient’s medications that may predispose to ecchymosis or hematoma (aspirin, warfarin, NSAIDs, steroids, Vitamin E, and herbal and other OTC supplements). In the ideal setting, have the patient stop these medications prior to treatment. You may want to give prophylactic arnica montana to minimize bruising.
9. Use a 0.5” 30-gauge needle for implantation of the filler.

Anesthesia

Various topical anesthetics work well for lip augmentation. They may include combinations of lidocaine, prilocaine, tetracaine, and phenylephrine.

Our custom and practice is to apply topical anesthetic approximately 30 minutes prior to treatment. Infraorbital and mental nerve blocks, either intraoral or transcutaneous, can be used as well.

Six Steps for the “Perfect” Lip

In previous years, when the only filling agent available was bovine collagen, the most commonly employed technique for lip augmentation was injection into the “white roll” of the vermilion-cutaneous junction. The injection of product started at one oral commissure and continued anterograde to the other. This created the classic “sausage” or “duck” lip deformity.

Our 6-step technique involves administering approximately 12 injections—about 0.1 cc HA per injection—placed in strategic locations in the upper and lower lips. Note that some areas of the lips may not be treated at all; some areas may require slightly more or less than 0.1 cc. In our opinion, the best position for the patient is supine with the neck slightly hyperextended. Over time, even with the introduction of new fillers, we have found this formula to be a template for success in creating aesthetically pleasing lips.

Step 1: Create Philtrum Columns

Sculpted philtrum columns are in style today. As we age, these well-defined longitudinal pillars are lost, leading to a flattened, ill-defined, unattractive upper lip. If the patient still has discernible philtrum columns, the object is to further enhance them. If the philtrum columns have been completely effaced, it is imperative to re-create them. This is accomplished by superficial

FIGURE 13. Create philtrum columns.**FIGURE 15.** Define the vermilion-cutaneous junction in the medial aspect of the lateral subunit.

vertical injection of filler into each philtrum column. It is important to realize that the philtrum columns are not parallel to each other, but rather they form an inverted "V" that narrows as it approaches the nostril sills and columella of the nose.¹¹ Approximately 0.1 cc of HA filler should be injected into each philtrum column (Figure 13).

Tip: Pinching the skin with your non-dominant hand during retrograde threading of the philtrum columns diminishes discomfort and keeps the filler in a ridge and prevents it from splaying laterally. Pinching after injection helps to further mold the filler to define the philtrum columns. Upon completion of the injections into the philtrum columns, one notes immediate definition of the philtrum dimple and enhancement of the Cupid's bow.

Step 2: Create Cupid's Bow

The pouty, Cupid's bow appearance of the central portion of the upper lip is considered sexy, desirable, and very much in fashion today. Place the tip of the needle at the base of the philtrum column (at the vermilion-cutaneous junction) and advance to the vermilion-mucosal junction ("wet line"). Inject a 0.1-cc thin thread of filler in a retrograde fashion. This thread of filler acts as an anteroposterior strut to support the projection of the central upper lip (Figure 14).

FIGURE 14. Create Cupid's bow.

Step 3: Define The Vermilion-Cutaneous Junction in the Medial Aspect of the Lateral Subunit of the Upper Lip

The upper lip is divided transversely into medial and lateral subunits.¹² The medial subunit of the upper lip extends from the midline to the philtrum column; the lateral subunit extends from the philtrum column to the oral commissure and nasolabial fold. Inject ~0.1 cc HA laterally from the base of the philtrum column, along the vermilion-cutaneous junction, about halfway to the oral commissure. It is important not to augment the vermilion-cutaneous junction along the entire lateral subunit, but only in its medial aspect (Figure 15).

Do not augment the vermilion-cutaneous junction in the medial subunit as it will obliterate Cupid's bow and create the "sausage" or "duck" lip.

Tip: Pinch the vermilion-cutaneous junction to reduce discomfort and to prevent product from splaying from its desired area of placement. Inject slowly, do not over-fill and watch for blanching of the lip. This helps to prevent direct injection or external compression of the labial artery, either of which can lead to ischemia or necrosis.

Step 4: Create Lower Lip "Pillows" or Tubercles on Each Side of the Midline

Ask the patient to evert the lower lip. Deposit approximately ~0.1 cc of filler as a depot injection into the orbicularis oris muscle at the vermilion-mucosal junction on each side of the midline. The depot injection should be about one third of the distance from the midline to the oral commissure. Gently massage to prevent superficial lumpiness (Figure 16).

Step 5: Support or Bolster the Oral Commissures

Place ~0.1 cc filler in the most lateral aspect of the cutaneous lower lip so as to provide upward support to the commissures (Figure 17).

Tip: Injectable neuromodulating agents (botulinum toxin A) placed into the depressor anguli oris muscles can be used as

FIGURE 16. Create lower lip tubercles.**FIGURE 18.** Evert the upper lip by filling the upper aspect of the nasolabial creases.

an adjunct to further elevate the commissures. This combines structural support with chemical neuromodulation to shape the oral commissures.

Step 6: Fill the Nasolabial Creases

Place ~0.1 cc of filler in the upper portion of the nasolabial crease; this helps to evert the upper lip. One must be cautious in the region of the piriform aperture so as to not inject or externally compress the angular artery (Figure 18).^{13, 14}

Tip: Inject just medial to the nasolabial crease to prevent spilling of the product laterally. Augmentation lateral to the nasolabial crease only serves to deepen the appearance of the crease.

Post-Injection Care

Cool compresses and ice packs can be used to minimize swelling and bruising. Patients should be advised to avoid ASA, NSAIDs, and other medications associated with an increased risk of bleeding. If anti-HSV I medication was prescribed, it should be continued according to physician recommendation.

Because HAs are hydrophilic, they attract water from the surrounding tissues and further augment the soft tissue volume beyond that expected from mere implantation. The significant swelling of the vermilion in the immediate post-operative peri-

FIGURE 17. Support the oral commissures.

od may be camouflaged by applying flesh-toned foundation or concealer to the entire vermilion. Lipstick can then be applied to a smaller portion of the vermilion than usual so as to not exaggerate the swelling that may be present.

DISCUSSION

These six steps will help to augment and evert volume-depleted lips. For those patients that have pronounced radial "lipstick bleed lines" in the cutaneous portion of the upper lip, additional treatments may be necessary. Caution must be exercised in treating these lines not to use a robust, high-G' filler; the orbicularis oris muscle is a sphincter muscle and its constant "milking" action may cause clumping of robust fillers. This can result in nodules, lumpiness and migration of product. It is preferable to "spackle" with a less viscous filler, such as Belotero. This technique requires very superficial placement of HA filler. A unique complication resulting from superficial implantation of most HA fillers is a bluish discoloration of the skin known as the Tyndall effect.¹⁵ One advantage of using Belotero in this area is the reported absence of the Tyndall effect when implanted superficially.¹⁶

If the radial lip lines are prominent and dynamic in nature, it is better to inject botulinum toxin A, off-label, as an adjunct. Botulinum toxin A injections should be administered after filler injections are completed so as to avoid the resultant fluid volume distention and distortion of the lips.

In patients with severe solar elastosis and photodamage who desire comprehensive perioral rejuvenation with more lasting results, fractional laser resurfacing with the CO₂ or Erb:YAG laser can be combined with injectable neuromodulating agents and our 6-step technique using HA to create the "perfect lip."

CONCLUSION

Lip enhancement is one of the most frequently requested procedures in a cosmetic practice. We recommend hyaluronic acid for safe, natural lip augmentation. Our 6-step technique is a template that can be used to artistically create aesthetically pleasing "perfect lips."

DISCLOSURES

Dr. Sarnoff and Dr. Gotkin are both consultants for Merz Aesthetics. No financial support was received for any work leading to this publication.

REFERENCES

1. Personal communication, Karyn Schoenbart, President and COO, NPJ Group, Port Washington, NY, May, 2012.
2. Cosmetics in the downturn: Lip Reading—Do sales of lipstick really go up in difficult times? *The Economist*. January 22, 2009, accessed at <http://www.economist.com/node/12995765>.
3. Mandy S. Letter: Art of the Lip. *Dermatol Surg*. 2007;33:521-522.
4. Klein AW. The Art and Science of Injectable Hyaluronic Acids. *Plast Reconstr Surg*. 2006;117:355-375.
5. Robertson KM, Dyer WK, Dyer, WK II. The use of fillers in the aging patient. *Facial Plast Surg*. 1996;12:293-301.
6. Maloney BP. Cosmetic surgery of the lips. *Facial Plast Surg*. 1996;12:265-278.
7. Millard, Jr. DR. Cleft Craft: *The evolution of its surgery—Volume I: the uni-lateral deformity*. Boston: Little, Brown and Company; 1976.
8. Wang F, Garza LA, Kang S, Varani J, Orringer JS, Fisher GJ, Voorhees JJ. In vivo stimulation of de novo collagen production caused by cross-linked hyaluronic acid dermal filler injections in photodamaged human skin. *Arch Dermatol*. 2007;143(2):155-163.
9. Sarnoff DS, Saini R, Gotkin RH. Comparison of filling agents for lip augmentation. *Aesthetic Surg J*. 2008;28:556-563.
10. <http://www.fda.gov/medicaldevices/productsandmedicalprocedures/deviceapprovalsandclearances/recently-approveddevices/ucm276637.htm>
11. Klein AW. In search of the perfect lip. *Dermatol Surg*. 2005; 31:1599-1603.
12. Burget GC, Menick FJ. Aesthetic restoration of one-half the upper lip. *Plast Reconstr Surg*. 1986;78(5):583-593.
13. Schanz S, Schippert W, Ulmer A, Rassner G, Fierlbeck G. Arterial embolization caused by injection of hyaluronic acid (Restylane). *Br J Dermatol*. 2002; 146:928-929.
14. Lowe NJ. Arterial embolization caused by injection of hyaluronic acid (Restylane). *Br J Dermatol*. 2003;148:379.
15. Hirsch RJ, Narurkar V, Carruthers J. Management of injected hyaluronic acid induced Tyndall effects. *Lasers Med Surg*. 2006;39:202-204.
16. Personal communication, Brian Pilcher, Ph.D., Vice President, Medical Affairs & Clinical Education, Merz Aesthetics, February, 2012.

ADDRESS FOR CORRESPONDENCE**Deborah S. Sarnoff MD FAAD FACP**

625 Park Avenue
New York, NY 10065

Phone:.....(212) 794-4000

Fax:.....(212) 794-0231

E-mail:.....sarnoffandgotkin@aol.com