Although CA-MRSA is usually associated with soft-tissue infections, it can also cause highly invasive and potentially lethal infections, including necrotizing pneumonia, septic cavernous sinus thrombosis, and pyogenic brain abscess.2,6,7 The fulminating nature of these unusual cases has led many investigators to speculate that CA-MRSA may be more virulent than HA-MRSA.3 In fact, CA-MRSA strains have been shown to be more virulent than HA-MRSA in neutrophil survival and murine infection studies,9; however, the factors that may make CA-MRSA more virulent or transmissible have not yet been clearly defined.

Herein, we present a case of surgical site infection after face-lift surgery caused by the epidemic strain of CA-MRSA USA300. At least 1 of the cases of MRSA face-lift wound infection described by Zoumalan and Rosenberg1 was also likely caused by a CA-MRSA strain based on the antibiotic susceptibility pattern of the isolate, but molecular analysis was not performed. To our knowledge, this is the first report of death attributable to an infection complicating face-lift surgery and the first fatal case of septic dural sinus thrombosis caused by CA-MRSA. In the preantibiotic era, uncontrolled infections of the face were a common cause of septic dural sinus thrombosis, and mortality rates of these now-rare conditions remain high in the modern era (30% for septic cavernous sinus thrombosis, 78% for septic sagittal sinus thrombosis).10

The emergence of MRSA as a CA pathogen will likely be an ongoing challenge in the care of ambulatory surgery patients.1,3 All MRSA wound infections should be treated aggressively with surgical drainage and appropriate antibiotic therapy.1,11 A recent study11 reporting a higher than 90% cure rate of uncomplicated CA-MRSA skin abscesses with incision and drainage combined with either a placebo or an antibiotic predicted to be ineffective (cephalexin) is yet another clear demonstration of the primacy of surgical drainage in the treatment of these infections. Less clear and in need of study are the optimal methods to identify, treat, and prevent disease in ambulatory patients at risk for MRSA surgical site infections. In conclusion, emergence of MRSA within the community represents a clear and present danger to individuals traditionally considered to be at low risk for MRSA infection, including those undergoing ambulatory surgical procedures.

Costi D. Sifri, MD
Nina J. Solenski, MD

Correspondence: Dr Sifri, Division of Infectious Diseases and International Health, University of Virginia Health System, PO Box 801361, Charlottesville, VA 22908-1361 (csifri@virginia.edu).

Author Contributions: Study concept and design: Sifri and Solenski. Acquisition of data: Sifri and Solenski. Analysis and interpretation of data: Sifri and Solenski. Drafting of the manuscript: Sifri and Solenski. Critical revision of the manuscript for important intellectual content: Sifri and Solenski. Administrative, technical, and material support: Sifri. Financial Disclosure: None reported.

Funding/Support: Work in the Sifri Laboratory is supported by a Howard Hughes Medical Institute Early Career Award.

Additional Contributions: Ann Karen Brassinga, PhD, and Meghan Cupp, BS, provided technical assistance.


High-Volume Calcium Hydroxylapatite Filler to the Lower One-Third of the Face

Many of today’s cosmetic patients desire the maximum aesthetic result with the least amount of downtime and expense. Nonsurgical, minimally invasive cosmetic treatments are increasing at a substantial rate. Calcium hydroxylapatite (CaHA) was one of the first fillers to be used for “volumizing” the face as an alternative to surgical intervention. Filling the cheeks and prejowl sulcus lifts the cheeks and camouflages dependent jowls, creating a more youthful appearance. Surgical practices have appropriately begun to incorporate more filling and less aggressive pulling during facial procedures.

The CaHA product Radiesse (BioForm Medical Inc, San Mateo, California) is a synthetic material approved by the US Food and Drug Administration for treating facial lines and wrinkles such as nasolabial folds. Correction and patient satisfaction can be expected for about 1 year following treatment. Some reports are now espousing persistence beyond 1 year.1,2 To determine the efficacy of CaHA, we hypothesized that complete correction of the lower one-third of the face, specifically, the nasolabial folds, prejowl sulcus, oral commissure grooves, and marionette lines, by filling with CaHA would lead to an acceptable satisfaction rate at 1 year in many patients who were seeking facial rejuvenation.

Methods. This study was conducted in a private practice ambulatory facial plastic surgery center in Chicago, Illi-
A total of 20 patients underwent CaHA treatment to the lower one-third of the face for soft-tissue augmentation. All 20 patients were women and ranged in age from 46 to 72 years (mean age, 56 years). Calcium hydroxylapatite was injected into the nasolabial folds, labiomentibular grooves (prejowl sulcus), marionette lines, oral commissure grooves, and chin.

Patients returned for a follow-up visit 2 weeks after their treatment. If complete correction was not achieved then a “touch-up” treatment was recommended using the same technique to achieve complete correction. The mean dosage of initial treatment was 4.9 cm³ (range, 3.2-6.5 cm³). Half of the patients (n=10) received only 1 treatment during the study, whereas the other half (n=10) required touch-up treatment to obtain optimal results. The mean dosage of touch-up treatment was 1.4 cm³ (range, 0.75-2.25 cm³). Patients returned at 3, 6, and 12 months after the initial treatment for 5 view photographs, a subjective questionnaire, and a severity rating by the primary investigator.

**Results.** Improvement was assessed using the Dayan Severity Rating Scale, wherein low scores designate absent creases and high scores reflect extreme rhytids. Wrinkle severity scores demonstrated marked improvement at 2 weeks after optimal treatment and remained improved throughout the 1 year of follow-up (Figure 1).

Physician assessment and patient satisfaction was also measured using the Global Aesthetic Improvement Scale (Figure 2). On the one hand, physician ratings revealed 100% improvement ratings at 3 months and 89% and 48% improvement at 6 and 12 months, respectively. On the other hand, patient perception of improvement upheld even better results, whereby 77% of patients continued to rate themselves as improved or better at 1 year, attesting to the value of CaHA soft-tissue augmentation over a 16-month period.
tissue fillers. Photographic evidence of long-term efficacy is demonstrated with frontal views before treatment and 6 and 12 months after treatment (Figure 3). In addition, the subjective questionnaire demonstrated that overall patient satisfaction rated improved, much improved, or very much improved in 95%, 89%, and 76% of patients at 3, 6, and 12 months, respectively, comparing favorably to other reports using fillers and CaHA.1-3

Comment. A nonsurgical alternative to face-lifting is desired by many of our patients. In this report, we identify a minimally invasive method leading to facial rejuvenation in our patient population at 1 year following treatment.

Many of the patients in this study were candidates for surgical rejuvenation but for a myriad of reasons were not ready to undergo a surgical procedure. Instead of turning these patients away and counseling them to return when they were ready for surgery, a nonsurgical alternative solution was offered that met many of their facial rejuvenating goals.

In this study, compared with previous reports, placement of the product was deep in the subdermal tissues and along the bony structures. This allows for the overlying soft tissues to be filled and lifted en bloc. Calcium hydroxylapatite has the advantage that it can be molded once placed deeply along the bony structures, an effect that has led to less edema and bruising and a better tolerated treatment. Finally, this study demonstrates that long-term efficacy and patient satisfaction depend on complete correction. A satisfying facial rejuvenation and wrinkle improvement can be achieved for up to 12 months with placement of high-volume CaHA to the lower one-third of the face.

Steven H. Dayan, MD
Elliot Lieberman, BS
Karen Larimer, MSN, APN, NP-C

Correspondence: Dr Dayan, Dayan Facial Plastic Surgery, 845 N Michigan Ave, Ste 923 E, Chicago, IL 60611 (sdayan@drdayan.com).

Author Contributions: Dr Dayan had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Dayan and Larimer. Acquisition of data: Dayan and Larimer. Analysis and interpretation of data: Dayan and Lieberman. Drafting of the manuscript: Dayan, Larimer, and Lieberman. Critical revision of the manuscript for important intellectual content: Dayan and Lieberman. Statistical analysis: Lieberman. Obtained funding: Dayan and Larimer. Administrative, technical, and material support: Dayan and Larimer. Study supervision: Dayan and Larimer.

Financial Disclosure: None reported.

Funding/Support: This study was funded by a research grant from BioForm Medical Inc (Dr Dayan).

Additional Information: Radiesse soft-tissue filler was provided by BioForm Medical Inc.