

EMERGING INNOVATIONS IN AESTHETICS

From a device to treat excessive sweating to new technologies to support surgery, new developments proceed.

BY SUZANNE BRUCE, MD, SAM RIZK, MD, ADAM LUBER, BA AND GARY GOLDENBERG, MD

MICROWAVE TECHNOLOGY FOR EXCESSIVE SWEATING

A new device offers a long-term solution to excessive sweating.



By Suzanne Bruce, MD, FAAD

Although hyperhidrosis is estimated to affect three percent of the population, the International Hyperhidrosis Society maintains that roughly half of those affected are not formally diagnosed. Whether or not they have received a diagnosis of hyperhidrosis, patients affected by excessive sweating have had few treatment options that offer lasting efficacy. This has been disappointing for both the patients and providers, as the effects of excessive sweating can be seen in social, professional, and other areas of life.

A novel treatment for hyperhidrosis, the miraDry® system (Miramar Labs) delivers precisely controlled microwave energy non-invasively to sweat glands where accumulated energy results in thermolysis of the glands. The handpiece includes a continuous hydro-ceramic cooling system that protects the superficial dermis and keeps heat at the level of the sweat glands. Treatment results in permanent damage to sweat glands and long-term reduction in sweating.

When I heard about the miraDry technology at the American Society for Dermatologic Surgery Annual Meeting in November 2011, I thought it was a great option for people who suffer from hyperhidrosis. It offers a convenient and effective treatment for a relatively common patient concern. In studies reported by the company, patients reported an 82 percent reduction in sweat after a round of two treatments. Data show that damaged sweat glands do not regenerate, making microwave therapy a long-term solution to hyperhidrosis. We introduced the procedure into the practice in early 2012 and have seen good results and steadily increasing demand since then.

A WELCOME OPTION

Previously existing options for the treatment of hyperhidrosis include iontophoresis and botulinum toxin injections. Iontophoresis generally cannot be applied to the underarms,

and results are typically short-term, requiring ongoing treatment for the patient. Botulinum toxin injections can be provided to the underarms as well as to the hands and feet, and they provide a reduction in sweating for several months. Effects are not permanent, however, and patients will inevitably require retreatment. Continuous treatments can become costly and inconvenient. Before offering miraDry, botulinum toxin was the only treatment for axillary hyperhidrosis we offered in our practice.

Over the past year, we have been pleased with the consistency in treatment outcomes. Results achieved with the miraDry system for axillary hyperhidrosis have been what we expected. We inform patients that they will need two to three treatments to achieve optimal results. The majority of our patients have had marked sweat reduction after two treatments; Only two or three patients have required a third treatment.

Patient response to treatment has been positive to date, with patients expressing satisfaction with the results of treatment. In fact, some patients have described treatment as “life changing.”

MARKETING CONSIDERATIONS

There tends to be a stigma associated with hyperhidrosis. Patients may be reluctant to discuss the problem, especially if they don't know that treatment options exist. Therefore, marketing and patient education are important. At the same time, however, we have found that many patients with hyperhidrosis are researching the condition online and are aware of new treatment options; it's important to market so that such patients are aware that you offer treatment.

Along with brochures in our office, we have promoted miraDry on our website, in our e- and print newsletters, at our annual open house, and at seminars. For seminars, we typically incorporate discussion of hyperhidrosis and miraDry within presentations on other topics. Promoting a seminar solely for excessive sweating did not attract any people due to the highly personal nature of this condition. We are currently trying our first billboard advertisement.

With our current strategies in place, the volume of procedures has steadily increased since introduction. We are performing on average one procedure per day.

PRACTICAL CONSIDERATIONS

Beyond potential patient interest/demand and the positive outcomes associated with miraDry, another attractive system feature is its compact size and portability. The machine can roll from room-to-room so we keep it in a storage room when not in use. The lone consumable is the sterile, disposable BioTip.

We have had very few logistical challenges in incorporating miraDry into our practice. The time it takes to do the procedure is very consistent from patient-to-patient so scheduling is easy.

From a practical standpoint, we have found it beneficial to have patients pay up-front for the two procedures; the patient becomes mentally committed to undergoing both treatments, which are necessary for achieving an optimal response. We don't want our patients to have unrealistic expectations—expecting resolution of sweating from a single treatment.

NOVEL APPROACH, WIDESPREAD NEED

The population of patients dealing with excessive sweating may be large and underserved. While hyperhidrosis is a medical condition, it's important to note that excessive sweating can negatively influence an individual's quality of

A PEARL FOR SUCCESSFUL INTEGRATION

Any time we introduce a new procedure we meet monthly for the first six months and then quarterly thereafter with our entire process team, including MD's/PA, representatives from the front and back office, our lead patient care coordinator, marketing director and our miraDry representative. At these meetings, we track our progress and address any issues that have arisen in any aspect of our service delivery system.

life with social, professional, and aesthetic ramifications. Certainly miraDry fits well into a general dermatology practice because we frequently see hyperhidrosis patients. At the same time, cosmetic practices are used to using technology like lasers and other energy-using devices, so this procedure also fits well in an aesthetic practice.

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A 21ST CENTURY APPROACH TO RHINOPLASTY: MARRIAGE OF FORM AND FUNCTION

A guide to the state of the art reveals why rhinoplasty is still the gold standard.



By Sam Rizk, MD, FACS

According to the American Academy of Facial Plastic and Reconstructive Surgery (AAFPRS.org), in 2012, rhinoplasty was the most popular surgical procedure performed on both men and women under the age of 35. Yet rhinoplasty is also among the most complex procedures to perform well because the surgeon must take into account not only aesthetics, but functional breathing considerations as well.

The nose is the most prominent feature on the human face: even a small change will affect a person's whole appearance in a big way. A beautiful nose is a natural one that complements and fits harmoniously with the other facial features. There is no universally ideal nose—only an ideal nose for one particular face. The consensus of opinion on the qualities of a beautiful nose has changed considerably over time. In nasal surgery, it is critical to achieve a natural result. Patients today do not want upturned noses, pointy tips, scooped-out bridges, or pinched nostrils that were commonplace in the 1980s. The modern concept in rhinoplasty is to preserve the overall characteristics of the original nose, and make small alterations to straighten or refine the shape and projection as the patient desires.

Every nose is unique since every face is different. Therefore

an individualized approach is required to address each patient's unique goals. My main mission with nasal surgery is to create a natural looking nose that will stand the test of time, based on the structure of the cartilage and the overlying skin. A natural nose should be in harmony with the other features of the face, including the upper lip, chin, and cheeks. An important factor in achieving a natural result in rhinoplasty is to maintain good structural support.

I routinely combine treating the internal structures of the nose with cosmetic improvements. A deviated nasal septum, if significant (greater than 50 percent), can result in difficult breathing and may be treated with a septoplasty surgery. This can be done as an isolated procedure or combined with sinus surgery or cosmetic rhinoplasty surgery. Being able to restore a patient's ability to breathe, in addition to improving the appearance of the nose by rebuilding previously removed cartilage or bone, provides an additional benefit to the patient. Functional repair can be combined with an aesthetic approach simultaneously, without compromising either, which is what most patients desire.

A delicate framework of bone and cartilage supports the internal structure. Even a small miscalculation can lead to an unsatisfactory result. The determining factor in whether a patient's nose has good support is the inherent strength of the underlying cartilages. If the tip has good support, it can be refined by simply removing excess cartilage. Another important aspect of the nasal anatomy is skin thickness. Thicker skin can often present a greater challenge to achieve definition and to sculpt a newly refined shape. A bulbous tip is common with thicker-skinned patients, and it can appear larger and droopy with advanced age.

THE CONSULTATION

During the consultation, it is vital for patients to view photographs of other patients whose noses the surgeon has operated on to determine whether they are in sync with the surgeon's vision of an attractive nose. In my practice, we offer patients the opportunity to view photographs, and upon request, to speak to other patients who have undergone a rhinoplasty procedure. Patients find this helpful to know what to expect before, during, and after the operation.

After a comprehensive nasal examination, I evaluate the strength of the cartilage, thickness of the skin, and see if the septum is deviated. In some cases, only one part of the nose may be too prominent. If an unsightly bump is the patient's main concern, we can sometimes file it down or shave it to create a smoother bridge. If the nasal bones are too wide, the nose can be slimmed down and refined. A crooked nose is a very difficult problem to correct; a nose can be made to look straighter, but it is not always possible to create a perfectly straight nose.

Bone structure, skin type, age, and ethnic background all play an important role in determining the optimal surgical plan. Cultural differences should be respected in altering the size, shape, and characteristics of an individual's nose. In many cases, African American, Middle Eastern/Mediterranean, Latino/Hispanic, and Asian patients may tend to have thicker skin that requires specialized techniques to re-sculpt the nasal tip. Rather than the cartilage-excising techniques used on individuals with thin skin, these patients often require more skill and expertise. It is not uncommon to see cases where the nasal tip is quite bulbous or there is a lack of support. Having thicker skin with very little cartilage support, or where the cartilage is weak, creates a more complex operation. These types of rhinoplasties often require cartilage grafts from the patient's own septum or from behind the ears, and de-fatting the thick skin to achieve good definition.

My overriding goal is to create a natural looking and aesthetically pleasing facial improvement that is tailored to the specific patient's needs. There is no ideal nose anymore; each procedure is customized to create a nose that is in harmony with the patient's face. The perception and creation of beauty in a nose is an artistic, innate quality that can be observed by looking at a surgeon's results. Training and experience provide the necessary tools to achieve this goal, but that is just the foundation. There was a time when surgeons had a "signature" procedure or look that was very identifiable. For today's consumers, that concept is wholly unacceptable. In fact, it runs counter to what they are really looking for. Each surgery I perform is customized to be in harmony with the individual patient's face to complement his or her other features.

A natural looking nose with tiny hidden incisions is certainly possible with modern techniques. Given the choice, patients will usually opt for a closed approach to avoid the resultant

visible external columella scar, however that may not always be in their best interest. Among the advantages commonly cited for endonasal surgery are shorter surgical times, reduced postoperative edema, decreased potential for compromised tip support, and shortened recovery time. For decades, many rhinoplasty surgeons have favored the closed approach for these and other reasons, but that philosophy can severely limit results, particularly with ethnic rhinoplasty where direct visualization can be essential.

I employ both the open (external) and closed (endonasal) surgical techniques to reshape the nose. Typically, the closed approach is more often used when the surgical objective is to reduce a bump or straighten the bridge. An open rhinoplasty may be more appropriate when the skin is very thick, or if there is significant asymmetry in the nasal tip, or when implants may be required. Since there are specific advantages to both, I have adopted a graduated approach to endonasal tip surgery versus open nasal tip surgery. The endonasal approach can progress from less invasive to more invasive. Less invasive endonasal approaches can be classified into either non-delivery approaches to the lower lateral cartilages, or delivery approaches to the lower lateral cartilages. Of course, the more aggressive open approach is a last resort but may be indicated in situations where major tip support and definition is needed. This is especially the case with revision rhinoplasty patients where the anatomy may not permit an endonasal approach. With this method, I can address all issues involving the bridge, including refining a bump, with a closed technique, and then address tip correction through a partial open incision, if needed.

INNOVATIVE TECHNOLOGY

With rhinoplasties, where a few millimeters can make a big difference in the result, I have incorporated a 3D high-definition approach, which increases precision and results with minimal trauma. Instead of rasping over soft tissue, muscle, and blood vessels and getting bruising, I am specifically reducing cartilage and bone under direct visualization with a high-definition 3D telescope system.

The use of this system basically provides a precise view of the interior nasal area by inserting a telescope connected to an imaging system. With this enhanced view, I can avoid disrupting blood vessels, muscles, and other sensitive tissues so there is less bruising and swelling, which promotes a quicker recovery. But the advantages go far beyond rapid recovery. Because of increased visibility, the surgery is more direct and allows for greater precision, as tissue is not distorted by swelling during the procedure. In addition, I have moved away from nasal packing in favor of only tissue glue to insure a faster, more comfortable recovery. This is a clear benefit to patients as well.

While older rhinoplasty techniques may have yielded nicely shaped noses early on, these results often changed over time as cartilage grafts became resorbed and shifted and airways col-

lapsed. I now routinely employ the use of suture reshaping techniques for cartilage sculpting. By employing a micropowered diamond machine to soften and refine the edges of all of my cartilage grafts, I can achieve a more finessed result. I see a large number of revision rhinoplasties, so I am always searching for ways to get a smoother outcome with cartilage grafts. Having had experience using diamond burr high-powered units to smooth out the bone during reconstructive ear surgery, I decided to apply this technique with cartilage grafts to create a rounded edge. This has worked extremely well and I have been able to achieve the round edges for cartilage grafts consistently.

One of my recent innovations is to avoid closing all incisions inside the nose completely, which allows blood and fluid to come out through gaps so it does not collect under the skin of the nose. These incisions close on their own during the first five days after surgery. I tend to perform rhinoplasty by sculpting deeper under the muscle layers of the nose, which is a clean plane of operating with fewer blood vessels. I have found that this method results in a more natural look because the muscle layer on top of the cartilage and bone acts to soften the shape of the nose, eliminating any potentially harsh edges. Finally, I use a combination of fibrin sealants and herbal supplements to achieve a speedy recovery so patients can look presentable within a week after the procedure and experience minimal discomfort, swelling, and bruising.

SECONDARY RHINOPLASTY

In performing revision rhinoplasty, it is not only about getting a good cosmetic result—there is an important functional component to consider as well. Many patients coming in for cosmetic rhinoplasty operations also have significant breathing deformities. Their noses may have been collapsed after previous surgeries. In revision rhinoplasty, it is even more likely that both the functional and the cosmetic issues need to be addressed. The surgeon must keep an open mind and change

the techniques and instruments used to adapt to each new situation encountered and to achieve a more superior result.

Patients who have had a previous nasal operation, and are unhappy with the outcome, require more time and attention during the consultation. In most cases, a poor result can be improved with a secondary procedure. It has become exceedingly common to perform secondary and tertiary nasal operations, especially if there was a miscommunication or the original surgeon was not very experienced in rhinoplasty techniques. Secondary rhinoplasty is almost always more difficult than a primary operation and requires a more detailed surgical plan to address all the components of the nose. The most common problem is overly aggressive surgery, where too much cartilage or bone was removed, which necessitates grafting of cartilage, rib, or other materials.

FACIAL HARMONY

A natural angle between nose and forehead and nose and upper lip as well as a natural transition between profile and tip are important features of a natural nose. A soft tip, which is not overly pointy, and a bridge that is not overly narrow, also contribute to the appearance of the nose. Achieving an appropriate length of the nose to fit the face and that does not expose a great distance between the tips of the nose and upper lip is also critical. Natural looking nostrils should not appear to be pinched or collapsed. A natural nose also must fit harmoniously with the rest of the face, and in particular, the chin angle and projection. Additionally, although there are certain standards for the size of the nose in relation to the face and eyes, rhinoplasty presents a combination of science with artistry. In the end, to achieve optimal results means selecting the right technique for the right patient.

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INTRALESIONAL CRYOSURGERY: A NOVEL TREATMENT FOR KELOID SCARS

Focused destruction of scar tissue with minimal damage to the surface skin.



By Adam Luber, BA and Gary Goldenberg, MD
Keloid scars, fibrous overgrowths that occur in sites of previous skin injury, often develop soon after injury but can also occur up to several years following the initial traumatic insult. Common causes include surgical procedures, piercings, vaccinations, lacerations, and burn injuries.¹ There is potential for all individuals (except albinos) to develop keloid scars; however, the great-

est incidence is seen in patients of darker skin color. Keloids are most common in the second to third decades of life, and susceptibility decreases with age.^{2,3} After development, keloid lesions continue to persist without spontaneous regression and have no malignant potential. Patients often complain of itchiness, pain, and abnormal sensitivity to touch. These symptoms, along with the contractures created from excessive scar formation, can be extremely uncomfortable for patients.^{2,3}

The cause of a keloid scar is multifactorial, with a strong genetic component. Uncontrolled scar formation is due to aberrant wound healing following any injury to the deep dermis. Normal wound healing depends on the fine balance between extracellular matrix deposition and degradation. However, in keloid scars, there is overexpression of specific

growth factors and inflammatory molecules that stimulate fibroblasts to increase collagen synthesis.¹⁻³

CURRENT THERAPIES

While multiple treatment modalities exist for treating keloid scars, no single method is proven widely effective. Intralesional steroid injections are the mainstay treatment and are usually well tolerated; however, approximately 50 percent of lesions recur after treatment.^{1,4} Alternatively, contact cryosurgery using liquid nitrogen to “freeze” the lesion is moderately effective, but patients may require up to 20 treatments.⁵⁻⁹ Often, these two methods (contact cryosurgery and intralesional steroid injections) are used in combination to achieve better results.¹⁰

Surgically revising the scar is typically unsuccessful, with recurrence rates between 45 to 100 percent.¹ Laser and radiotherapy can be used with variable efficacy, in addition to injections with 5-fluorouracil (5-FU) or interferon-alfa-2b. Other minimally invasive regimens with mediocre results include silicone gel sheets, silicone occlusive dressings, and pressure devices.⁴

INTRALESIONAL CRYOSURGERY

Intralesional cryosurgery, introduced in the early 1990s, is a treatment that allows for a focused destruction of keloid scar tissue with minimal damage to the surface of the skin.¹¹ Most recently, a uniquely designed needle probe has been developed (CryoShape®).⁹ After proper local anesthesia is achieved, the probe is inserted into keloid scars and attached to a liquid nitrogen source (a cryogun). As liquid nitrogen passes through the needle, a lethal zone (<22°C) is created around the inserted probe which is situated deep in the scar tissue, thereby directly destroying the cells that produce keloids.¹² This is in contrast to traditional contact cryosurgery, which forms a lethal zone on the surface of the skin, often leading to blistering, loss of pigmentation, and inadequate penetration to the deeper tissue structures.^{7,9}

Immediately after treatment, patients experience redness, swelling, and blister formation. After approximately one month, the wound is healed with a flat, slightly thinned scar. There are minimal cosmetic side effects.^{9,12}

Several studies^{9,13-16} have examined the safety and efficacy of intralesional cryosurgery for treating keloid scars. There is a significant reduction in objective parameters, such as scar volume, deformity, hardness, and redness. Microscopically, the scar architecture is transformed into a more organized arrangement.⁹ Notably, this treatment also decreases subjective concerns including tenderness, itching, and aesthetic discomfort.¹⁴ Patients experience better results and shorter healing time compared to the contact cryosurgery technique.¹¹

CONCLUSION

The treatment of keloid scars continues to be a challenging clinical scenario. Intralesional cryosurgery is shown to

reduce the size of keloid scars and eliminate the symptoms associated with abnormal scar formation. Intralesional cryosurgery is a novel, safe, and highly efficacious technique recommended for clinicians and patients striving to minimize both the appearance and discomfort of these physically and psychologically damaging lesions. ■

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INNOVATIVE GATEWAYS

The burgeoning body sculpting market may be a gateway to new long-term aesthetic patients: “More than any other procedure in my practice, CoolSculpting brings in new patients...CoolSculpting and its marketing program have greatly benefited my practice. The outside marketing brings in new patients and is a strong driving force for the overall growth of the office. It not only directly increases revenues for CoolSculpting, but it also funnels in new patients who are generally highly interested in other aesthetic procedures we offer. It is important to note that many of the patients that specifically come for CoolSculpting see an opportunity to address their medical dermatological concerns in our practice, receiving their complete care with us.”

— Leyda Elizabeth Bowes, MD
Learn more in an upcoming edition of
Modern Aesthetics