Can Length Control Sutures Reduce Scarring?

The Length-Control Suture: A New Method for Prevention of Hypertrophic Scars and Dog-Ears.

Reiffel AJ, Reiffel RS:

Ann Plast Surg 2011; 67 (July): 53-58

To be effective, scar support techniques must be applied for several months after the injury.

**Background:** Methods for the prevention and treatment of hypertrophic scars are many and varied. They are typically postoperative treatments. However, methods of wound closure and suture material have been reported to have a minimal effect on scar hypertrophy.

**Objective:** To report the authors’ experience with a particular type of wound closure suture that may help prevent scar hypertrophy.

**Design:** The paper is a detailed description of the wound suture technique and a retrospective review of the series of consecutive cases for which the technique was utilized.

**Methods:** The authors' suture technique employs a slowly absorbable monofilament suture that is placed longitudinally within a skin incision to resist tension applied to the longitudinal axis of the wound. At the outset of the series and for the majority of cases, Panacryl suture (braided) was used, but after its withdrawal by the manufacturer, PDS II was substituted. The suture material must be sufficiently long-lasting to provide resistance to tension for several months and should also be monofilament and absorbable in order to be tolerated in the wound without ultimate extrusion. The suture is secured to the dermis at each pole of the wound and tied in the wound's center to slightly draw the wound's ends toward one another. The authors reviewed the scars that resulted from the use of length control sutures in 230 consecutive skin wound closures performed by the senior author from 2006 to 2009. All cases were assessed at 6 weeks and 6 months for scar hypertrophy and widening.

**Results:** 7 of the 230 resultant scars were judged "widened." In one case, the Panacryl suture "spit" from the wound.

**Conclusions:** The "length control suture" was a useful adjunct in the closure of wounds on the face, trunk, and extremities. The authors suggest that their experience indicates this technique promotes flat, thin, supple scars with little dog-ear deformity and no increase of scar length.

**Reviewer's Comments:** This paper revisits a concept of scar hypertrophy that differs from most conventional thinking. First introduced by the senior author some years earlier, it suggests that longitudinal wound tension, rather than transverse tension, is the key factor causing scar hypertrophy. The authors offer their favorable experience to support their contention. Unfortunately, the retrospective review of a small consecutive series that lacks any controls provides only low-level evidence. Nonetheless, the paper includes a thought-provoking review of scar hypertrophy concepts and highlights the authors' novel theory that would likely merit a proper prospective, randomized, controlled study to test its merits. (Reviewer-Norman V. Godfrey, MD).

Keywords: Hypertrophic Scars, Keloids, Prevention

Print Tag: Refer to original journal article
The select use of acellular dermal matrix products enhances results in both cosmetic and reconstructive breast surgery.

**Background:** The rates of revisional procedures after primary breast augmentation remain higher than patients and surgeons would otherwise desire.

**Objective:** The authors demonstrate how the utilization of acellular dermal matrix products during revisional procedures improves outcomes.

**Design:** Technique paper and a retrospective review.

**Methods:** The authors describe the surgical technique by which they incorporate the use of geometrically oriented pieces of acellular dermal matrix to address post-augmentation capsular contracture, implant malposition, and symmastia; in some patients, simultaneous mastopexy is required. The surgical technique focuses on triple-antibiotic irrigation of the acellular dermal matrix product and minimal tissue handling, making use of an inframammary approach. Preoperative planning is essential -- the use of surgical simulation facilitates selection of the size of the new implant, the pocket dissection, and the appropriately sized piece of the selected acellular dermal matrix product. For best results, drains are used in all cases. Fat grafts are also used frequently. The use of neopectoral pockets and the change of a subglandular to subpectoral site are also performed as necessary.

**Results/Conclusions:** The versatility of the addition of an acellular dermal matrix product allows for achievement of improved functional and aesthetic outcomes for revisional procedures.

**Reviewer’s Comments:** The role of acellular dermal matrix products beyond their initial introduction in the breast for use in 2-stage breast reconstruction is becoming widespread. The *Aesthetic Surgery Journal* published a supplement to their September issue, which is devoted exclusively to "Fundamentals on Expanding Applications of Acellular Dermal Matrix in Plastic Surgery." The supplement includes papers that highlight the role of acellular dermal matrix in the setting of breast reconstruction for patients who have had radiotherapy. Additional authors also expand on the principles and clinical case applicability as described by Dr Maxwell. The supplement contains another paper from Dr Mark Mofid from Lo Jolla, California, which describes another surgeon’s experience with acellular dermal matrices in cosmetic breast surgery. There are also reviews of the basic science mechanisms of acellular dermal matrices and comparisons between some of the popular products that are available. Moving forward, look for continuing basic science and translational research on these materials to be the subject of further reviews. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Acellular Dermal Matrices, Revisional Breast Surgery, Breast Augmentation
The use of epidural anesthesia facilitates early ambulation after abdominoplasty but cannot be considered an effective strategy in minimizing the risk of venous thromboembolism risk at this time.

**Background:** The reduction of venous thromboembolic phenomena, particularly in abdominoplasty, is an important patient safety goal in minimizing complications for patients who are undergoing elective cosmetic surgery procedures.

**Objective:** To demonstrate the role of epidural anesthesia as a risk reduction prophylactic strategy against venous thromboembolic phenomena.

**Design:** Retrospective review.

**Methods:** Over a 3.5-year period, 24 abdominoplasties that were performed under general anesthesia were compared to 371 cases of abdominoplasty and liposuction performed under epidural anesthesia during a subsequent 5-year period. The authors used bupivacaine as their epidural anesthetic. Almost 5% of cases could not achieve sufficient epidural anesthesia and had to be excluded from the study. This was a single-surgeon's treatment with no mention of the demographics or surgical procedure time.

**Results:** No medicinal anticoagulation strategy was used in either group. One patient in the general anesthetic group had a thromboembolic event, whereas no venous thrombolic events in group 2 were noted.

**Conclusions:** The authors recommend the more frequent use of epidural anesthesia for abdominal surgery as a potential way to further reduce thromboembolic phenomena.

**Reviewer’s Comments:** Dr Leroy Young, former Chairman of the Patient Safety Committee of the American Society of Aesthetic Plastic Surgery, provides an excellent commentary and critique of this article. The authors’ conclusions cannot be considered definitive due to the retrospective nature of the study and its small patient size. While the use of ambulation is enhanced in patients who are undergoing epidural anesthesia, it is clear that current guidelines call for additional chemoprophylactic measures in excess of what the authors are recommending. What might facilitate our compliance with the updated guidelines for minimizing venous thromboembolic events is that new chemoprophylactic agents should be available soon that do not require injection but can be taken orally without the need for significant monitoring or with a significant increase in perioperative bleeding rates. We are following the leadership in this area of our orthopedic colleagues, for whom venous thromboembolic phenomena after joint replacement is a daily concern. The use of epidural nerve blocks certainly can be helpful, but should not in any way be considered a replacement for adherence with the latest venous thromboembolic guidelines as recommended by the American College of Chest Physicians. (Reviewer-Robert Thomas Grant, MD).

Keywords: Venous Thromboembolic Prophylaxis, Epidural Anesthesia, DVT, PE

Print Tag: Refer to original journal article
**Background:** Optimal management of keloids remains undefined. While surgical excision is the most obvious approach, it is associated with recurrence rates that approach 100%.

**Objective:** The authors describe their approach to the treatment of auricular keloids. In addition, they offer a detailed description of an auricular compression device that provides convenient, effective, long-term compression of the external ear.

**Design:** The paper is a topic and literature review followed by a detailed description of a multimodal therapeutic approach to the treatment of auricular keloids. It includes the detailed review of 7 clinical cases or auricular keloids treated by the defined combined approach that included surgical extirpation, intralesional drug therapy, and long-term external compression.

**Methods:** The authors' surgical approach is based on the merits of intralesional excision. Specifically, they suggest that confining the surgical trauma to the existing lesion and using limited undermining to achieve closure with skin sutures placed within the keloid margins is most likely to permit debulking of established keloids. The intralesional drug regimen involved the use of steroid injections into the healing scar beginning at the time of wound closure and repeated for a total of 6 treatments timed according to scar appearance and symptoms. Finally, external low-pressure compression was delivered to the ear with a custom-molded acrylic device. Target pressure was in the range of 24 to 30 mm Hg. The device was affixed to the auricle in a bi-valve fashion with magnets embedded in the acrylic. It was worn at night, ideally no less than 5 times per week. As the compression therapy reduced the auricle's bulk, additional shims of acrylic provided increased compression.

**Results:** 7 patients underwent the full course of treatment that included intra-marginal excision, intrallesional triamcinolone injection, and external compression. Mean follow-up was 24 months. No keloids recurred in the follow-up period. All patients were satisfied with their appearance and reported relief of itching, pain, and dysesthesia. One patient experienced depigmentation due to the steroid injections.

**Conclusions:** The authors concluded that their combined approach is effective and practical. They stressed that its practicality is primarily due to the ideal characteristics of their unique compression device. It is strong, lightweight, comfortable, easily and cheaply made, easily removed for hygiene, precise in its control, and adjustable in pressure.

**Reviewer's Comments:** This is an interesting paper. While it offers no new insights into the genesis of keloids, it offers important details about the fabrication of a practical compression device. I have declined surgical excision for auricular keloid patients for lack of an available compression device to prevent recurrence. (Reviewer-Norman V. Godfrey, MD).

**Keywords:** Keloids, Auricular Keloids, Compression Devices
Silicone gel sheeting may exert a beneficial effect on hypertrophic scars by limiting scar dehydration.

**Background:** Hypertrophic scars are a frequent and significant undesirable complication of many injuries and surgical procedures. Among the most commonly used topical preventive measures are silicone gel sheeting and microporous paper tape. Clinical studies of these modalities have shown varying results and have rarely compared the 2 methods. The recent identification of a reliable rabbit model for hypertrophic scarring has made it possible to perform experimental evaluation of scar prevention methods in a laboratory setting.

**Objective:** To evaluate the relative effectiveness of silicone gel sheeting and microporous paper tape in preventing hypertrophic scarring. The paper includes a discussion of the current state of hypertrophic scar research and treatment.

**Methods:** The laboratory study used 10 New Zealand white rabbits and the hypertrophic scar model described by Morris et al in 1997. Three standardized wounds were created on the rabbits' ears. Beginning 14 days after wounding, 1 of the 3 wounds was not treated (control), while the other 2 were treated with silicone gel sheeting and micropore paper tape, respectively. At 44 days, photographs of the resulting scars were evaluated for contour and appearance using a visual analog scale scoring system. In addition, the scar tissue was evaluated histologically using the system described by Mustoe in 2004. A Scar Elevation Index (the ratio of tissue height of the scar to that of the adjacent native skin) was measured for each treatment group.

**Results:** The findings were interesting. The visual analysis showed that the scores for appearance in the treatment groups were similar (1.52 for paper tape and 1.61 for silicone gel sheeting), whereas the score for the untreated group was 2.19, judged a statistically significant difference. By contrast, the Scar Elevation Index for the treatment groups was 1.32 for paper tape, 1.41 for silicone gel sheeting, and 1.35 for the untreated (control) group; these differences were not statistically significant.

**Conclusions:** The visual analysis results confirmed the findings of previous clinical studies that both silicone gel sheeting and micropore paper tape improve hypertrophic scars. The authors were perplexed by the lack of effect that was measureable histologically in the same study. They plan a second study with a 12-week treatment period and longer follow-up.

**Reviewer's Comments:** This paper is disappointing in that it failed to identify a clear-cut "best practice" winner. Nonetheless, it is interesting to read and describes an investigational approach that I believe has a good chance to yield a clinically relevant result in the future. Moreover, the topic review and study discussion sections were well written, insightful, and informative. (Reviewer-Norman V. Godfrey, MD).

**Keywords:** Hypertrophic Scar, Treatment, Silicone Gel Sheetling, Microporous Paper Tape

**Print Tag:** Refer to original journal article
Radiofrequency ablation of the nerve supply to the glabellar musculature provides excellent control of frown lines in that area.

**Background:** Surgical treatment of the muscles that work to cause creasing between the eyebrows was a standard aesthetic approach before the wide introduction of neurotoxins.

**Objective:** To describe a percutaneous ablative technique using radiofrequency generation of heat on specific nerves that innervates the procerus and corrugator muscles.

**Design:** Retrospective, non-randomized study.

**Methods:** Over a 2-year period, 27 patients underwent percutaneous radiofrequency nerve ablation of branches of the frontal nerve and angular nerve in order to denervate the musculature between the eyebrows. The authors performed the ablation under local anesthesia, with 93% of subjects requiring additional conscious sedation provided by an anesthesiologist so that patients could tolerate the procedure. Patient follow-up averaged 18 months, ranging from 1 to just over 2 years. The average age of the patients was almost 55 years. The radiofrequency technique selected was a monopolar electrode 22-gauge that was heated to allow for tissue temperatures to reach 85°C with the energy applied for 70 seconds. A Wrinkle Assessment Scale was utilized with independent observers assessing response to patient photographs when the patients were asked to maximally contract. This postoperative analysis was performed after at least 1 year of follow-up.

**Results:** A significant decrease in wrinkle assessment from 3.7 to 1.8 on the Wrinkle Assessment Scale (range, 1 to 5) was demonstrated. One patient sustained a superficial burn at the electrode insertion point, which subsequently healed uneventfully on its own.

**Conclusions:** Percutaneous selective radiofrequency nerve ablation achieves predictable and long-term results in the relief of glabellar frown lines.

**Reviewer's Comments:** This technique has great advantages over the direct excision of the muscle units that used to be performed during brow lifts. The authors map out the location of the nerve that is to be sacrificed preoperatively using a peripheral nerve stimulator. This is an essential feature of their protocol. The selection of the unipolar electrode and keeping the heat generated to <90° adds to the predictability of the result. As Dr David Knize points out in his discussion, if the tissue temperature exceeds 90°, impedance shift results that limit the amount of radiofrequency energy that is transmitted and can lead to unpredictability of the nerve ablation. Radiofrequency ablation is commonly used as an effective treatment for cardiac arrhythmias. The application of this technology to aesthetic surgery needs a longer-term prospective study to ensure that reinnervation recovery does not occur. Reinnervation recovery could lead to abnormal or asymmetric muscle recovery and function. Another limitation of the technique described is the need to undergo sedation anesthesia. This adds significantly to the cost, particularly as the typical injection of neurotoxins is not associated with the need for any ancillary service other than the surgeon and some needles and syringes. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Glabellar Wrinkles, Radiofrequency Ablation

Print Tag: Refer to original journal article
Intense focused ultrasound tightens skin and improves nasolabial folds and jowls.

**Background:** High energy focused ultrasound is a new technology that delivers energy to the dermis and underlying tissues in a precise fashion. As a new technology, its benefits and limitations are just being defined.

**Objective:** This is the first study demonstrating the effectiveness of this new technology in Asians.

**Participants/Methods:** 22 Asian patients with a mean age of 48.5 years underwent a single full-face treatment with the Ulthera intense focused ultrasound device. Topical anesthetic cream was applied to the face, and the forehead, temples, and malar area were treated with a single pass with a pulse depth of 3.0 mm. The cheeks and submental areas were treated with 2 passes; both the 3.0 and 4.5 mm depths were treated. Clinical assessment was performed objectively by 2 blinded dermatologists who compared unlabeled before-and-after photographs. Patients were also asked to assess their results. Skin biopsies were performed before and 2 months after treatment in half of the subjects.

**Results:** The blinded dermatologists judged that 91% of patients showed much improved appearances of the nasolabial folds and jaw line, and the other 9% showed improvement. Patients subjectively reported great improvement in 77% of nasolabial folds and 73% of jaw lines. Biopsies showed 24% increased collagen and more organized elastin fibers after treatment. Complications were minimal and included transient numbness in 18%, which resolved by 3 weeks. Nine percent of subjects developed whitish wheals that were presumably transient.

**Conclusions:** Intense focused ultrasound is effective in improving the appearance of nasolabial lines and the jaw line in aging Asian subjects. The technology delivers heat in a precise location, tightening the skin and increasing the thickness of collagen. The benefits are achieved with a low chance of complications.

**Reviewer's Comments:** This well-done study showed that Ulthera is effective at facial rejuvenation in Asians. Because of the risk of hyperpigmentation in darker Fitzpatrick skin types, lasers must be used with great caution. However, high-energy ultrasound bypasses the epidermis and has a minimal risk of pigmented changes. Since this technology is very new, studies like this one are very important in defining which patients are appropriate and what the treatment parameters should be. This study widens the scope of people who can benefit from Ulthera and better define the parameters for its use. (Reviewer-Arthur W. Perry, MD, FACS).

Keywords: Intense Focused Ultrasound, Facial Rejuvenation

Print Tag: Refer to original journal article
Adjunctive fat grafting used in conjunction with suspension techniques for facial rejuvenation leads to improved aesthetic results.

**Background:** The addition of fat grafting to facial rejuvenation operative procedures has been noted as an increasing trend.

**Objective:** The authors report their results with fat grafting added to a facial rejuvenation procedure.

**Design:** Retrospective review.

**Methods:** 50 patients who underwent a suture-based facial suspension rejuvenation procedure were compared with patients who underwent the same procedure but who also underwent fat grafting in the tear trough area, nasolabial crease, and the malar prominence. Patients were followed up for at least 1 year ranging out to 46 months. The mean patient age was approximately 51 years. Photographs were taken at least 10 months after surgery. The photographs were then shown to blinded panels of plastic surgeons and medical students to assess the degrees of improvement as well as ranking results from best to worse. Fat grafting was performed in a standard Coleman fashion with the abdominal and lower extremities utilized as donor sites. A range of 13 to 23 mL of fat was used as grafts in the areas treated.

**Results:** The addition of fat grafting improved the aesthetic results as judged by the independent observers in the tear trough and malar eminence areas.

**Conclusions:** The authors recommend the use of fat grafting as an adjunct that improves facial rejuvenation results.

**Reviewer's Comments:** The authors include preoperative and postoperative photographs on 2 patients treated in the study. Their minimal access cranial suspension lifting procedure alone achieves results consistent with a limited technique. I see areas of deficiency in the postoperative jaw line and neck contour that would have been improved if a more extensive facial rejuvenation procedure had been performed. Surgeons and patients should be aware that a limited-access type of facelift can sometimes lead to a result that leaves significant areas of facial laxity behind. Nonetheless, the benefits of adding facial volume are apparent in the postoperative photographs in the article reviewed. This paper also makes the point that providing lipofilling alone may not be adequate. Outcomes after fat grafting can be enhanced when lipofilling is combined with a surgical procedure. Aesthetic surgeons should begin to consider adding fat grafting to their rejuvenation repertoire if they have not done so already. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Fat Grafting, Minimal Access Cranial Suspension Lifting

**Print Tag:** Refer to original journal article
Absorbable sutures, whether smooth or barbed, achieved longstanding results in the maintenance of rectus diastasis.

**Background:** Rectus plication with permanent sutures leaves tissue material in a place that can serve as an inciting foreign body that can increase postoperative infection rates or be palpable postoperatively.

**Objective:** To describe the authors' use of absorbable sutures in performing rectus plications.

**Design:** Retrospective review.

**Methods:** 34 patients who underwent abdominoplasty in a 3-year period were studied. Half of the patients underwent repair with a smooth running absorbable suture; the other underwent repair with a barbed suture. Patients were all women with an average age of just over 44 years. The mean body mass index was 23. The patients were followed up for a mean of 34 months, with the smooth group followed up approximately 15 months longer than the barbed suture group.

**Results:** The rates of seroma (12%), hematoma (6%), and total complications (18%) reported by the authors were similar to rates reported by groups as described in the authors' review of the literature. One patient in this study developed a hematoma thought to be due to the use of chemoprophylaxis against deep venous thrombosis. No recurrent rectus diastasis was noted.

**Conclusions:** Absorbable sutures, whether smooth or barbed, achieved longstanding results in the maintenance of rectus diastasis and freedom from the need for an assistant to “follow” the surgeon when the barbed suture was utilized.

**Reviewer's Comments:** I have a great deal of personal experience using barbed sutures, not only for rectus muscle plication but also for my subcutaneous and intracuticular closures. Unlike the double-armed barbed suture used by these authors, I make use of a uni-directional barbed suture. This makes the closures even faster since it is unnecessary to have to factor in the mechanics and geometry of the mid-points of the double-armed suture material. If you have not had the opportunity to make use of barbed sutures when you are performing an abdominoplasty or breast reduction, I highly recommend them. They perform superbly and allow for significant increases in productivity during wound closure. The increased productivity more than compensates for the increased cost of the barbed suture material. I have found that my use of barbed sutures is associated with a decrease in operative times. This is yet another way to decrease rates of perioperative morbidity, such as venous thromboembolic phenomena. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Diastasis Recti, Barbed Sutures, Rectus Plication, Abdominoplasty

**Print Tag:** Refer to original journal article
Cutting Costal Cartilage Grafts Is About to Become Easier

Practical Device for Precise Cutting of Costal Cartilage Grafts to Uniform Thickness.

Foulad A, Manuel C, et al:

Arch Facial Plast Surg 2011; 13 (July/August): 259-265

Cutting costal cartilage for sheet grafts is most accurate when done longitudinally.

**Background:** As rhinoplasty has evolved from a primarily ablative procedure to a constructive and augmentative procedure, the need for autologous cartilage grafts has grown dramatically. While the quadrangular plate remains the ideal source of such material, it is frequently lacking sufficient amounts, particularly in the secondary case. Costal cartilage is a source of generous amounts of autologous tissue, but it requires careful, balanced carving to avoid warping.

**Objective:** To design and perfect a practical device for the precise cutting of costal cartilage into uniform, balanced cross-section sheets suitable for grafting in reconstructive rhinoplasty.

**Design:** The initial phase of the effort was an evaluation of existing cutting modalities for their applicability to costal cartilage cutting. All methods were found lacking, with double-bladed devices with static spacers offering the most promise. Shorter blades resisted bending better. This dictated that the costal cartilage be sectioned longitudinally rather than transversely. Paired single-bevel blades with their beveled surfaces facing away from each other yielded strips with the most uniform thickness. Finally, proper straightening and stabilization of the costal cartilage, in preparation for cutting, gave the most reliable balanced sections. The authors used these insights to design and fabricate a prototype. It features a vertical bar to guide a blade carrier. The blade carrier holds 2 single-beveled blades and a spacer to control the thickness of the cut. Finally, there are 2 vertical stabilizing bars of adjustable position, to which the costal cartilage segment is secured.

**Methods:** The costal cartilage was harvested as an intact, complete cylinder. The perichondrium was carefully removed from the lateral surfaces of the cartilage where the blades will pass through the surfaces as the tough perichondrium will distort and dull the blades. The perichondrium should be left attached to the remaining surfaces of the cartilage to facilitate the hold of straightening sutures passed through the cartilage and secured to the stabilizing posts.

**Results:** The authors found that the sheets they cut were of very uniform thickness. They judged the speed and ease of use far superior to that of freehand carving.

**Conclusions:** A practical device for the accurate carving of balanced sheets of cartilage graft from costal cartilage is near at hand. The authors suggest that with some expected design refinement, the fundamental engineering already exists to make a simple cartilage cutting device available very soon.

**Reviewer's Comments:** I found this paper very interesting. In addition to offering the prospect of a practical and efficient device for producing cartilage sheets from costal cartilage material, it offered wonderful insights into the development process. I commend the authors for a paper that is very enjoyable to read. (Reviewer-Norman V. Godfrey, MD).

Keywords: Cartilage Grafts, Costal Cartilage, Corrective Rhinoplasty

Print Tag: Refer to original journal article
Experienced surgeons can achieve excellent results with a transaxillary approach for breast augmentation, even when using fairly large volume silicone implants.

**Background:** Most surgeons insert silicone implants through an inframammary approach due to ease of pocket dissection and minimizing trauma on the implant.

**Objective:** The authors report a single surgeon's experience using a transaxillary incision showing that this approach still has a role for patients seeking breast augmentation with silicone implants who do not want to have initial scars placed on the breast.

**Design:** Retrospective review.

**Participants/Methods:** 1776 patients underwent transaxillary subpectoral augmentation mammoplasty over a 20-year period. The average age of the patients was just over 32 years. The average implant size was over 435 cc. The mean follow-up was >3 years with a range out to almost 20 years. Thirteen percent of the patients underwent staged mastopexy.

**Results:** Malposition, size change, and capsular contracture rates were reported at <3%. No postoperative infections were noted, and only 2 patients experienced postoperative bleeding requiring additional surgery. Two-thirds of the re-operations were able to be performed through the axilla.

**Conclusions:** The transaxillary approach to breast augmentation with silicone implants remains a versatile technique.

**Reviewer’s Comments:** The authors admit the retrospective nature of the review. The decrease in the percentage of patients returning for follow-up after surgery that rapid falls off after 3 years and the lack of any patient satisfaction data make conclusions difficult to interpret. Nonetheless, the paper does contain comparisons of the author's data to those in the implant manufacturer's studies as well as comparisons to reports of acknowledged experts like Dr Tebbets and the Danish implant registry. These other published studies all have higher rates of complications than what the author reports here. Most interesting to me is the fairly impressive sized implants that are used for augmentation - an admitted consequence of the geographic location in which the author practices. The clinical examples show relatively petite women receiving implants that are significantly larger than what would otherwise be implanted in other geographic regions. Nonetheless, of the clinical cases shown, the esthetic results are certainly excellent. In my opinion, the learning curve associated with the transaxillary approach is probably its largest deterrent. There are enough issues related to the implants themselves that lead to re-operation rates. Avoiding having to deal with the surgeon's learning curve is one excellent reason to seriously consider the advantages of an inframammary approach when beginning to perform breast augmentation procedures regularly. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Breast Augmentation, Subpectoral Implants, Transaxillary Incision

**Print Tag:** Refer to original journal article
Rotation of excess lateral breast tissue enhances the outcomes of breast procedures done in patients who have experienced a massive weight loss.

**Background:** Achieving desirable breast shapes in patients who have undergone massive weight loss (MWL) remains a challenge.

**Objective:** The authors describe their technique, which incorporates a standardized keyhole pattern and a superomedial nipple pedicle with the addition of a lateral-based flap to enhance the aesthetic result they achieve.

**Design:** Retrospective review.

**Methods:** 20 patients operated on over a 4-year period, who underwent mastopexy with autoaugmentation from the lateral breast flap and implant insertion in a single stage, are described. The patients shared similar demographics and had an average age of 41 years. All patients had at least grade II ptosis, with 30% having grade III ptosis. Patients underwent elevation of the superomedial pedicle. A lateral flap of excess tissue was then rotated and sewn to the inferior border of the pectoralis major muscle, achieving complete soft tissue coverage of the implant placed. The inverted-T pattern skin closure is reinforced by having healthy tissue underneath the apex of the inverted-T. Implant volumes ranged from 275 to 600 cc, with the average amount being 350 cc.

**Results:** None of the patients developed complications requiring additional surgical procedure. Twenty-five percent of the patients did have a small amount of breakdown along the suture line that resolved on its own with local wound care. One capsular contracture developed within the first year and required elective revision. Another patient developed a small hematoma and one patient wanted a larger implant size. No patient-reported outcome assessment is used, but all patients were described as being happy with their results.

**Conclusions:** Use of the lateral-based breast flap to add breast tissue to the inferior pole of the breast and additional soft tissue coverage over an implant placed facilitates one-stage breast rejuvenation in patients who had MWL.

**Reviewer's Comments:** I am not sure that use of a breast flap secured inferiorly would prevent implants from bottoming out after augmentation/mastopexy in massive weight loss patients. There may be a role for the use of acellular dermal matrix or other products in this clinical scenario. Dr. Peter Rubin describes using the lateral breast flap in a mastopexy technique alone so that implants are not necessary in some patients. Nonetheless, some patients will require an implant because autoaugmentation with the patient’s own tissue does not provide enough volume for optimal results. Some surgeons prefer performing a mastopexy and then staging an augmentation subsequently. I always discuss the need for subsequent revisions with my MWL patients. My high rate of revisional procedures may be due to the development of capsular contracture or because the quality of these patients tissue is such that elasticity and deterioration of the immediate postoperative result is always problematic moving forward. (Reviewer-Robert Thomas Grant, MD).

**Keywords:** Mastopexy, Superomedial Pedicle, Breast Augmentation, Massive Weight Loss

**Print Tag:** Refer to original journal article
Preoperative planning allows custom osteotomy cutting guides to be created, facilitating the bony cuts required during fibula reconstruction of mandibular defects.

**Background**: Microvascular transfer of the fibula along with the segmental osteotomies has become the gold standard of choice for reconstruction of 3-dimensional defects following extensive head and neck ablative procedures that require mandibular resection.

**Objective**: To describe the authors' technique that makes use of virtual surgical planning to facilitate and ultimately guide osteotomies in the fibula with the goal of reducing the time necessary to achieve these procedures.

**Design**: Technique paper with a retrospective review.

**Participants/Methods**: The authors used their technique on 5 patients. Preoperatively, 3-dimensional imaging was used to define the resection that was to be done by the ablative surgeon. Virtual surgery was then performed, facilitating the development of a mandibular cutting guide. The mandibular cutting guide was affixed to the fibula during its harvest, allowing for definitive osteotomies and expedited placement of the reconstructive plate.

**Results**: The authors noted a significant but un-quantified savings of time during the procedures.

**Conclusions**: Virtual surgery facilitates the perioperative planning for patients undergoing mandibular resection, allowing for production of customized mandibular cutting guides. Improved communication between the ablative and reconstructive teams also results, leading to increased efficiency.

**Reviewer's Comments**: The lead author, Dr Antony, completed her microsurgical fellowship at our Cornell partner Memorial Sloan-Kettering Cancer Center (MSKCC) in Manhattan. The tradition of fibula reconstruction extends back to when Dr David Hidalgo was chief of plastic surgery of that institution and published his landmark paper on the technique over 20 years ago. His successors, Dr Cordiero, Dr Disa, and Dr Mahara have improved upon this and the original descriptions of the technique. From my own experience as a plastic surgery resident at MSKCC, I remember the extensive preoperative planning that Dr Hidalgo would do by hand with one-to-one images of the patient's mandible and use of x-ray film to create models to help guide him in performance of osteotomies as he was harvesting his fibula grafts. The advantage of computer technology over what was a laborious hand-individualized process is clearly demonstrated in this paper. There is no doubt that the enhanced improvements in surgical timing in this paper reflect not only these refinements in the technique overall, but also the more widespread familiarity with it as more and more of the procedures have been done. Certainly, the ability to maximize the learning curve in an educational setting is benefited by the use of simulation. Virtual surgical planning will increasingly become a reality as simulation and simulators advance in sophistication. (Reviewer-Robert Thomas Grant, MD).

**Keywords**: Virtual Surgery, Cutting Guides, Fibula Free Flap, Stereolithography

**Print Tag**: Refer to original journal article
Customized fill of temporal defects can be reliably achieved with use of methyl methacrylate.

**Background:** Augmentation of the temporal hollowing that results following previous craniofacial surgery can significantly improve patients' esthetic appearance.

**Objective:** To demonstrate use of an alternate material to increase tissue projection in a depressed temporal region.

**Design:** Technique paper and retrospective review.

**Methods:** A 4-5 cm incision in the hair-bearing scalp 1 cm posterior to the temporalis muscle was made. A submuscular pocket was created down to the superior edge of the zygoma. Methyl methacrylate acrylic was placed into the space. Dissection to get to the space below the temporalis muscle was performed at a level separate from the skin closure. A stepwise layered closure results, avoiding a single full-thickness dissection plane that facilitates soft tissue coverage of the acrylic.

**Results:** The authors report having used this technique 35 times over an 8-year period. Indications have been for patients due to aging, low body fat, adjacent soft tissue or skeletal deformity, or as a result of previous surgery. Three patients had excess contour that needed to be reduced. One additional patient had too much projection and asked for the implant to be removed. Another patient had the methyl methacrylate inserted below the superior border of the zygomatic arch, interfering with maximal jaw opening.

**Conclusions:** Methyl methacrylate acrylic is a versatile biomaterial and is useful for correction of temporal hollowing.

**Reviewer's Comments:** Certainly, craniofacial surgeons have a vast experience utilizing methyl methacrylate. Its ease of use and early malleability make it ideal biomaterial for many applications. I have found that attempting to place off-the-shelf pre-formed anatomically designed temporal inserts has been problematic, especially at the interface between the insert and the normal tissue adjacent to where the implant is inserted. Residual contour abnormalities and soft tissue defects can persist. Disadvantages of methyl methacrylate use include that the technique requires an operative procedure in a monitored setting under general anesthesia, whereas fat grafting or injection of other materials can typically be done in the office under local anesthesia. Nonetheless, the predictable and reliable nature of the outcomes achieved by these respected authorities demonstrates the versatility of methyl methacrylate. This is clearly an innovative new use of a well-established material. (Reviewer-Robert Thomas Grant, MD).

Keywords: Methyl Methacrylate, Temporal Hollowing

Print Tag: Refer to original journal article
Use of a 3-cm disc to guide selection of onabotulinumtoxinA injection sites minimizes treatment overlap and untoward diffusion.

**Background:** Neurotoxins are able to achieve excellent results in treatment of cosmetically unappealing forehead wrinkles.

**Objective:** To describe development of an injection aid that allows for the identification of a reliable site for location of the neurotoxin in order to minimize complications with injection into areas that lead to less optimal results.

**Design:** Retrospective study.

**Methods:** The authors used a 3-cm disc with a hole in the center that served to estimate the distribution of the botulinum toxin type A that was administered. The 3-cm disc is appropriate for a dilution where 100 units of the neurotoxin is diluted with 2.0 mL of sterile non-preserved saline with generation of 2 mm subcutaneous elevation in the treatment area with a 0.3-mL syringe and 30-gauge needle. The first 15 patients had the glabellar region treated 2 weeks after frontalis treatment, with all subsequent patients (35) having the frontal and glabellar areas treated simultaneously. In total, 370 injections in 50 patients were performed over an 18-month study period. Patients were followed with photographs 2 weeks after the treatment. The authors used on average 16 units of the toxin, and an average of 3 injection sites was needed.

**Results:** All patients achieved satisfactory esthetic results. Two patients developed asymmetry requiring repeat injection, and 5 patients early in the study period had irregular positioning of the discs leading to excess residual wrinkles. The disc is positioned with its most inferior portion at 0.2 cm below the most inferior forehead wrinkle to minimize the development of eyelid ptosis or other side effects.

**Conclusions:** The use of a fixed measuring disc helps avoid overlap of injection sites and allows for the most appropriate dosage efficiency for treatment of forehead wrinkles with neurotoxin.

**Reviewer’s Comments:** The paper has a number of photographs that demonstrate the authors’ usage of the disc, how it is located, where the injection site is, and how overlap is minimized. It is interesting that the injection sites for the patient’s glabella do overlap into the frontal region. I think the disc device presented is an excellent teaching tool. As with most learning aids, its use becomes less necessary as an injector gains experience. I have used a U.S. quarter to demonstrate diffusion diameters when I am leading a neurotoxin instructional course (the 25 cent piece is widely available and easy to sterilize Regardless of whichever simple disc you choose to utilize a technique like the authors describe here is a great way to make sure you are maximizing dosage and avoiding treatment overlap. (Reviewer—Robert Thomas Grant, MD).

Keywords: Neurotoxin, OnabotulinumtoxinA, Dose Disc

Print Tag: Refer to original journal article
A simple carpenter’s level can be used to help confirm symmetry of new nipple positions during breast procedures.

**Background:** Necessity for symmetric nipple location is essential to optimize results when performing breast reduction and breast lift surgeries.

**Objective:** To demonstrate a straightforward technique for using a commonly available carpentry tool to confirm symmetric levels of the new location of the nipple and areola in breast reduction and mastopexy surgery.

**Design:** Technique paper.

**Methods:** This technique is applicable regardless of the marking technique that the surgeon utilizes, whether it is a Wise pattern or any of the additional skin marking patterns utilized.

**Results:** The commonly available carpenter's level placed across the top of both nipples is able to demonstrate symmetric location of new nipple position by ensuring that an air bubble is centered between the 2 vertical lines in the level.

**Conclusions:** Use of a carpenter's level allows for demonstration of symmetric nipple position at the conclusion of preoperative markings for breast reduction and mastopexy, and confirmation of symmetry during and after the procedure.

**Reviewer's Comments:** Dr Perry is a member of our Division of Plastic Surgery. This is a technical common sense innovation so obvious in retrospect I can't believe I didn't think of it! The carpenter's levels are long enough so that they are easily used in patients of all sizes. I can see how its use can confirm surgical markings, and compensate for patient positioning, cooperation, and the multitude of marking techniques surgeons employ for determining the new elevated position of the nipple and areolar complex. It's an inexpensive instrument that is widely available, durable, and easily stored. I think its use is a great idea. (Reviewer—Robert Thomas Grant, MD).

**Keywords:** Nipple Symmetry, Breast Reduction, Preoperative Planning, Surgical Markings

**Print Tag:** Refer to original journal article