CLINICAL ROUNDTABLE:
LASER SCAR REVISION

Experts discuss reimbursement issues, treatment protocols, combination therapy, as well as the future for scar revision therapy.

PARTICIPANTS:
Matthias Donelan, MD
Mitchel P. Goldman, MD
Charles “Eric” Greeson, MD
Chad M. Hivnor, MD
E. Victor Ross, MD
Nathan S. Uebelhoer, DO
Jill Waibel, MD
Reimbursement Issues

The panel of laser experts shares insights on how to bill for laser treatment of scars and the need for a dedicated code that is reimbursable for this treatment.

Q. How do you bill? What CPT codes should be utilized when performing laser treatment of scars?

E. Victor Ross, MD: I have a hybrid approach—if someone comes in with a very small scar, such as a scar after MOHS surgery or a small scar after an injury, I typically bill it to the 17110 code with the diagnosis of keloid scar 701.4.

I recently treated a patient who had a large burn on most of her chest from a fire on Halloween in 2011. She required local tumescent anesthesia infiltration into the scar and DeepFX and pulsed dye laser treatment over a very large area. For treatments like this, I pre-certify the procedure for 17108, which is the code for greater than 50 square centimeters for cutaneous vascular proliferation.

Sending photos of the patient can be very helpful; photographs are compelling. I think for larger scars, you can make a good case that there should be fair reimbursement, particularly when there’s restriction in range of motion and significant cosmetic deformity.

Jill Waibel, MD: We hope to make our own code at some point. Currently, I send a peer-review article that supports the treatment protocol to the insurance companies and say, “This is what I’m doing, it’s published, and these patients need treatment.” I document—I have a history and physical where I document range of motion, but currently there is not a code that really fits. We’re doing the right thing for patients who deserve this treatment. It is unfathomable that these patients aren’t covered by insurance. These are children and adults who have suffered more than anyone. There are military soldiers who can’t even open their hands, and we have the laser that can fix it. This is a problem that needs to be tackled in Washington. There needs to be a unanimous front on how this should be reimbursed.

Dr. Ross: Many patients can’t afford this treatment out-of-pocket. I have a young female patient I’m currently treating and I know her parents can’t pay for these treatments. She was getting some support from Angel Faces and some other organizations, but it’s typically not sufficient to carry the whole burden. There has to be some burden sharing here, particularly with these large scars, and I agree with Dr. Waibel that, unfortunately, there’s not a code that really fits. The destruction of cutaneous benign lesion, which is the 17110 or 17111 code, really doesn’t fit. Nor does the treatment of an inflammatory cutaneous disease, nor does the treatment of cutaneous vascular proliferation. I don’t think there’s any great code for this.

Panelists

Matthias Donelan, MD is an Associate Clinical Professor of Surgery at Harvard Medical School. He is Chief of Plastic Surgery at Shriners Burns Hospital, and an Associate Visiting Surgeon at Massachusetts General Hospital.

Mitchel P. Goldman, MD is a board certified and a Diplomate of the American Board of Cosmetic Surgery. He is a volunteer Clinical Professor in Medicine/Dermatology at the University of California, San Diego and the founder and Medical Director of Goldman Butterwick Fitzpatrick Groff & Fabi, Cosmetic Laser Dermatology.

Charles “Eric” Greeson, MD, FAAD is a dermatologists with the Austin Regional Clinic in Austin, TX. He is a distinguished Graduate of the United States Air Force. He most recently held the position of Associate Professor of Dermatology at the Uniformed Services University of the Health Sciences.

Chad M. Hivnor, MD is the Dermatology Program Director at San Antonio Uniformed Services Health Education Consortium in San Antonio, TX

E. Victor Ross, MD is Director of the Scripps Clinic Laser and Cosmetic Dermatology Center in La Jolla, CA and a frequent lecturer at national and international meetings on cutaneous laser medicine.

Nathan S. Uebelhoer, DO is Head, Dermatologic and Laser Surgery Division, Dermatology Department, Naval Medical Center, San Diego, CA.

Jill Waibel, MD is a Clinical Voluntary Professor at University of Miami and Clinical Assistant Professor of Dermatology for Wright State University. She is the Dermatology Subsection Chief in the Department of Medicine at Baptist Hospital, and medical director and owner of Miami Dermatology and Laser Institute in Miami, Florida.
Dr. Waibel: Creating a code is not going to be easy. A group of us have started to discuss it—you have to go to the Relative Value Update Committee (RUC) and then it’s a two- to three-year process. And, lasers and codes and insurance have not had a great track history—the vitiligo code just got pulled.

Mitch Goldman, MD: I have a different approach—I call it the Robin Hood approach. I know it’s not going to go over well with the great masses, but I do not want to possibly mislead insurance companies or spend an exorbitant amount of staff time arguing with insurance companies for them to do what they should be doing. My practice is not a 100% scars practice, but in the 5% or so of my practice that involves treating scars, usually I will treat the traumatic scars for free, and charge for the treatment of surgical scars from a plastic surgery procedure. The profit I make from those patients goes to pay for treating the traumatic scars. But this is not the right answer. The right answer is to form a committee and to get the insurance companies to do what they should be doing, but until that time, I don’t want to walk on a ledge of being unethical and using codes that may not be right. My fear is that other unscrupulous physicians will abuse those codes, just like so many other codes that are being abused.

Matthias Donelan, MD: I’m at an unusual situation amongst this group being a plastic surgeon who predominantly uses lasers for the treatment of 95% children who have sustained burn injuries and adults who have also sustained burn injuries. Until recently, the children we were treating were taken care of within the Shriner’s hospital systems and all of our care was provided at no charge. Our use of the codes was nonexistent among the patient population. However, I had an interesting experience in Massachusetts. Because of the obvious benefit of the pulsed dye laser in treating the vascular proliferative deformity and hypertrophic scars after burn injuries, we were able to actually get all of the insurance companies in Massachusetts to support the use of the destruction of a vascular lesion in patients who had sustained burn injuries and were being treated with the pulsed dye laser for hypertrophic scars. It was an amazing accomplishment and a couple of papers were present in the literature that could be cited, which speaks to what Dr. Waibel was talking about earlier. I think that by extension, you could make a case for using those codes because the ablative fractional CO₂ laser is destructive to a proliferating vascular disorder and you could therefore try to piggyback that on to what has already been accepted by insurance companies.

I don’t disagree with Dr. Goldman that this is pushing the envelope, but I think it’s an envelope that needs to be pushed. I’m very familiar with the conflict that exists among people who are in a specialty when it has to do with something being deemed cosmetic or functional and therefore covered. Every rhinoplasty has a functional component and a cosmetic component. Every reduction mammoplasty is obviously a procedure that is being done at least as much for an improvement in appearance as it is for rashes under the breasts and back pain. But all of these gray areas are areas where we allow this ridiculous dance to go on between third-party payers desperately trying to avoid providing care to clients and customers who have paid premiums for decades by denying payment on a technicality. I think it’s incumbent upon us as people who are taking care of patients to take that argument aggressively to the insurance companies and to the RUC committee. One of the advantages of photo-medicine is that it allows us to do way better things with way less morbidity. So why shouldn’t we push that case for our patients? It’s not fair for patients who have scars from plastic surgery procedures either. If a patient had a bad outcome, maybe treatment should be covered.

Dr. Goldman: I don’t believe that keloidal and hypertrophic scarring should be under vascular. They’re a lot more than that.

Dr. Ross: The 17999 is the unclassified code.

Dr. Goldman: If we push that at least that’s a more ethical way of doing this until such time as we can devise the proper code.

Dr. Waibel: Unfortunately I tried to use that code when I first started. I billed 20 patients with that code and they got all denied six to nine months later.

Dr. Goldman: When we were first treating port wine stains, the codes were always denied. It took years and years of fighting the insurance companies through hundreds and hundreds of patients for them to start allowing us to use destruction of vascular lesions for port wine stains as being a medically covered disease. We need to do the same thing now. We need to treat hundreds of patients and get hundreds of letters for this to happen.

Chad Hivnor, MD: We need to make sure that we keep things in context and not marginalize what we’re treating. Like Dr. Goldman said, the keloids and hypertrophic scarring and the range of motion decrement that can occur with these scars is much more than vascular. If we marginalize it to only being vascular, I think that in the future it will be difficult to argue that it is more—this is about range of motion and function. Scars can often be functional issues. We need to prove that the range of motion issue is legitimate in a prospective manner. We don’t want to marginalize things by putting a code on there that may be improper, or marry ourselves to a code that is being devalued.

Dr. Donelan: Another important point is that the concept of functional deformity is very complicated and it’s not just range of motion. I think the most important functional activ-
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Dr. Hivnor: I think that has the potential for abuse, though. We need to objectify this and not have subjectivity. We need to focus on the range of motion issue, the pain associated with scars, pruritus — there are several objective criteria.

Dr. Goldman: There are many kinds of combination therapies to consider. When I’m treating a gunshot or a powder burn victim with hypertrophic scarring, I use ablative lasers, fractionated lasers, Q-switch lasers, and pulsed dye lasers. Sometimes I’m using four or five lasers in a single patient and it’s very difficult to figure out if that’s by area and by time. There have to be a variety of modifiers.

The location and type of scar dictate treatment settings. Panelists discuss other attributes of scars that affect treatment decisions.

Q. When treating customers who pay cash out-of-pocket, should you charge by area or by time?

Dr. Ross: I don’t like to charge by time. You can have a lot of experience with a device and work very fast or you can be training or have someone who’s uncertain with the settings, so I think we should charge by the unit of work that’s done. Physicians who are fast and get good results should be paid the same as physicians who are good, but slow.

Dr. Goldman: The challenge of certain patients is anesthesia, so there has to be an anesthesia charge as well. When treating young children who don’t hold still, you have to do things more slowly, so I agree that we need to charge by area, but there should be another code or a modifier on degree of anesthesia or sedation that is required.

Dr. Waibel: At the hospital, I do Z-Plasty and I can take a patient to the OR — the anesthesia and the Z-Plasty charge are covered. Then I do a cosmetic charge on top of that and laser the whole body, so it might be another X-hundred dollars rather than thousand dollars.

Dr. Ross: Modality doesn’t matter as much to me as the disease pathology, so regardless of what I use, whether it’s an ablative fractional laser, a vascular laser, etc., I code the same. And 98% of my codes are 17110, which reimburses reasonably poorly. But they’re mostly small scars so I can do them very quickly too. It’s basically a four-, five-, or six-minute case.

Dr. Waibel: A nice thing about combination therapy is that if I use 5-fluorouracil or triamcinolone, I can bill the consultation to the insurance company. You can bill injections to insurance. There are peripheral things like Z-plasty that you can bill to insurance. I might tell a patient that of nine treatments we’re going to do, five can be billed to insurance, but we can’t bill insurance for the laser part. So there’s a little glimmer of hope there for some of the combination therapy, but some of these treatments do not reimburse well. Triamcinolone injection does not reimburse well and it’s expensive to buy, but 5-fluorouracil is a little bit better because it only costs 2 cents a bottle to buy.

Dr. Ross: The injection code 11440 doesn’t reimburse very well, either.

Treatment Protocols

The location and type of scar dictate treatment settings. Panelists discuss other attributes of scars that affect treatment decisions.

Q. How do the type and depth of scar play a role in the treatment protocol? What’s the anatomical marker used to determine the depth?

Dr. Ross: Scar characteristics determine my approach. Depending on the depth and type of scar, I’m going to change the approach as far as settings, but not necessarily type of device.

Dr. Waibel: I ask four questions immediately when I see a scar: What type of scar is it? Where is it located? What’s the skin type? What’s the health of the patient? In milliseconds, all of us in this room would be able to say if it’s a hypertrophic scar on the chest on a Hispanic woman.
that has Lupus vulgaris, these are going to be my settings. Our brains just do that because we’re all laser experts. A new person, however, I find very challenging to train. If the person knows burns or knows lasers, you can train them to do this but if you take someone who knows nothing about burns or lasers, it’s difficult.

In terms of a marker, if it’s above the epidermis, meaning hypertrophic or keloid, if it’s just a cosmetic issue, the patient wants it flat. But if it’s a range of motion issue or a restrictive issue then you have to go to dermis to treat the problem—it’s tagged down to the muscle, it’s tagged to the joint. I try to assess how thick it is. I use the ultrasound machine and while it’s not very precise, I have been finding that scars are much deeper than I would have initially set. If I think it is 800 microns, it’s probably 2000 microns.

Dr. Uebelhoer: We can measure the depth of the scar with the high-frequency ultrasound; I’m also amazed that some scars we think are atrophic are 3 mm of dermis.

Dr. Goldman: We also use ultrasound but you have to be good at it because by the megahertz of the ultrasound, it is going to change your acuity and some ultrasound machines are better than others. It is easily trainable, so we should be taking an ultrasound measurement on all of our patients and at least recording that in our operative note or chart.

Dr. Donelan: Those are all excellent points and in general I would agree with them. As a plastic surgeon who has been incising into contracted scars for decades, they’re always thicker than you think that they are and that’s just an essential ingredient of your evaluation of contracted hypertrophic post-burn and post-traumatic scarring. If a scar is 3000 microns thick, it’s going to be really hard for your laser to render that back to a normal thin epidermal-dermal component by itself. You can do it and I’m optimistic that using the Deep FX component, for example, loosening scars at an infinite number of points has the potential to possibly create significant elasticity or increased laxity in patents after

TREATING SCARS: DEVELOPING TREATMENT PARAMETERS

By Charles “Eric” Greeson, MD, FAAD

Protocols for scars are challenging to establish because there is not a one size fits all system. Every scar behaves differently and the settings on the laser may change as the scar changes with each successive treatment. Here are my general settings, but my disclaimer is that these are moving targets.

Atrophic Scars: I generally don’t use the DeepFX on atrophic scars. I find the most benefit from non-ablative 1550 or 1565 nm, or Active FX. For Active FX, I use a scan size that allows for the fewest passes to overlap the edges of the scar by 2-3mm. Energy: 90-100mJ, density setting: 2-3, Hz: 150-250, repeat delay: 0.5s, Pulse: single. I do not use topical steroid for atrophic scars. Post-operative application of petrolatum for wound care.

Hypertrophic Scars: I think one will find the greatest amount of variation in settings for this scar type because so much depends on the location and thickness of the scar. Additionally, pigment alteration can become an issue with higher energy and density settings in darker skin types. I recently started using a specialized DermaScan C ultrasound to help determine the thickness of the scar prior to treatment, so I could more accurately choose the appropriate energy setting to achieve the desired depth. Our current understanding is that you need to penetrate the full thickness of the scar for optimal results. This is not to say you will not get results if you don’t. The DermaScan C unit is $35,000, and my program was fortunate to have acquired it for one of our studies. This is not practical for most offices.

Knowing that the DeepFX has a maximum ablative penetration of about 2mm and the SCARRFX about 4mm in depth, the user will have to estimate the thickness of each scar and choose energy setting appropriately. I frequently refer to the energy setting to depth of penetration graphs provided by Lumenis, and I keep a healthy respect for the depth of residual thermal injury beyond ablation depth.

Standard Settings—Hz: 300 (consider reducing when using very high energies), Repeat delay: 0.5s, Scan Size: largest I can or pattern chosen to meet scar dimensions, Pulse: always single pulse. Variations to keep in mind:
• Teaching new users regardless of thickness or location: 17.5mJ, Density of 10%
• Low: 20-30mJ, 10%, Medium: 40-50mJ, 5% Density (consider 2 passes), Medium-High: 70-80mJ, Density of 3%, High: (thick bands or plate-like scar on the back) 100-150mJ Density of 1%, (consider 2 passes)
• Apply topical triamcinolone 40mg/cc immediately after therapy
• Repeat treatment in two to three months
• Do not overlap when treating

Acne Scars: Acne scarring can by atrophic or hypertrophic, so the settings can vary. I use DeepFX in atrophic acne scars. For hypertrophic acne scars, I use low to medium settings as described above in the hypertrophic scar section. However, I recently used the high setting on severely hypertrophic acne nodules on the face and shoulders.

For atrophic scars on the cheeks: DeepFX: 22.5-30mJ, Density of 10%, followed by AFX 90-100mJ at Density of 3-4. Decrease energy or density for darker skin types. Use lower density with higher energy.

Surgical Scars: At time of suture removal: DFX 15-22.5mJ, density of 10-15% and or AFX 90-100mJ, density of 2-3.

Cosmetic Scars: Same as surgical scars.
treatment. The anecdotal reports from the patients I have been treating have been remarkable. In fact the symptomatic improvement of the patients following these ablative CO$_2$ laser interventions seems completely out of proportion with the objective appearance of the improved scar. But it’s true the ectropions that are the result of contracted skin scarring, after two or three treatments with the UltraPulse laser, get better. And they’re measurable—you can see it in the photographs. The range of motion data that Dr. Hivnor’s been reporting on for the last several years is certainly real. It’s going to be really interesting to find out how it’s working because I don’t think we know at this point. There’s so much research that needs to be done and reported upon.

**Combination Protocols**

*A discussion of combination approaches for treating scars.*

**Q. In terms of combination, if you didn’t have another laser, what would you actually use for hypertrophic, atrophic, acne, and traumatic scars?**

**Dr. Goldman:** We always use a combination approach for hypertrophic or traumatic scarring, possibly a corticosteroid or 5-fluorouracil. Acne and atrophic scarring are completely different. You could put in a hyaluronic acid to raise atrophic and acne scars.

**Dr. Waibel:** I use a combination approach with a cross technique, Z-plasty, and W-plasty.

**Dr. Uebelhoer:** I use the cross technique, a TCA peel occasionally for acne scars that are ice pick-esque, subcision, shaving for keloids sometimes, and Z-plasties.

**Dr. Hivnor:** I use shaving for keloids and subcision for acne scars. Some atrophic scars look hypertrophic but when you feel them it’s more like an acquired cutis laxa because there’s almost no dermis underneath of it. That’s often from traumatic scars, like road rashes. It’s much like striae. I’m trying to determine the best way to reestablish collagen there.

**Dr. Goldman:** I think the autologous fibroblast culture, Isologen™ or LaViv™, is probably the best treatment for people with a decreased dermis.

**Dr. Uebelhoer:** There’s also compression and massage that physical therapists (PTs) and occupational therapists (OTs) are doing that are profound. Good compression can really change the course of a scar as well.

**Dr. Hivnor:** With contractures, you have to include some level of PT or OT so the body heals correctly. For range of motion on the hands, the hand wants to form back into a cupped position. You need PT, OT, splints, compression, or something to help the body heal in the correct position.

**Dr. Donelan:** The most important thing is making the correct diagnosis. It depends on the cause of the hypertrophic scar. It may be the location or it may be the circumstances within which the scar is living. Hypertrophic scars in the deltoid area are kind of idiopathic. Nobody knows why they suddenly proliferate and get so thick. There isn’t much that you can direct at therapy other than using a laser or doing injections with steroids, but if there’s a tension component to the scar, if you direct your intervention at fixing the tension you will get improvement in the scar virtually 100% of the time. If you have an atrophic scar it may be striae from pregnancy, it may be some sort of a systemic disease, or it may be the result of treatment with systemic steroids for renal failure, but one of the most common causes of atrophy that I see is from intralesional scar therapy over a prolonged period of time from other physicians. There, usually the best thing to do is to just leave everything alone and sometimes you’ll get improvement from that.

**Dr. Goldman:** The best thing to do is just put in normal saline and infiltrate those atrophic steroid scars to wash out the triamcinalone crystals and they plump right back up.
Dr. Donelan: The pulsed dye laser has been a panacea for all of these things that are created by iatrogenic injuries. Each traumatic scar is different, each patient is unique, each injury is unique, and each location is unique, so treatments need to be customized.

Dr. Goldman: Although the pulsed dye laser has historically been the laser that started the anti-scar movement in medicine, you can get really good results with intense pulsed light as well. The advantage of IPL is that you can treat the hyperpigmentation as well as the vasculature. I actually rotate between one treatment with pulsed dye laser and the next treatment at three to four weeks with an IPL.

Dr. Waibel: I have to have a pulsed dye laser, an IPL, a thulium laser, and a fractional ablative laser. This is a complex problem that needs complex solutions.

Dr. Ross: If the building were burning and I had to save one laser as my second, I would take the pulsed dye laser; with minimally purpuric settings for red scars, it’s most effective.

The Next Frontier for Scar Revision

The panel discusses advances they anticipate in the future.

Q. What’s next for scar revision? What is on the horizon?

Dr. Goldman: The next step is to have a laser with combinations in it so that it can drill holes and at the same time put light specific for vascular or pigment through that same hole to fully take care of the hypervascularity. I think that a laser should be developed that has some kind of retro feedback mode to take the physician almost out of the equation so that scars can be treated by both novice and experts.

Dr. Waibel: I think that laser assisted delivery systems are next. Companies need to start focusing on the big pictures. I’m passionate about scars, but I just think we haven’t yet seen the full potential of fractional lasers for wounds. We have a department of defense grant right now for studying stem cells and we can put stem cells in one side of the pig and do a control on the pig and the stem cells will go to that laser wound on the other side.

Dr. Ross: I agree with Dr. Waibel. Biology is the next frontier. Physics is allowing us to do some things, but the non-energy based technologies might be the next wave; I think that’s where most of the information is going to come in the near future. I believe laser technology will always be an enhancement tool.

Dr. Donelan: I think that the laser technology is perhaps more of a stimulant than we’re giving it credit for. We’re using codes to describe a destructive interaction but based on my experience with the fractional laser in scar rehabilitation, it seems as though we are initiating a unique wound healing response amongst living organisms that has never occurred before. We’re turning on a smart wound healing that is not accompanied by the cytokine storm that’s associated with major trauma and is associated with major burn injuries. It appears as though the scar is able to look at itself and figure out what’s wrong and respond in an appropriate way. And so it may be that the actual depth of the setting is not as important as the fact that you’re using the device to create these multiple even small injuries that then allow the body to do things that we don’t even begin to understand. All of these multi-modal interventions are probably going to be a big part of what we end up doing in the future that is going to make lasers an important part, but it’s only going to be one part. You’re not going to eliminate the doctor, you’re going to have to have a doctor who really understands laser tissue interactions, who really understands the wound healing response, who really understands ancillary techniques, who really understands the ability to know exactly what they’re doing with the device.

Dr. Hivnor: I think we’re at the tip of the tip of the iceberg in regard to these things and that it’s an exciting time to be associated with lasers and the adjuvant therapies that are coming down the road. As I discussed with Dr. Waibel four or five years ago, I think some de-differentiation occurs within the southern structure. How else can you explain how we get hair to regenerate or sweat to regenerate. There are not a lot of other feasible options other than some sort of de-differentiation—our whole understanding of the wound healing process has to be changed. We have to study the pathophysiology of these small wounds. I think that the pathophysiology is different from the inflammatory, proliferative, and remodeling stages. I think that you can kick it into that if you over treat. It’s a fine line of knowing what to do and what not to do. The forefront is understanding the pathophysiology and being able to utilize these other entities.

Dr. Uebelhoer: Another big area is regeneration of tissue. We’re working on a study to see if we can expand skin faster so that someone who has an acute burn may not need to have that split thickness graft. We may be able to expand the skin more quickly by lasing over normal skin and regenerating normal skin. Another big area will be treating ulcers. We’re getting very good results with ulcers, and I’m very excited to see what other ulcers will respond besides ulcers on scars, such as diabetic ulcers and stasis ulcers. It would be unbelievable if we could start treating patients with these chronic ulcers that are very difficult to treat right now.
“The positives have been unbelievable. You wouldn’t think 5 to 10 degrees is that big of a deal – it’s a huge deal! The alleviation of pain, to get a decent night’s sleep is huge. Cosmetically…”

— Patient A

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