

CLINICAL
roundtableUltraPulse Encore Offers Full Spectrum
of Treatment Modalities

By Kevin A. Wilson, Contributing Editor

As new ablative fractional CO₂ devices enter the market, Lumenis, Ltd. (Santa Clara, Calif.) remains at the technology forefront with the UltraPulse Encore, a 10,600 nm CO₂ laser platform with a unique computer pattern generator (CPG) that gives new life to a tried and true system. Practitioners can use ActiveFX or DeepFX fractional protocols, or TotalFX – a combination treatment – to achieve results that approach those seen with traditional ablative resurfacing.

For almost two decades, the original UltraPulse 5000 and its successive models have stood unchallenged as the gold standard for ablative CO₂ resurfacing, the most effective treatment for rejuvenating the aging and photodamaged face, according to Jeffrey Dover, M.D., F.R.C.P.C., dermatologist and vice president of the *American Society of Dermatologic Surgery* in Chestnut Hill, Mass. "What was great about the original UltraPulse was its ability to deliver fixed, short pulses of CO₂ laser light in a controlled fashion," he said. "This sophisticated delivery system allowed practitioners to more selectively ablate tissue and perform reproducible resurfacing that was relatively safe." However this modality is very technique dependant, and factors such as discomfort and extensive downtime have since driven physicians and patients to seek less risky, more tolerable procedures with less downtime. The risk of infection or long-term adverse events, including hypopigmentation and scarring, are also daunting to today's aesthetic consumer.

As with non-ablative fractional treatments, ablative fractional CO₂ therapy creates a pattern of microscopic wounds sufficient in shape and depth to cause reorganization of subsurface collagen, which also stimulates neocollagenesis through the natural healing process. Delivered energy is adjustable, as is the density of the wound pattern. "Since each tiny wound is surrounded by healthy tissue, healing is much more rapid and downtime is minimal, especially compared to traditional CO₂ laser resurfacing," explained Dr. Dover. "Risk of infection or the

adverse events seen with ablative resurfacing are also dramatically reduced." Original fractional technology used an erbium doped glass fiber laser to create subsurface wounds, preserving barrier function but reducing potential efficacy. With a single treatment, ablative fractional resurfacing can achieve what would normally require several treatments with non-ablative fractional modalities.

"Since each tiny wound is surrounded by healthy tissue, healing is much more rapid and downtime is minimal, especially compared to traditional CO₂ laser resurfacing."

UltraPulse Encore is very much like its predecessors except it features a smaller spot size – which was reduced from 2.25 mm to 1.30 mm – as well as a CPG. According to Dr. Dover, what separates UltraPulse Encore from competing systems is the proprietary scanner technology, known as CoolScan. "Traditional scanning methods would lay down the pulses immediately adjacent to each other," he explained. "The UltraPulse CPG lays down the pattern of pulses in a pre-programmed sequence that appears almost random." The end result is the same pattern of spots, but because they aren't placed in an adjacent sequence, heat build-up is minimized and post treatment erythema and edema are reduced.

Editor's Note:

In the following clinical roundtable, a group of top dermatologic and plastic surgeons share their knowledge and clinical experience with fractional CO₂ treatment using the UltraPulse Encore. Collectively, these physicians possess substantial experience in successfully treating aging skin and photodamage with the full spectrum of available laser and light-based modalities.

"I found with ActiveFX it only took one or two treatments to achieve what took five or six treatments with non-ablative fractional therapy."



Before Tx



Two weeks after DeepFX and ActiveFX treatments

Photos courtesy of E. Victor Ross, M.D.

How does a practitioner new to fractional modalities choose between non-ablative and ablative fractional therapies?

James Heinrich, M.D., F.A.C.S. – It all depends on what your patient base wants. At first we went with a non-ablative fractional device because we figured that patients were most concerned with wrinkle improvement and downtime. At least that's been the trend. The trouble was that patients seemed to want better results than were possible with non-ablative fractional treatment, so we began moving back toward traditional CO₂ resurfacing. Then ActiveFX showed up and gave us more of what we needed. We still do non-ablative fractional therapy, but ActiveFX and TotalFX are the most common procedures we perform at our office, primarily because of the end result.



James Heinrich, M.D., F.A.C.S.
Board Certified Facial and Reconstructive
Plastic Surgeon
Pacific Coast Cosmetic and
Laser Medical Center
Mission Viejo, CA

Basically, I found with ActiveFX it only took one or two treatments to achieve what took five or six treatments with non-ablative fractional therapy. Now with TotalFX we're getting very close to reaching the same results as more aggressive ablative resurfacing.

How does a practitioner with non-ablative fractional treatment experience choose an ablative fractional device?

Dr. Heinrich – I went with UltraPulse Encore because it was the first on the market, but I stayed with it because of its versatility. You can use it for cutting. You can do traditional resurfacing, light resurfacing or DeepFX. It does so much more than just wrinkles or acne scars.

E. Victor Ross, M.D. – It's great to have a system that can credibly handle the most popular applications. I use the smaller 1 mm handpiece to focus on specific lesions like syringomas, which is very useful. It's important to note that there are only two ablative fractional CO₂ systems out there that can create wounds that are only 100 microns wide but 1 mm deep, UltraPulse Encore is one of them.

Jeffrey S. Dover, M.D., F.R.C.P.C. – That is a very important point, there are only two true fractional CO₂ devices with microspot technology that drill holes like that.

Robert Weiss, M.D. – I don't think there is any other device out there that allows you to treat superficially for pigmentation, which almost mimics non-ablative fractional treatments, but also performs aggressive fractional CO₂ therapy and traditional ablative resurfacing.

"I think the real role of DeepFX is reducing downtime and problems that might occur during recovery."

When doing ablative fractional CO₂ therapy with UltraPulse Encore, how do the ActiveFX, DeepFX and TotalFX protocols fit into the spectrum of treating photodamage?

Dr. Dover – ActiveFX was the first fractional CO₂ therapy available in the U.S. The wounds are shallower, so it's better for pigmentation or fine lines and more modest photodamage. The DeepFX handpiece makes smaller spots and basically drills deeper into the epidermis through to the dermis, vaporizing the tissue. It is theorized that this enhances the overall effect because it actually reduces volume. What's left collapses and shrinks. This makes DeepFX good for wrinkles and acne scarring by literally vaporizing away columns of scar tissue to be replaced by normal collagen.



Jeffrey Dover, M.D., F.R.C.P.C.

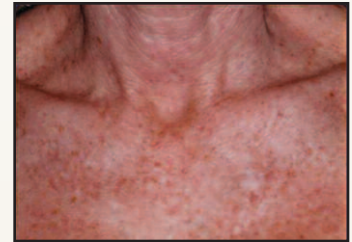
Clinical Associate Professor
of Dermatology
Department of Dermatology
Yale University School of Medicine
Chestnut Hill, MA

TotalFX uses both protocols in conjunction, which I'd say we do most of the time. You can vary aggressiveness easily, using ActiveFX protocols with less downtime for fine lines, for example, at lower energies and spot densities. For modest wrinkling and pigmentary changes we might boost the energy and tighten up the spot pattern. We can overlay with DeepFX for areas requiring more aggressive treatment. It's the best of both worlds. You can treat more aggressively with DeepFX and use ActiveFX to blend everything in the same treatment session, or you can start with ActiveFX if you prefer and save DeepFX for a different session, for example. With TotalFX you can approach traditional ablative resurfacing outcomes.

Dr. Heinrich – When choosing the appropriate protocol, it basically depends on what the physician and patient are comfortable with. You can go lighter with less downtime or heavier with more downtime, just be careful to manage patient expectations. You can do TotalFX in one day, or do DeepFX first and add ActiveFX a month later. You'll decide what works best for you as you gain experience.

What other role does DeepFX play in addition to reducing volume?

Dr. Ross – There are possibilities for future indications, such as removing tattoos that don't respond to Q-switched lasers or treating traumatic scars. The jury's still out on melasma and striae. I think the real role of DeepFX is reducing downtime and problems that might occur during recovery. When compared to traditional ablative resurfacing you still easily see 50% to 60% of the improvement. Downtime is much less and there seems to be no risk of long-term hypopigmentation. Also, much less analgesia is required. There may be a little (punctate) bleeding to manage with DeepFX but thrombin spray easily handles that. Because I use more aggressive settings than most, I use greater analgesia and sedation, but I also work in California and photodamage tends to be worse there. Downtime might go up a day or two but it's worth it, otherwise patients may be disappointed with the outcomes.



Before Tx



After ActiveFX Tx

Photos courtesy of E. Victor Ross, M.D.

"I've found it quite amazing that every single patient is pretty comfortable as we finish the procedure."



Before Tx



After DeepFX and ActiveFX treatments

Photos courtesy of E. Victor Ross, M.D.

With DeepFX, what is the best depth for achieving maximum results for photo-aging? Is going deeper better?

Dr. Weiss – Deeper is better in many cases. If you look at the worst solar elastosis on a biopsy in the oldest farmer, it only extends 600 or 700 microns, typically. Maybe 800 is the worst I've ever seen, so if you go one and two millimeters down you're certainly exceeding the depth of solar elastosis, which presumably gives rise to most of the wrinkling.

How do you handle pre-treatment analgesia with ablative fractional CO₂ therapy?

Dr. Ross – We give patients 5 mg of Valium from Roche Pharmaceuticals (Nutley, N.J.), and then apply one tube of Pliaglis cream (7% lidocaine/7% tetracaine) from Galderma (Fort Worth, Texas), mixed with a small amount of Cetaphil cleanser (Galderma) to make application easier; from hairline to jaw line very close to the eyelid margin. We leave that on for 60 to 75 minutes. We also give them 60 mg of Toradol (Roche Pharmaceuticals) about 30 minutes after applying the cream. We may do a few nerve blocks as well, but I tend to treat aggressively so others may not go that far. Just prior to treatment we put shields under the eyes with the numbing cream still on, then remove the cream and begin treatment. We use the Zimmer air cooler from Zimmer-LaserMed (Shelton, Conn.) during treatment. Over the last few months blocks and subcutaneous anesthesia were largely unnecessary. The numbing cream has really worked wonders since I started using it, even while doing traditional resurfacing.



E. Victor Ross, M.D.

Director
Cosmetic and Laser Dermatology Unit
Scripps Clinic
San Diego, CA

Dr. Weiss – We found that using Cetaphil facial moisturizer is better than using the cleanser with the cream when diluting Pliaglis for easier application. If you mix about 90% Pliaglis with 10% Cetaphil moisturizer it peels off easily before treatment, which allows you to get it right up to the eyelids. Too much Cetaphil, say 25% Cetaphil to 75% Pliaglis, and you lose efficacy. We might also use Xylocaine gel (30% lidocaine) from Abraxis Pharmaceutical Products (Rolling Meadows, Ill.) or benzocaine. For the upper lip with DeepFX we typically have to do a local block because topicals don't seem to work there for some reason.

Dr. Dover – We use a combination of topical anesthesia, oral sedation and intramuscular analgesia depending on the pain threshold of each individual patient.

What do you do for post treatment pain relief?

Dr. Dover – I've found it quite amazing that every single patient is pretty comfortable as we finish the procedure, but over the next 30 to 45 minutes pain increases rather rapidly. Then it suddenly stops just when you think you're going to need

“Patients may experience some discomfort from one to three hours after the procedure, but it’s nothing like the days of traditional CO₂ resurfacing.”

to give them something before they leave the office. It just eases off. Every patient has had this experience and I don’t understand it exactly. Cold packs help this.

Dr. Ross – We’ve seen that, too. Patients want to take the Zimmer cooler home with them. We typically provide Vicodin from Watson Pharmaceuticals (Corona, Calif.) just in case, but patients generally get by with Tylenol or Motrin, both from McNeil Consumer Products (Fort Washington, Pa.). They may experience some discomfort from one to three hours after the procedure, but it’s nothing like the days of traditional CO₂ resurfacing. Most of the discomfort occurs right after the procedure though, and abates within two to three hours.

Dr. Heinrich – For pain, we do nerve blocks on our DeepFX patients, and we don’t give them any pain medication. Immediately after treatment we put saline-soaked gauze over their face and blow the cooler on them for about an hour, which makes a huge difference. They can take Motrin or Tylenol I guess, but if they have pain we tell them to call us. This is very important because pain after they go home should decrease, so if it’s increasing or becoming less manageable then something is wrong, and we need to know that as soon as possible. I’ll see them the next day at the latest. But I’ve never had to do this, nobody has called yet.

What about post treatment wound care?

Dr. Heinrich – We’ve tried all kinds of things but we’re back to the old standbys, Cetaphil and Aquaphor from Eucerin (Beiersdorf; Wilton, Conn.). I know there are other things out there but these are simple and effective, without the risk of allergic reactions.

Dr. Ross – We use Aquaphor almost exclusively, but recently we’ve been switching to an Elta (Carrollton, Texas) product, the post-laser paraffin with petrolatum and a copolymer, which we apply in the office. We send them home with white petrolatum or Aquaphor.

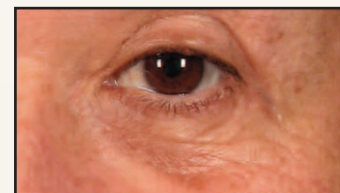
Dr. Weiss – We give patients a kit with Avène Eau Thermal water spray from Pierre Fabre Dermo-Cosmetique (Parsippany, N.J.), which helps to rehydrate the dehydrated ablated areas. The Avène kit has a mild cleanser and mild moisturizer in it that seems to help us avoid acne flare-ups we might see on some acne scar patients using Aquaphor. It adds about \$12 to the cost of treatment, but it enhances patient satisfaction so it’s worth it.

After ActiveFX treatment you get those little white dots and this makes them disappear within minutes. It also seems to reduce downtime by a day or so.

Dr. Dover – We also send them home with Aquaphor. But as Dr. Weiss mentioned, hydration is very important. The best result I’ve ever seen of fast healing was a



Before Tx



After ActiveFX Tx

Photos courtesy of Robert Weiss, M.D.



Robert Weiss, M.D.

Associate Professor of Dermatology
Johns Hopkins University School
of Medicine
Hunt Valley, MD

"I think it's nice to have the UltraPulse Encore option because it offers the full spectrum of treatments from traditional CO₂ resurfacing to ActiveFX, DeepFX or TotalFX."



Before Tx



After ActiveFX Tx

Photos courtesy of Robert Weiss, M.D.

woman who looked like she could go to work with no make-up within four days of TotalFX treatment. I've never seen anything like it. She was fastidious with post treatment care and did soaks every three hours, and she looked absolutely fantastic. Traditionally we have patients come in a few days after treatment, and again seven days after treatment, for follow-up with a little skin still trying to peel off the edge of their face.

How do you deal with patients who really need traditional CO₂ resurfacing?

Dr. Ross – With fillers and the other tools at our disposal these days, it's just no longer as compelling to treat everyone with traditional resurfacing. But I'd give them the option. After you go through the pros and cons, you can still offer it to them. I think it's important to educate the patient thoroughly.

Dr. Dover – I saw a woman today, age 57, looks 75, has class four wrinkles. Her daughter's wedding is in about four months, so I gave her a choice between aggressive traditional CO₂ resurfacing, with two weeks of looking horrible and more downtime for healing, or two to three treatments of TotalFX – I suggested three, once a month for three months. She's a CEO of three very big businesses and she can't really take a week off, but maybe she can do work at her desk. She's going to get back to me in a few days. So I think it's nice to have the UltraPulse Encore option because it offers the full spectrum of treatments from traditional CO₂ resurfacing to ActiveFX, DeepFX or TotalFX. I sleep better when patients undergo less aggressive treatments. It's easier on patients, too.

Dr. Heinrich – I think there's still a role for traditional ablative resurfacing, but I'm encouraging most of my patients to go with fractional CO₂ simply because it's easier to take care of after treatment. And the results with fractional CO₂ are close to those of traditional resurfacing now, so it's that much harder to justify the risks.

What is the risk of hyperpigmentation with UltraPulse fractional CO₂ treatment?

Dr. Weiss – I think if you go too high on density or fluence, maybe you'd see it, but I haven't seen it with DeepFX and I'm treating fairly aggressively.

Dr. Heinrich – I haven't had a problem with it either. The smaller spot size seems to help prevent that. It's important to realize that ActiveFX becomes UltraPulse CO₂ resurfacing if you increase the density or fluence beyond a certain point, so technically you could induce hyperpigmentation. DeepFX is different because it's a smaller spot size.

How do you manage the potential for post-inflammatory hyperpigmentation with darker skin types?

Dr. Weiss – We have a large Korean population in Baltimore, Md., generally skin type IV. We've used normal treatment settings and not seen any problems.

“With UltraPulse Encore we can work in the full spectrum of aggressiveness and adjust the treatment to fit the patient’s comfort zone and expectations.”

Dr. Heinrich – We’ve treated a bunch of skin type IV patients with no significant problems. We have a population of Persians where I am, and when they want wrinkle improvement we just go a little less aggressive with the DeepFX, turning the spot density down to two, for example.

What do patients think about their results, and what feedback have you received?

Dr. Ross – In the context of properly managed expectations, patients are extremely satisfied. There’s a certain finesse you can achieve with ActiveFX that you can’t with similar systems. You can go from less aggressive settings for pigmentation, for example, up to fully ablative. With experience my results have improved across the board.

Dr. Weiss – When we were doing just ActiveFX I think a few patients were disappointed because they needed just a little bit more aggressive treatment. With UltraPulse Encore we can work in the full spectrum of aggressiveness and adjust the treatment to fit the patient’s comfort zone and expectations. We’re all cautious to begin with, and depending on experience it takes a good year or more to optimize your protocols and maximize outcomes, but we’re achieving some amazing results with very high patient satisfaction.

Dr. Heinrich – With UltraPulse Encore we’re seeing something we’ve never seen before: patients referring their friends for CO₂ treatment. Before Encore, people loved the results they saw with traditional CO₂ resurfacing, but they couldn’t easily convince their friends to get past the wounding and long downtime. With fractional CO₂, everything is so much easier to deal with.

Dr. Dover – I’m seeing the same high patient satisfaction. I can’t stress enough the difference we’re talking about when you compare the six or more weeks of downtime from traditional resurfacing with the approximately seven days you need after fractional CO₂ treatment, not to mention the reduced risk of infection and adverse effects. Even if you undergo more than one session, it’s just so much easier on the patients.

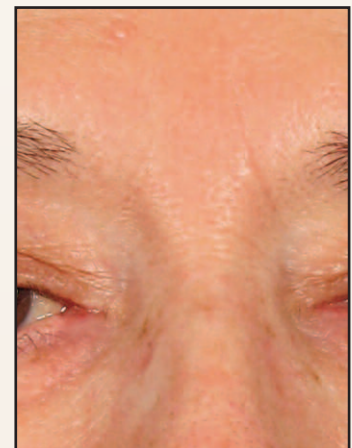
What suggestions do you have for treating other indications with UltraPulse fractional CO₂ or treating over dermal fillers?

Dr. Heinrich – I do ActiveFX the same day as dermal fillers, and I do the filler first. That’s part of why I do nerve blocks. There shouldn’t be any trouble because they’re in entirely different planes.

Dr. Weiss – You can modify the lip line by doing ActiveFX and DeepFX over one another, over the upper lip and under the lower lip, when you’re treating periorally. As for combining with fillers, I would do the resurfacing first, but not DeepFX because there’s no reason to drill that deep and use fillers on the same day.



Before Tx



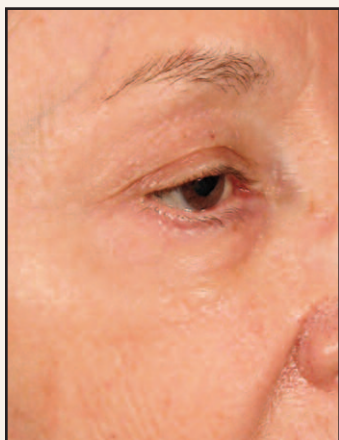
After ActiveFX Tx

Photos courtesy of Robert Weiss, M.D.

“Older scars require DeepFX, but within eight weeks you’ll probably be able to get away with using ActiveFX.”



Before Tx



After ActiveFX Tx

Photos courtesy of Robert Weiss, M.D.

Dr. Ross – For post-operative scars, it depends on the age of the scar. Older scars require DeepFX, but within eight weeks you’ll probably be able to get away with using ActiveFX. I’m experimenting with combining ActiveFX with a vascular laser, like the KTP. You get the vessels and pigment and some of the fine lines all at once, but you do see more swelling. A woman I did recently was puffier on day two than day one, but that’s fine. You get the swelling with the KTP anyway, so why not knock it out in one session?

What about treating other body areas with UltraPulse fractional CO₂?

Dr. Dover – Be very careful on the neck. For one woman I did ActiveFX, 80 to 100 mJ, density up to three on the more wrinkled areas, and she’s had prolonged erythema. She’ll heal fine over time.

Dr. Ross – I definitely agree. For the neck and décolletage you’ll use lower settings but you can improve crepiness and pigmentation. Healing will take twice as long at most, but doesn’t seem to differ between doing DeepFX and ActiveFX concurrently and doing ActiveFX alone.

Dr. Weiss – I found that as well. I expected healing time to increase when doing both, compared to ActiveFX alone, and it hasn’t been like that. I usually only do the neck at a density of 1 with ActiveFX set at 70 to 80 mJ; same with arms and hands.

Any treatment advice or final thoughts?

Dr. Ross – I recommend Valtrex from GlaxoSmithKline (Brentford, London, U.K.) for everyone if the perioral area is treated. Antivirals are important because even if it’s unlikely, one case of generalized herpes simplex of the face will make life miserable for a long time.

Dr. Weiss – I caution against using DeepFX to treat stretch marks. Maybe ActiveFX but not DeepFX. I recently saw a woman who actually had her stretch marks treated with DeepFX and it’s going to take her six months to heal. We’ve discussed the treatment of various types of scars with DeepFX a lot so I wanted to mention this. Go anywhere from 80 to 100 mJ with ActiveFX, density of one to two, maybe three to cover an area quickly. And wait three to six months before treating again.

Dr. Heinrich – It’s good to remember that results, good as they are, still do not arrive overnight with ablative fractional CO₂ therapy. Initially there’s post treatment edema which patients get excited about, but most of the results occur two or three months down the road and take a while to see.