

# **Multi-Center Clinical Perspectives on Titan**

ELIOT F. BATTLE JR, MD  
EDGAR F. FINCHER, MD, PhD  
RONALD L. MOY, MD  
GREGORY NIKOLAIDIS, MD  
AMY FORMAN TAUB, MD

---

# Multi-Center Clinical Perspectives on Titan

ELIOT F. BATTLE JR., MD, EDGAR F. FINCHER, MD, PhD, RONALD L. MOY, MD,  
GREGORY NIKOLAIDIS, MD, AMY FORMAN TAUB, MD

---

Five eminent dermatologists from around the country, with extensive expertise in the field of elective medical procedures for the skin, report their perspectives on infrared skin tightening with Titan. Titan was introduced in the fall of 2004, and these physicians represent some of the earliest adopters, each with twelve to eighteen months experience with the procedure. While individual techniques vary slightly, there are strong commonalities in the approaches the authors are using and in the gratifying results they are seeing. They agree on who is the best candidate for Titan and in which areas the most dramatic effects are achieved. They concur on the high safety profile of Titan and, combined, have observed only two adverse events in an estimated 1,000 treatments (0.2 percent). They all find the relatively low discomfort level to be a key decision factor with patients. In three of the four practices no anesthesia is used, and in the fourth only a numbing cream is applied. The treatment intervals vary, but all report, after one to three treatments, both immediate tightening and incremental tightening over time. While their endpoints differ, the energy delivered is similar. The authors' variations in technique represent the flexibility the users have in calling upon their skill and artful eye to respond to each unique situation – and getting safe, reproducible results with a high incidence of patient satisfaction. (A summary of the authors' comparative protocols is found on the last page of this document.)

**Note:** this paper reflects individual protocol refinements of the authors and is intended as a supplement to, not a substitute for, the clinical guidelines provided by Cutera.

---

## ELIOT F. BATTLE JR., M.D.

*Dr. Battle is a cosmetic dermatologist and co-founder of an aesthetic practice in Washington, D.C. that merges dermatology, plastic surgery and spa therapy. He is a renowned authority on cosmetic lasers and on their use with darker skin types. He is also on the clinical faculty of Howard University Hospital.*

### Patient Consultation and Selection

In my practice, we offer a wide range of services to a wide range of patients. Regardless of their age or consultation focus, everyone wants to be firmer, stay firmer longer, or do whatever they can to prevent facial aging. This includes younger and older, lighter skinned and darker, men and women, spa and surgery patients alike. Therefore, I include the prospect of collagen enhancement and skin tightening with Titan as part of my general consultation. This consultation covers categories of skin care with universal benefits, including at-home skin care regimens, spa treatments and cosmetic laser procedures. In terms of the Titan, in the space of a year we've gone from treating four to five patients a week to treating four to five patients a day, seven days a week.

We explain to patients there are two mechanisms at work with Titan, both of which are beneficial. First, Titan contracts the collagen within the skin, which will improve laxity. Second, Titan actually stimulates the infiltration of fibroblasts and the formation of new collagen. This not only enhances the noticeable tightening effect but helps to bolster the skin against

future aging. Loss of collagen is a key factor in the visible signs of aging, and the more healthy collagen there is in the dermis the more the skin can maintain a youthful resiliency and texture.

Titan has broad appeal. First, the sites patients most want to have tightened are the face and neck but they usually don't stop there; they often want to "Titan" the skin on other body areas as well. For instance, some of our youngest Titan patients are treated for post-pregnancy laxity of abdominal skin. Older patients with inevitable laxity on the buttocks and knees are also good candidates. In addition, skin cannot only droop with time but take on a crepe paper quality as well. Many female patients complain about "V-neck crinkling," for instance, and Titan is a real asset here. Second, it is of value to all skin types. While everyone's skin ages in different ways and at different rates, it ages nonetheless. Because the Titan system is "color blind" we can treat any skin type, regardless of ethnicity and skin color.

### Treatment Protocol

In order to achieve a critical mass of both immediate gratification and prophylaxis, we recommend

a series of three treatments. Ideally, these are spaced three to six weeks apart to optimize the repair process that leads to the formation of new collagen.

For the face, we encourage patients to combine Titan with Laser Genesis and/or Photo Genesis IPL.

Because each modality treats different skin issues and reaches different skin depths, this is a synergistic approach for optimizing the overall impact.

**Table 1.**  
General Treatment Protocol  
*One to three treatments, three to six weeks apart*

<b>Treatment area</b>	<b>Energy (fluence, pulses)</b>	<b>Technique (# of passes, placement)</b>	<b>Endpoint</b>
Lower 2/3 of face (30 minutes)	<i>Fluence Target Range:</i> 32-40 J/cm <sup>2</sup> ▪ start at 32 J/cm <sup>2</sup> and adjust per tolerance  <i>Pulses:</i> 160 total	<ul style="list-style-type: none"> <li>▪ Treat one side at a time</li> <li>▪ Mark vector lines</li> <li>▪ 1 complete pass (for collagen enhancing): treat full side of face incl. temple</li> <li>▪ 1-3 focused passes* (for skin tightening)</li> </ul> <p><i>*see next page</i></p>	<ul style="list-style-type: none"> <li>▪ Initial complete pass— warmth but no discomfort</li> <li>▪ Focused pass— pain tolerance or # of pulses per specific area</li> </ul>
Forehead	<i>Fluence Target Range:</i> 30-40 J/cm <sup>2</sup> ▪ start at 30 J/cm <sup>2</sup>  <i>Pulses:</i> 60	<ul style="list-style-type: none"> <li>▪ 2 complete passes over entire forehead including over the eyebrow</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same endpoints as above: the patient's pain tolerance or total number of pulses</li> </ul>
Neck	<i>Fluence Target Range:</i> 30-36 J/cm <sup>2</sup> ▪ start at 30 J/cm <sup>2</sup>  <i>Pulses:</i> max. of 100 for anterior neck	<ul style="list-style-type: none"> <li>▪ 2 complete passes over entire anterior neck</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same endpoints</li> </ul>
Chest	<i>Fluence Target Range:</i> 34-38 J/cm <sup>2</sup> ▪ start at 34 J/cm <sup>2</sup>  <i>Pulses:</i> 200 for upper chest	<ul style="list-style-type: none"> <li>▪ 2 complete passes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same endpoints</li> </ul>

“Focused” refers to placement either along vector lines or directly on an area to be flattened. For vector passes, we determine placement of the spot by gently jiggling the skin to look for a “drawstring effect;” that is, gently pushing up in one area causes lift in the desired area. For instance, we often focus vector passes on the lateral cheeks and temples in order to lift the droop of the oral commissure. We also do direct passes, where we place the handpiece directly on the pouches of skin along the jawline and on the redundant tissue of the nasolabial fold to tighten them into a smoother contour. In the course of the procedure, we pause after treating half the face in order to show the patient the immediate tightening effect and to capture it with an interim photo.

### Titan Results

Virtually everyone benefits from Titan. Eight out of ten patients get noticeable improvement in skin laxity after just their first treatment, and ten out of ten will be putting collagen “in the bank” for the future. The importance of collagen enhancement can’t be overestimated, since the destruction of collagen is at the root of skin aging. Even surgery doesn’t impact the mid-face too dramatically, yet with Titan we can smooth jowling and crepe paper skin and significantly reduce prominent nasolabial folds. It is also important to note that although the majority of our patients observe immediate tightening, they also realize delayed tightening over the course of six months. Therefore, we like to schedule follow-up visits three and six months after completion of the treatment series to assess the ultimate result.

The degree of improvement with Titan needs to be considered in the context of both ablative procedures on one end of the spectrum and topical products on the other. Consider a ten-point scale for extent of restoration, where zero is no change and ten is perfection. Surgery may achieve a “seven” or “eight,” creams a “one,” and Titan a “four” or “five.” Granted, there is no parity with surgical results, but nor is there the time, expense and risk profile that is entailed with surgery. Also, while Titan is a procedure that costs more than topicals, skin laxity is a problem beyond the scope of cosmeceuticals.

Patient satisfaction is another vital variable, which can be assessed in a number of ways. Nine out of ten of my patients are pleased with Titan, which renders it among the most highly rated modalities we offer. This is not only because patients get tangible tightening

but because they know they are doing what they can to ward off further aging. Further, we have a high referral base for Titan; people either come in asking for Titan by name because their friend told them about it, or come in and say “I want whatever it is that Jill got.”

### Perspective for Success

It is important to evaluate Titan through a wide-angle lens. On a continuum of modalities for skin rejuvenation, Titan occupies a valuable space in between the minor improvement with topicals and the major commitment with surgery.

***“We’ve gone from treating four to five patients a week to treating four to five patients a day, seven days a week.”***



**Figure 1.** 6 months after 3 treatments of the neck.

Also, the fact that Titan is a very participative, tolerable procedure enhances its value for our patients—and us by extension. The visit is long enough and comfortable enough for rapport to build between staff and patient, and the patients aren’t medicated so they get real-time sensate cues that Titan is giving them their money’s worth. ◆

## RONALD L. MOY, M.D. AND EDGAR F. FINCHER, M.D., PH.D.

*Drs. Moy and Fincher are partners in a private dermatologic surgery practice in Los Angeles, comprised predominately of medical and elective surgery and a growing number of non-surgical aesthetic procedures. Dr. Moy is Clinical Professor and Dr. Fincher is Clinical Instructor at the David Geffen School of Medicine at UCLA.*

### Patient Consultation and Selection

An estimated 50-60 percent of our patients have come into the office seeking aesthetic intervention for their skin. Some have a particular procedure in mind, while others are unaware of their options. In either case, the most common request—even more than for wrinkles—is for something that will address skin laxity. In the first year, we have treated approximately 200 patients with Titan.

Most of our Titan patients are people in their mid-thirties, forties and fifties who are not interested in surgery: they either don't have the need or they don't have the mindset for it. The areas they most want to have treated often correlate by age and reflect the normal progression of skin aging. Patients in their late thirties typically note the skin in the malar region is beginning to slide into nasolabial folds. Patients in their forties complain of a degree of jowling and loss of definition along the jaw line. Patients in their forties and fifties may also have submental laxity, with or without a prominent submental fat pad. By the time patients are in their sixties, they are more apt to be better candidates for surgery of some type, such as laser resurfacing or a surgical lift to redrape redundant skin; however, some will still opt for a Titan non-surgical treatment given the low risk potential.

The risk-benefit ratio is the most compelling aspect of Titan. We explain to our patients that the results will not necessarily be dramatic by surgical standards but that typically Titan promotes a more refreshed, fit look, with no untoward results and no deterrence due to pain or downtime. (Figure 2.) Our number one concern is always safety, and our patients have not experienced even the most superficial of adverse changes. Pain dur-

***“Titan promotes a more refreshed, fit look, with no untoward results and no deterrence due to pain or downtime.”***

ing and after the procedure is the number two concern; however, the slight discomfort of the Titan procedure (requiring nothing more than acetaminophen) is not a deterrent. Therefore, there is tremendous receptivity to Titan. Seventy to eighty percent of our patients get a full face or full face and neck treatment, because the heat from Titan not only contracts existing collagen but promotes the formation of new collagen over time.

### Treatment Protocol

We typically do not present Titan treatments as a series, but rather recommend that patients come back three months after one treatment for us to assess their progress and determine whether a second or third treatment is indicated. After each treatment, it is common for results to literally build over the course of three to six months.

When treating a full face, we divide it into four discrete areas: the forehead, two lateral zones and a submental zone. There is a threshold effect with Titan wherein one joule can make the difference between discomfort that is bearable and pain that is not. We aim for the highest tolerable fluence (up to 40 J/cm<sup>2</sup>), but if we need to lower the fluence to 30-32 J/cm<sup>2</sup> to maintain minimal discomfort, we can compensate by increasing the number of passes (up to five or six).

**Table 2.**  
General Treatment Protocol  
*One to three treatments, three months apart*

<b>Treatment area</b>	<b>Energy (fluence, pulses)</b>	<b>Technique (# of passes, placement)</b>	<b>Endpoint</b>
Lower 2/3 of face (45 minutes)	<i>Fluence Target Range:</i> 28-40 J/cm <sup>2</sup> ▪ start with 32 J/cm <sup>2</sup> then increase to 34-36 J/cm <sup>2</sup> ; reduce fluence by 2 J over nasolabial fold  <i>Pulses:</i> 180-200 total	▪ 2 complete passes on each side  ▪ 1-2 vector passes on each side, directed from the lateral aspect of malar fat pad and over nasolabial fold  ▪ 2 direct passes on supramandibular area	▪ Visible tightening or max. of 3-4 total passes
Forehead	<i>Fluence Target Range:</i> 30-34 J/cm <sup>2</sup> ▪ start with 30 J/cm <sup>2</sup> then increase to 32-34 J/cm <sup>2</sup> , remaining at 30 J/cm <sup>2</sup> at temple  <i>Pulses:</i> 100 total to forehead and an additional 15-20 total to temples	▪ 2 complete passes  ▪ 2-3 vector passes directed along desired vectors of lift (lateral and/or medial brow)	▪ Number of passes
Neck	<i>Fluence Target Range:</i> 30-34 J/cm <sup>2</sup> ▪ start with 32 J/cm <sup>2</sup>  <i>Pulses:</i> 150	▪ 2 complete passes on each side  ▪ 2 focused passes on submentum and lateral neck	▪ Number of passes

## Results

One of the most important things to know about Titan is that there is outstanding patient satisfaction with mild to moderate improvement in laxity. This is undoubtedly because the frustration with lax skin reaches beyond the subpopulation considering surgery. Just a few years ago, the choices were fairly black and white: surgery or sagging. Now, with Titan we can offer patients the prospect of more defined cheek bones, a sleeker jaw line, and a more open expression in the brow area.

The patients for whom Titan has the greatest impact tend to be those with less laxity to reverse in

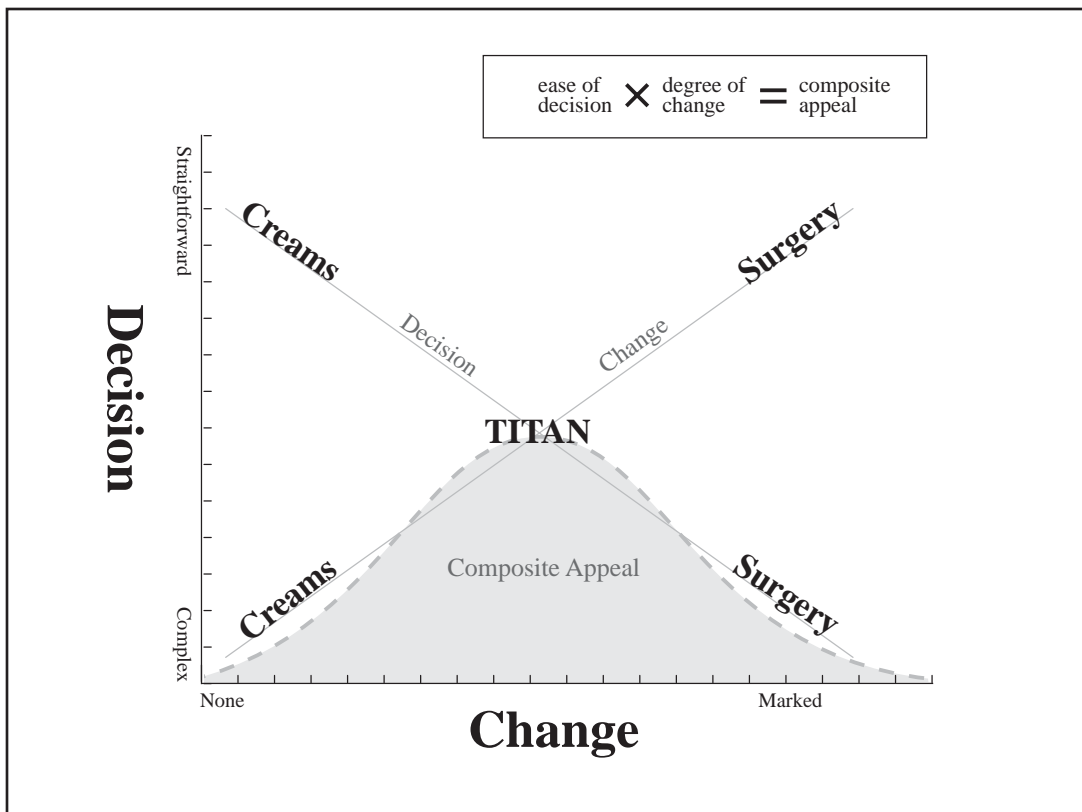
order to return to “taut.” One of the most responsive areas is the jaw line, which can become a “jowl line” over time and contribute to a more aged appearance. Older patients still get pleasing tightening effects but simply have further to travel to get to visible correction. It’s also important to note that tightening is a process not an event, and it can take up to three months or more to realize the full potential of one treatment. Older individuals may lack the ability to produce enough collagen to have an incremental effect over the initial, more immediate tightening.

### Perspective for Success

Even within the realm of non-ablative technologies, there is huge patient demand for skin tightening, and for Titan in particular given its overwhelmingly positive safety profile. This can bring in a whole new category of cosmetic patient: those who are willing to

consider an elective procedure for the first time, or willing to trade off the degree of visual impact from surgery, due to the fact that Titan is so accessible and patient-friendly. ♦

### Risk/Reward Optimization with Titan



**Figure 2.** Titan represents a “sweet spot” in rejuvenation for patients, given its ability to deliver more gratifying results than creams with fewer factors to consider than with surgery.

## GREGORY NIKOLAIDIS, M.D.

*Dr. Nikolaidis is a board-certified dermatologist with sub-specialty training in laser and cosmetic surgery. The focus of his practice in Austin, Texas is on minimally-invasive and non-invasive procedures.*

### Patient Consultation and Selection

Skin tightening has quickly become one of the mainstays of my cosmetic practice. We have performed hundreds of Titan treatments in the past year, and we find that the demand for the procedure is increasing. Titan appeals to patients who want skin tightening, but do not want or need a surgical lift. Because Titan offers an entry-level modality for tightening the skin without the pain, expense and time of surgery, our potential patient base reaches beyond the stereotypical cosmetic surgery patient.

Patients will come to me saying their skin does not seem as elastic as it used to be. Indeed, as one ages, a discordance develops: bone, fat and muscle resorb or “shrink,” while the skin loses its elasticity and “stretches.” The resulting effect can be skin that is too big relative to the volume of the underlying structure. By the time patients seek a cosmetic consultation, they are already experiencing varying degrees of this. We can achieve near perfection using Titan with athletic-type patients in their thirties and forties. People in their fifties and above with thin skin get substantial results as well. Those with a significant amount of subdermal fat, which serves to weigh down the skin, can benefit, but not to the same degree. The only patients we find to not be suitable candidates are those with unrealistic expectations. We explain to prospective patients what Titan cannot do as well as what it can do. It does not take the place of fillers, peeling devices or surgery, but it does return skin elasticity and tone. Oftentimes, we will combine these complementary therapies to achieve maximum impact.

***“An estimated 95 percent of our patients get visible results after two treatments with Titan.”***

The area treated most frequently with Titan is the lower two-thirds of the face and upper neck, where elasticity and contour have been adversely affected by age and the sun, and where we are attempting to resize and reposition the skin. We also may treat the forehead in order to achieve a slight lifting of the brow. In some cases, patients will also ask to have their knees, hands, or chest treated; in these areas, elasticity more than contour is the issue, and the skin benefits from a plumping effect.

### Treatment Protocol

We advise patients to schedule two treatments, optimally spaced two to three months apart. By heating the dermis, we are not only contracting the existing collagen, but inducing a wound-healing response (without an invasive wound) to create new collagen. The key to the interval, then, is to give the skin ample time to heal after the first treatment. We assess improvement with the patient and, during subsequent visits, use the patient’s current status as the baseline for looking to the future.

We integrate numbing creams into the procedure with all patients, which enables us to increase the fluence up to 38 or 40J/cm<sup>2</sup> to maximize the therapeutic effect. We apply a B.L.T. cream (benzocaine/lidocaine/tetracaine) to the entire face and neck area and then remove it after 30 minutes. We then divide the area into

three discrete sections for treatment (each side of the face and the neck) and reapply the cream to each section immediately prior to placing the pulses. We treat each section completely before progressing to the next.

**Table 3.**  
General Treatment Protocol  
*Two treatments, two to three months apart*

<b>Treatment area</b>	<b>Energy (fluence, pulses)</b>	<b>Technique (# of passes, placement)</b>	<b>Endpoint</b>
Lower 2/3 of face (90 minutes including BLT application)	<i>Fluence Target Range:</i> 34-40 J/cm <sup>2</sup> ▪ start at 34 J/cm <sup>2</sup>  <i>Pulses:</i> 250 total	<ul style="list-style-type: none"> <li>▪ Treat one side at a time to maintain numbing effect and heat</li> <li>▪ 1 complete pass, excluding the temples and lateral one-third of the malar fat pad</li> <li>▪ 3-5 focused passes either directly to jowls and nasolabial fold or at vector points to reduce jowling</li> </ul>	▪ Confluence of mild erythema and swelling
Forehead	<i>Fluence Target Range:</i> 30-36 J/cm <sup>2</sup> ▪ start at 30 J/cm <sup>2</sup>  <i>Pulses:</i> 50 total	▪ 2-3 complete passes	▪ Confluence of mild erythema and swelling
Neck	<i>Fluence Target Range:</i> 34-36 J/cm <sup>2</sup> ▪ start at 34 J/cm <sup>2</sup>  <i>Pulses:</i> 100 total	▪ 2-4 complete passes	▪ Confluence of mild erythema and swelling

## Results

An estimated 95 percent of our patients get visible results after two treatments with Titan, in terms of both immediate contraction and continued improvement up to seven to twelve months. Their degree of improvement is consistent with the 20 to 30 percent collagen contraction and secondary remodeling that Fitzpatrick et al found with the CO<sup>2</sup> laser in eyelid skin.<sup>1</sup>

While Titan may afford the same amount of correction across patients, the results are relative to the patient's age. For instance, with a 35-year-old you can achieve near 100 percent correction, and with a 55-year-old you will not. In addition, the perceived effect is influenced by the area being treated. If platysmal bands are prominent, for instance, they can lessen the visual impact of skin tightening on the neck. Also, the effects of Titan on the jaw line, where tightening can affect overall contour, will appear more dramatic than on the knees or abdomen where there is less tissue movement.

Patient satisfaction with Titan is notably high across the board, however, and they will often come back for more than two treatments given the improvement in elasticity they see and feel.

## Perspective for Success

Non-surgical skin tightening is a promise well-delivered, given the safety and efficacy profile of Titan. Since Titan is non-ablative, you don't achieve a surgical homerun, but it does consistently deliver moderate tightening. Assuming their expectations are managed, rejuvenation patients welcome this degree of progress. ◆



**Figure 3.** 1 day after 1 treatment of full face and neck.

<sup>1</sup> Fitzpatrick RE, Rostan EF, Marchell N. Collagen Tightening Induced by Carbon Dioxide Laser Versus Erbium: YAG Laser. *Lasers Surg. Med.* 2000; 27:395-403.

## AMY FORMAN TAUB, M.D.

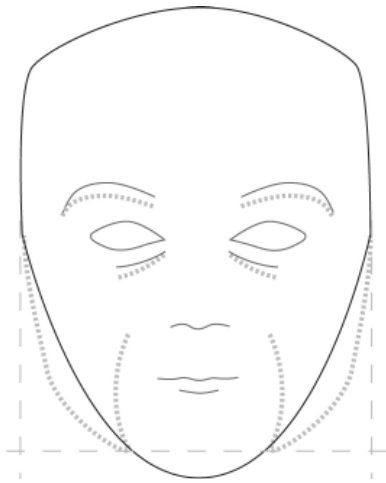
*Dr. Taub is founder of an established medical and aesthetic dermatology practice in suburban Chicago, which includes a clinical research unit as well as a skin care boutique. She is also on the faculty at Northwestern University Medical School.*

### Patient Consultation and Selection

We have been treating patients with Titan since early 2005. In that time I have seen an increase not only in demand for non-surgical cosmetic procedures, but in the number of new patients coming in specifically for tightening. Patients are quite receptive to the concept of Titan, and its strength lies in the fact that they get a degree of noticeable improvement without undue pain or downtime; even those who could also really benefit from surgery still want to try Titan. Plus, for the provider, the preparation time is minimal, there is no consumable expense, and the procedure is well-tolerated without anesthesia.

Patients often come in complaining “my face is falling.” In fact, as we age, the skin literally does shift downward. Sun damage and the passage of time inalterably weaken the integrity of the skin and its ability to hold its shape. As the support network of collagen fibers flattens and weakens, the overlying skin becomes thinner, looser and more susceptible to gravity. Thus, a young, heart-shaped face can evolve into a bottom-heavy face looking more the shape of a rectangle. (Figure 4.)

### The Changing Shape Of The Face Over Time



**Figure 4.** A face can evolve from a youthful oval to a more rectangular shape, and Titan patients are seeking to reverse this.

Virtually any patient in their thirties or above can be a candidate for a little tightening and firming, and while it is not a substitute for a facelift, Titan can visibly improve skin laxity. However, there is variability among

patients. Patients who do the best tend to be those with earlier changes along the jaw line and those with thin submental skin that doesn't have weighty fat to support. Also, someone with a large amount of redundant skin can still benefit from Titan, but the more voluminous the subcutaneous tissue the harder it is to make a noteworthy impact. Patients over 65 are viable candidates for Titan, but some of these patients have not maintained their results as long as younger patients. We have postulated that older clients may have a compromised ability to manufacture collagen or to protect new collagen from breakdown.

***“Titan’s valuable hallmark is that you can accomplish a more youthful narrowing and ovaling of a face, by essentially shrinking the skin back into place.”***

The area we treat the most frequently is the lower two-thirds of the face and upper neck, because ptosis (or drooping) of the cheeks into jowls is so prevalent. We also treat the abdomen for overall laxity and for post-liposuction and post-tummy-tuck smoothing. In addition, we treat the forehead, often in conjunction with Botox, to mitigate brow and eyelid ptosis, and we treat the entire neck— independent of or in conjunction with the rest of the face. We explain to patients that Titan acts as if we were placing a net within the skin and slowly cinching it in. We also explain that it's a gradual rebuilding process. Since we are heating the dermis to the point of collagen contraction, they may notice some immediate tightening; however, since some of the effect comes from new collagen being laid down, further tightening occurs over the next several months.

### Treatment Protocol

We typically schedule a series of two treatments spaced one month apart. While some patients do notice improvement after the initial treatment, two treatments yield better results, possibly due to the repeated fibroblastic stimulation. We also schedule two, four and six-month follow-up visits to assess the ultimate treatment outcome.

Both our laser technician and I perform the procedure, but I did not delegate it lightly. This person

is a certified Surgical Technician as well as a certified Laser Safety Officer, who has worked with me for the past six years. In addition to being highly trained and educated in laser and aesthetic procedures, she has been instrumental in helping me to produce more effective protocols for many of our procedures. While the Titan learning curve is not difficult, the approach is not “cookie

cutter.” It requires an artistic eye and responsive hands—the ability to fine-tune, within the bounds of general parameters, according to how a patient’s skin reacts during treatment. This will only enhance the outcome. In addition, before and after photographs are taken for each patient, and they serve as a valuable reference tool.



**Figure 5.** Three months after two treatments of lower two-thirds of face.



**Figure 6.** Two months after two treatments of lower two-thirds of face and neck.

**Table 4.**  
General Treatment Protocol  
*Two treatments, one month apart*

<b>Treatment area</b>	<b>Energy (fluence, pulses)</b>	<b>Techniques (# of passes, placement)</b>	<b>Endpoint</b>
Lower 2/3 of face (45 minutes)	<i>Fluence Target Range:</i> 34-38 J/cm <sup>2</sup> ; 30-34 J/cm <sup>2</sup> for temples ▪ start at 36 J/cm <sup>2</sup> (32 for temples) and adjust as tolerated  <i>Pulses:</i> 250-300 total pulses	▪ 2 complete passes  ▪ 2 arch “L” passes  ▪ 6-8 sculpting passes—vector passes to pull and/or direct passes to flatten	▪ Visible: Oral commissure downturn raised, nasolabial and marionette folds softened, face ovaled/more taut, jowl protuberance flatter, better mandibular definition  ▪ Skin is slightly pink and warm to touch
Forehead	<i>Fluence Target Range:</i> 28-32 J/cm <sup>2</sup> ▪ start at 30 J/cm <sup>2</sup>  <i>Pulses:</i> 60-100	Treat ½ of area at a time if treating entire face; entire area at once if forehead only  ▪ 2 complete passes  ▪ 4-6 sculpting vector passes either in the area directly above each eyebrow or the top half of forehead, whichever yields better lift	▪ Endpoint more subtle: may see slight elevation of eyebrows, may feel more taut
Neck	<i>Fluence Target Range:</i> 28-34 J/cm <sup>2</sup> ▪ start at 32 J/cm <sup>2</sup>  <i>Pulses:</i> 150-200	▪ 2 complete passes  ▪ 6-8 sculpting passes—vector passes on lateral neck and/or direct passes on submental pad	▪ Visible: neck laxity softened, skin more taut, submandibular pad flattened, central “turkey neck” laxity diminished
Abdomen	<i>Fluence Target Range:</i> 34-40 J/cm <sup>2</sup> ▪ start at 34 J/cm <sup>2</sup>  <i>Pulses:</i> variable	▪ 2 passes encompassing involved area and vectors  ▪ 6-8 sculpting passes	▪ Visible: skin tauter, redundant skin pulled tighter, better definition of umbilicus

- Universal tips
  - Treat one side at a time to achieve and maintain a critical mass of heat, and to more easily appreciate the changes by comparing them to the contralateral side.
  - Constantly pull the tissue to feel if it is decreasing in laxity and if you are on the right vector.
- Types of passes
  - *Complete pass–face:* 2 fingerbreadths above the lateral canthus on the temple across the entire cheek to 2 fingerbreadths below the mandible.
  - *Arch “L” pass:* 2 rows beginning on the temple, down the lateral cheek/pre-auricular area, and across just above the mandible, plus 1 row just below the mandible. Exclude thin skin over the cheek bone and the mid-cheek to avoid further loss of volume.
  - *Complete pass–neck:* 1 row above the mandible from chin to bottom of the ear, then diagonally down to the collarbone 2/3 from midline and across to the sternal notch; fill in with rows up to the chin, avoiding the Adam’s apple.

- *Vector pass*: determine placement of the tip by pulling on the skin with two fingers and observing which area yields the most tissue movement. Do more passes where your fingers are acting as vectors.
- *Direct pass*: if you are trying to diminish a bulky area (e.g., nasolabial folds, submandibular fat pad) stack 1-3 passes directly on the involved area, taking care not to overheat the skin.

## **Titan Results**

Our evaluations reveal clinically significant, mild to moderate improvement in the first month after completion of the series. Results tend to improve over the next four to eight months, before stabilizing. We have had only a few patients (less than five percent) who have not responded. At the other end of the spectrum, the most dramatic response is not that far off from a mid-face surgical lift, particularly if Titan is used in combination with Botox and fillers if indicated. For the more subtle changes, showing the patient his or her “before” and “after” photographs, especially at the six-month follow-up visit, is a helpful tool to remind patients of their baseline status. Since the change can be gradual, sometimes patients don’t remember their pre-treatment degree of laxity.

Patient satisfaction is by no means the only way to measure results, but with Titan and other non-ablative procedures it may be the best way. The treatment is an easily tolerated experience and there is truly no downtime. Titan patients tend to leave satisfied and come back happy, especially a few months after their second treatment. While it may be difficult to pinpoint the nature of the change, particularly in two-dimensional photos, patients realize firmer, smoother feeling skin and a tighter, more toned appearance.

Two of our patients had excellent results that fell off over a seven to nine month period. Both of these individuals were over 65, which led us to the conclusion that perhaps collagen degradation processes at that age can overwhelm collagen stimulation. All of our other Titan patients who are one year out have maintained correction, and it is reasonable to think that patients will avail themselves of a yearly Titan “touch-up” treatment to keep pace with the ongoing aging process.

## **Perspective for Success**

To fully appreciate what Titan can contribute, it’s important to look beyond discrete areas to the overall appearance of the face. Titan’s valuable hallmark is that you can accomplish a more youthful narrowing and ovaling of a face, by essentially shrinking the skin back into place. Also, even though surgery produces more dramatic results, Titan is broadly appealing precisely because it is not surgery. This patient acceptance factor is key to how it has contributed to our practice. In the beginning, we spent time comparing it to other technology we have in the office, mainly on non-revenue generating tests. In the first six months of paid treatments, however, it generated \$100,000 in revenue, with the 2nd quarter representing a 60 percent increase over the 1st quarter. In the space of a year, Titan has gone from being used occasionally on a trial basis to being a mainstay of our practice—and we expect even further growth in Titan treatments in the year to come. ♦

## CLINICAL SUMMARY

### Comparative Approaches for the Lower Two-Thirds of the Face

<i>Doctor</i>	<i># Txs</i>	<i>Tx Interval</i>	<i>Fluence Range J/cm<sup>2</sup></i>	<i>Beginning Fluence J/cm<sup>2</sup></i>	<i>Pulses</i>	<i>Passes</i>
Battle	1-3	3-6 weeks	32-40	32	160	1 complete + focused
Moy/Fincher	1-3	3 months	28-40	32	180-200	2 complete + focused
Nikolaidis	2	2-3 months	34-40	34	250	1 complete + focused
Taub	2	1 month	34-38	36	250-300	2 complete + focused

**Note:** numbers represent a typical but not absolute approach

### The Safety of Titan

<i>Estimated Total # Of Individual Treatment Sessions Across All Four Offices</i>	<i># Adverse Events (burns, scarring, infection)</i>
1,030 Txs	2 *

\* including 1 burn due to error in omission of gel