Delaying Skin Aging in Fitzpatrick Skin Types I Through V with Forever Young BBL™

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OBJECTIVE

The purpose of this paper is to introduce the significant age-delaying benefits of the BroadBand Light (BBL™) treatment, known as Forever Young BBL, in patients with Fitzpatrick Skin Types I through V. Treatment technique and suggested appropriate parameters will be discussed.

INTRODUCTION

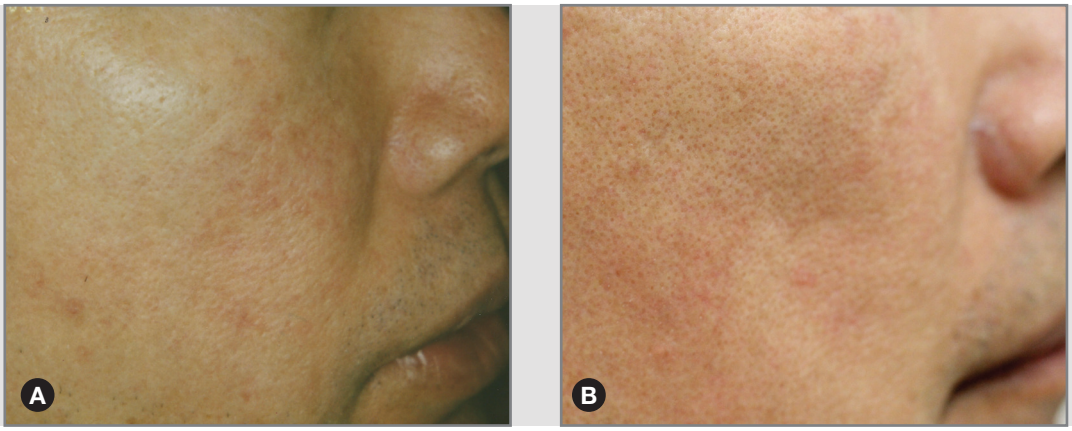
The treatment of photo-aged skin with pulsed, visible BroadBand Light (Sciton, Palo Alto, CA) is proven to dramatically improve the appearance of aging skin. The treatment as first described by this author[1] has the ability to reduce or eliminate hyperpigmentation, fine lines, wrinkles, and other visible signs of aging. The original procedure, popularly known as the FotoFacial® procedure, treats the entire face or other anatomical areas and typically requires 3 to 5 treatments at 3 to 4 week intervals. This procedure is one of the top aesthetic treatments performed by cosmetic physicians and practices because of the high degree of efficacy, high patient satisfaction, ease of application, reasonable cost per treatment, and lack of recovery time. According to a recent American Society for Dermatologic Surgery survey, nearly 1,700,000 BBL-type sessions were performed in 2012, making it one of the most popular aesthetic procedures in the United States[2].

The ability of BBL to improve photo-aged skin is now well known and universally accepted. Keeping skin healthy and delaying the signs of skin aging (e.g. fine wrinkling, laxity, age spots, uneven pigmentation and textural changes) are newly described benefits of regular BBL treatments. Delay of skin aging and maintenance of healthy skin are two very desirable goals for patients of all ages and skin types. While the focus of virtually all aesthetic treatments is to correct issues such as sun damage and aging, helping our patients keep their skin healthy and delaying the inevitable signs of skin aging is perhaps the most important service practitioners can offer their patients.

Introduction of Forever Young BBL using Sciton's BroadBand Light (BBL) technology encompasses all of the advantages of the original procedure with the newly recognized benefit of delaying skin aging. Because the common effects of photo-aging, such as sun damage, are often less pronounced in patients with darker skin, the benefits of Forever Young BBL to these patients may have been overlooked. Aging in dark skin is reflected in texture, tone, and other factors, all of which can be greatly improved via a BBL treatment regimen. Previously, treatments with pulsed light devices for patients with darker skin types have been met with more challenges and greater risks of complications than treatments for lighter skin patients. This paper describes the safe use and advantages of Forever Young BBL in treating patients with skin types IV and V.

[1] Bitter PH, Noninvasive Rejuvenation of Photodamaged Skin Using Serial, Full-face Intense Pulsed Light Treatments. Dermatologic Surgery, 2000, 26, 835-42

[2] ASDS Website, asds.net, https://www.asds.net/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=6607&libID=6583



Retrospective Study, After 7 years of Forever Young BBL Skin Type V
A) before and B) after | courtesy of Patrick Bitter Jr., MD, FAAD

The term Forever Young BBL has been coined to describe the newly recognized benefits of BBL in delaying skin aging. The common effects of photo-aging are often less pronounced in patients with darker skin types, yet these patients do inevitably experience skin aging.

BACKGROUND

A recent study(3) showed that regular treatments of broad spectrum light delivered 2 to 4 times per year appeared to delay the emergence of the visible signs of skin aging; including age spots, wrinkles and laxity. In this study, 15 patients ranging in age from 38 to 69 years received at least one annual BBL treatment for 5 to 11 years. A total of 491 evaluators were asked to estimate the age of both pre and post treatment photos.

The evaluators estimated the median post-treatment age to be 45. This age estimate was statistically unchanged from the actual median pre-treatment age of 46, even though study participants had in fact aged a median of nine years throughout the duration of the study. In other words, the individuals in both pre and post treatment photos appeared to be of the same age even though the post treatment photos were taken on average nine years later.

Number of Reviews	Evaluator Field
51	Dermatologists
122	Aesthetic physicians
44	Other physicians
177	Physician extenders
97	Individuals outside the medical or aesthetic field

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A second recently published study[4] provided substantial support for the anti-aging effects of BBL and an explanation for the observed clinical results. In 2012, the author collaborated with Stanford University Dermatology Department to show for the first time that BBL treatments have a restorative effect quantified at the genetic level. This was demonstrated by comparing the gene expression of Forever Young BBL "treated aged" and

[4] Chang A, Bitter PH, et al., Rejuvenation of Gene Expression Pattern of Aged Human Skin by Broadband Light Treatment: A Pilot Study. Journal of Investigative Dermatology, 2013, 133, 394-402

[3] Bitter, P, Pozner, J., Retrospective Evaluation of the Long-term Antiaging Effects of Broadband Light Therapy. Cosmetic Dermatology, February 2013, 34-40

"untreated aged" photo-damaged skin to that of young skin. Of the 2265 genes whose expression was altered in aged skin, 1,293 were fully restored to the expression seen in younger skin. After three successive BBL treatments, the re-expressed genes included those associated with longevity and increased life. This groundbreaking study provided additional evidence to support the age-delaying benefits of BBL.

The use of BroadBand Light (BBL) for the purpose of delaying skin aging is a unique and novel benefit. To date, BBL has been used with great success to correct aged or damaged skin, including photo-aging, vascular and pigmented lesions, erythema and flushing, scars, and acne. With the Forever Young BBL treatment technique, the benefits of BBL can be expanded to include maintaining healthy skin once it has been corrected, and delaying the signs of skin aging. This new Forever Young BBL treatment technique expands treatment to the following patient categories:

i) Younger patients who do not yet need correction of damaged skin, but desire to maintain healthy skin and delay skin aging;
ii) Patients who have had damaged skin previously corrected by BBL or laser treatments;
iii) More mature patients who have better quality or healthier-appearing skin and may not yet require corrective treatments;
iv) Patients who have previously undergone a facelift or other cosmetic procedures;
v) Skin type IV and V patients who generally have healthier skin with little to no photo-damage, yet desire to maintain healthy skin and delay skin aging.

Although the bulk of experience with BBL for the correction of common skin conditions has been in skin types I through III, Forever Young BBL is proving to be safe and efficacious in skin types IV and V[5,6]. While patients with darker skin types experience skin aging, the degree of photo-aging is usually less pronounced and erythema and rosacea are less common. The benefits of BBL treatment are the same for patients across all skin types, including maintaining skin tone, clarity, smoothness, and delaying the development of rhytids and laxity. Additionally, the documented ability of BBL treatments to enhance gene expression in aged skin is a benefit for patients of all skin types.

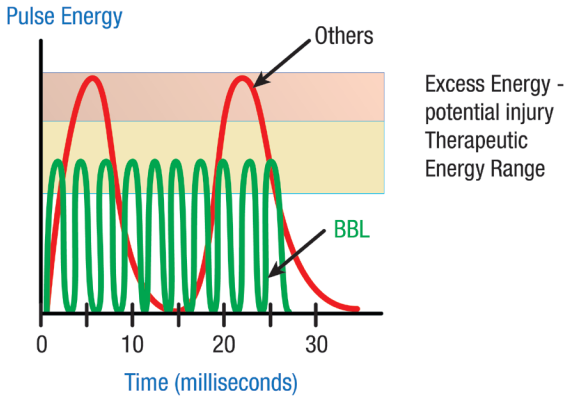
The most common adverse events reported for general IPL treatments, including hyper-pigmentation, hypo-pigmentation, and blistering, are due to inappropriately high parameters resulting in excessive heating and epidermal injury. These undesirable effects are more typical in patients with tanned skin and skin types IV and V. Although not readily described in the literature, another common negative effect of IPL treatments is a lack of clinical results. This occurs when patients are treated with parameters that are too conservative, a haphazard technique that does not treat the entire cosmetic area, or an inadequate number of treatments. This lack of clinical results is most commonly due to inexperienced or poorly trained practitioners.

In the author's experience, Sciton's Forever Young BBL has proven safe and effective in correcting damaged skin as well as delaying skin aging in over 1000 treatments of skin type IV and V patients. The superior safety and efficacy in patients with darker skin is due to three factors: the unique technological design that provides a wide range of parameters, the use of conservative parameters, and a multiple-pass technique.

PROCEDURE

Treating skin type IV and V patients for the purpose of delaying skin aging employs the use of more conservative parameters, multiple passes, treatment of the entire cosmetic zone (i.e. the full face), and 2 to 4 treatments per year. The goal of the Forever Young BBL treatment is to maintain healthy skin and delay skin aging safely, effectively, and with minimal to no risk of complications. To improve skin laxity, Sciton's BBL SkinTyte *II*™ procedure can be performed immediately after the Forever Young BBL treatment.

[5] Negishi K et al, Dermatologic Surgery, 2001, 27, 627-31, discussion 632



Forever Young BBL™ delivers therapeutic energy without energy spikes that can damage skin

The advanced technological design of Sciton's BBL offers multiple treatment advantages. The first advantage is a fast, one-second pulse rate with a large spot size up to 15 x 45 mm, which delivers rapid, uniform treatments. A skilled clinician can complete a full-face Forever Young BBL procedure in less than fifteen minutes. The second advantage is the use of the optimum wavelengths for treating patients of all skin types. Interchangeable smart filters in the BBL handpiece control the wavelength range of the transmitted light, allowing optimization for different applications and skin types. To reduce the risk of injury, longer wavelengths are generally used to treat darker skin types because melanin absorption declines as the wavelength increases. The third advantage of the BBL design is the pulse shape. In darker skin types, longer pulses allow heat to diffuse from the epidermal melanin. When used in combination with precision temperature controlled contact cooling, there is minimal risk of superficial epidermal burns. The technological advances of Sciton's BBL and the Forever Young BBL procedure technique allow for the safe and effective treatment of skin type IV and V patients with the benefits of delaying skin aging.

FOREVER YOUNG BBL TECHNIQUE

The following technique has been developed over six years from over 1000 BBL treatments of skin type IV and V patients. Patients may have an anesthetic cream applied 30 minutes prior to the treatment. The topical anesthetic is removed before starting the procedure. The appropriate starting parameters (refer to the Table of Parameters on page 6) are selected and programmed into the Joule or BBLs device.

For male patients, the beard area is an important consideration. It is crucial to inform patients that there may be partial or complete loss of dark beard hair in the treated areas. For female patients, and male patients who are willing to risk loss of beard hair, the full 15 x 45 mm adapter was used. Treatment starts near the right ear. A series of pulses are delivered, with the operator moving the handpiece after each pulse with up to a 10% overlap of the previously treated area. The first row of pulses moves along the jawline and ends mid-chin (Fig. 1). The next row of pulses begins in front of the ear just above and slightly overlapping the first row of pulses. Rows of pulses are continued until the entire right cheek including the right upper lip and right chin have been treated.

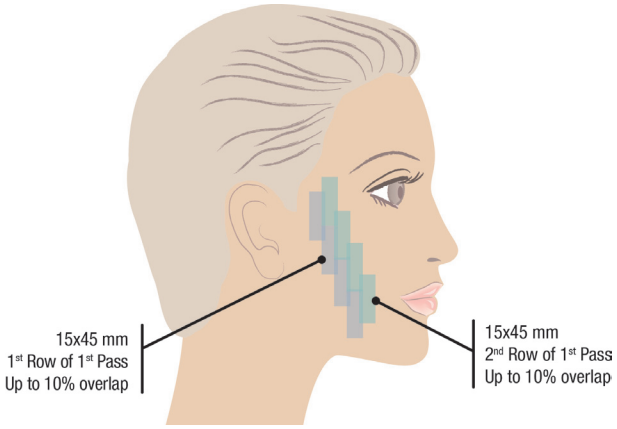


Figure 1

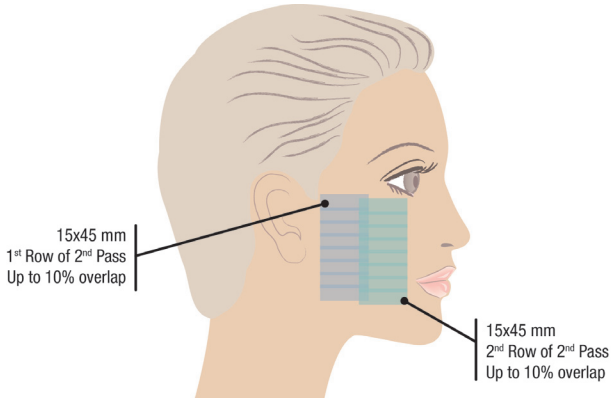


Figure 2

 Forever Young BBL is not FDA cleared for changing gene expression, anti-aging or fine lines and wrinkles. For International Distribution Only

For male patients who choose to not have the beard area treated, the 15 x 15 mm spot adapter is used, and treatment begins in the pre-trichial (non-beard area) of the cheek. The fluence may be increased by one or two joules when using the spot adapters. The non-beard portions of the cheeks are treated with two passes, followed by the forehead. The non-beard portion of the cheek is treated bilaterally with two passes, followed by the forehead. In most male patients, the upper lip or the goatee area is not treated.

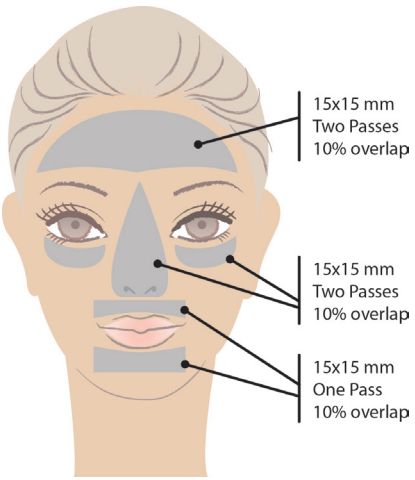


Figure 3

Female patients (and male patients who are willing to risk loss of beard hair) will require approximately 25 pulses with the full BBL crystal for the first pass on the cheek. The second pass is then made perpendicular to the direction of the first pass immediately after the first pass. Two full passes of approximately 50 pulses are delivered to the lower half of the face (Fig. 2). This process is repeated on the opposite cheek. The forehead is treated with the square 15 x 15 mm spot adapter using the same parameters as the cheek. As opposed to skin types I through III patients where the fluence is increased 2 J/cm^2 on the forehead when the 15 x 15 adapter is used from the fluence used to treat the cheeks, it is recommended to keep the fluence the same for the forehead as the cheeks in skin types IV and V. Because there is less soft tissue on the forehead compared to the cheek there is a tendency for greater epidermal heating to occur. Keeping the fluence the same as the cheeks when treating the forehead with the smaller adapter will help avoid superficial burns. Treatment of the forehead requires approximately 80 to 100 pulses. Forehead treatment is approximately 80 to 100 pulses and begins at the glabella and moves towards the frontal hairline, with a 10% overlap of each adjacent pulse. The direction is continued towards the lateral canthus and returns towards the mid forehead in both directions for two full passes.

Using the same parameters and the square 15 x 15 mm spot adapter, two passes are delivered to the under eye area including the lower eyelid skin. Protective eyewear is kept in place throughout the procedure. The protective goggles are gently pulled superiorly to expose and tighten the lower eyelid skin and keep the eyelashes away from the treatment field. Pulses are made over the exposed lower eyelid skin as close to the goggle as possible. Alternatively, the 11 mm round adapter can be used to treat lower eyelid skin safely. The square 15 x 15 mm spot adapter is used for one additional pass on the upper and lower lip overlapping onto the vermilion border. Two full passes are made over the nose (Fig. 3).

Approximately 200 to 400 pulses are required to complete a full-face Forever Young BBL procedure. A partial third pass can be performed over any areas where the patient may need additional treatment and/or where laxity is evident. The appropriate parameters and spot adapter can be used to perform one or two additional pulses to correct areas with any benign hyperpigmentation, erythema, or telangiectasias. A SkinTyte II™ procedure (Sciton, Palo Alto, CA) may be performed immediately after a Forever Young BBL session (Refer to the Table of Parameters).

PARAMETERS

FOREVER YOUNG BBL TREATMENT TABLE OF PARAMETERS

Skin Type	I-II	III	IV	V
Smart Filter	515 or 560 nm	515 or 560 nm	590 or 640 nm	640 or 695 nm
Fluence (recommended starting)	8-10 J/cm^2	8-10 J/cm^2	7-10 J/cm^2	6-8 J/cm^2
Spot Adapter	Large 15x45 mm for cheeks (Full BBL Crystal) 15x15 mm Square for forehead, nose, under eyes	Large 15x45 mm for cheeks 15x15 mm Square for forehead, nose, under eyes	Large 15x45 mm for cheeks 15x15 mm Square for forehead, nose, under eyes	Large 15x45 mm for cheeks 15x15 mm Square for forehead, nose, under eyes
Pulse Duration	10-15 ms	10-15 ms	20 ms	40 ms
Cooling	15°C	15°C	15°C	10°C
Passes	2	2-3	2-3	2-3
Pulses	200-240	200-240	200-240	200-240
Treatment Time	8-12 min, Target time 240 sec per area	8-12 min, Target time 240 sec per area	8-12 min, Target time 240 sec per area	8-12 min, Target time 240 sec per area

ADD-ON SKINTYTE // PARAMETERS

Smart Filter	590ST	590ST or 695ST	695ST or 800ST	800ST
Fluence	10-15 W/cm^2	10-15 W/cm^2	8-15 W/cm^2	8-15 W/cm^2
Duration	12 sec	12 sec	12 sec	12 sec
Total Energy (Joules)	Neck 40,000 – 50,000 Cheeks 30,000	Neck 40,000 – 50,000 Cheeks 30,000	Neck 40,000 – 50,000 Cheeks 30,000	Neck 40,000 – 50,000 Cheeks 30,000
Target Temperature	38-41°C	38-41°C	38-41°C	38-41°C
Spot Adapter	Large 15x45 mm for cheeks and neck 15x15 mm Square for forehead	Large 15x45 mm for cheeks and neck 15x15 mm Square for forehead	Large 15x45 mm for cheeks and neck 15x15 mm Square for forehead	Large 15x45 mm for cheeks and neck 15x15 mm S quare for forehead
Cooling	30°C	30°C	30°C	25°C

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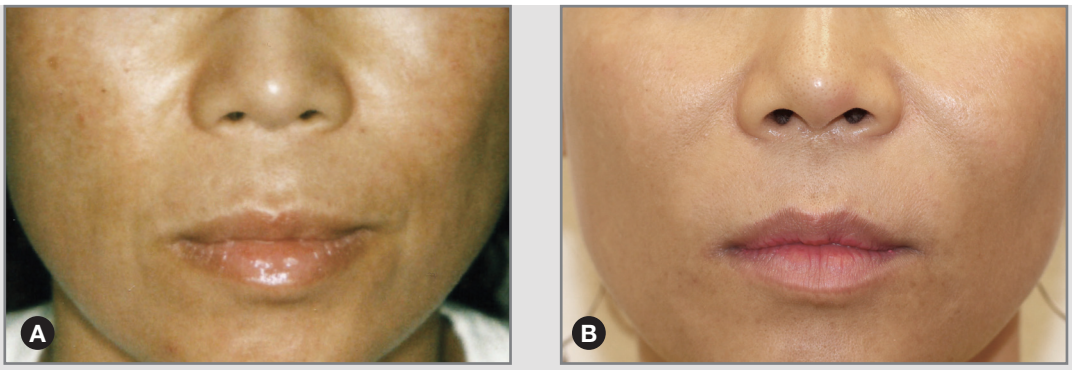
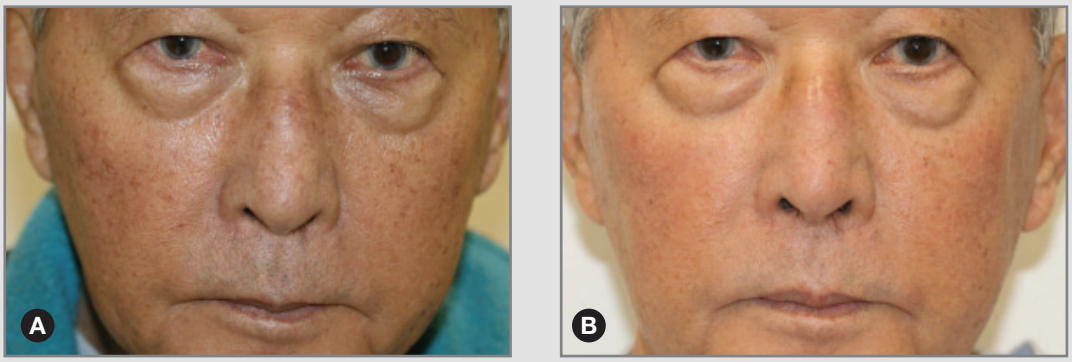
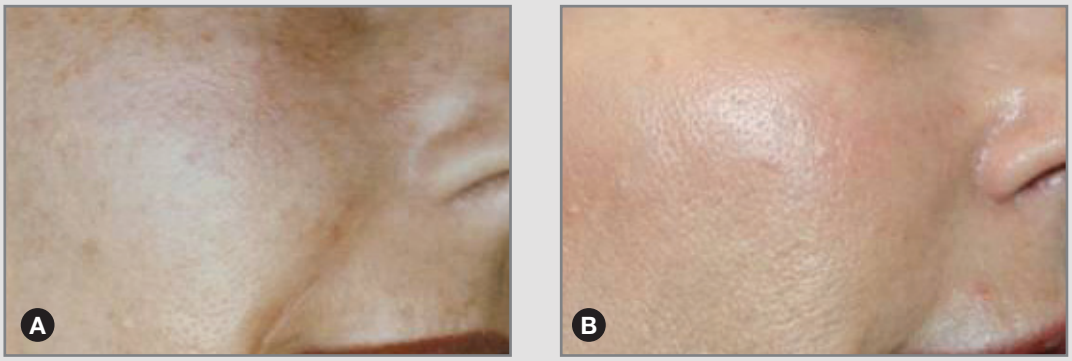


Retrospective Study, After 7 years of Forever Young BBL Skin Type V
A) before and B) after | courtesy of Patrick Bitter Jr., MD, FAAD



Forever Young BBL Skin Type V
A) before and B) after | courtesy of Patrick Bitter Jr., MD, FAAD



Retrospective Study, After 11 years of Forever Young BBL Skin Type III
A) before and B) after | courtesy of Patrick Bitter Jr., MD, FAAD

FREQUENCY OF TREATMENTS

A minimum of two Forever Young BBL treatments per year with or without the BBL SkinTyte //™ treatment is recommended. Optimal results for maintaining healthy skin and delaying skin aging require four full Forever Young BBL treatments each year, timed on a quarterly basis. When sun exposure may be an issue, Forever Young BBL treatments can be deferred until less sunny months. Appropriate skincare includes daily application of a physical sunblock to prevent complications such as hyperpigmentation after a Forever Young BBL treatment.

RESULTS

With the treatment technique and parameter selection delineated in this paper, patients can expect to maintain healthy skin and delay the visible signs of skin aging. Treatments are typically well tolerated with no expected downtime and minimal risk of an adverse event. Occasionally patients experience infraorbital edema that resolves within 2 to 3 days when the Forever Young BBL treatment is combined with a SkinTyte // treatment.

CONCLUSION

Using Sciton's BBL technology, the Forever Young BBL is the first and only treatment designed to delay the appearance of visible skin aging in all patients, including those with darker skin types. In addition to the proven clinical improvement in the appearance of photo-aged skin, compelling evidence supports regular long-term BBL treatments will enhance the expression of longevity-related genes in aged skin cells; essentially reversing the aging process and returning skin to a genetically youthful state. Using the technique and parameters described, patients with Fitzpatrick skin types I through V can receive the age-delaying benefits of the Forever Young BBL treatment.

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