Combining broad based light, fractionated 1927 and dual wavelength 2940/1470 for diffuse pigmentation, texture and actinic changes

NCT06091215
10/21/24

Combining broad based light, fractionated 1927 and dual wavelength 2940/1470 for diffuse pigmentation, texture and actinic changes

Sponsor	Sciton
PI	Dr. Jeffrey Kenkel, MD
Facility	UT Southwestern Medical Center
Site	Department of Plastic Surgery 1801 Inwood Road 5th Floor Dallas, TX 75390-9132

ClinicalTrials.gov Identifier: NCT06091215

Background

Skin concerns encompass a range of issues, including photodamage, dyspigmentation, UV spots, brown spots, red birthmarks, broken blood vessels, and overall skin texture and appearance. Various devices and technologies have been developed to address these concerns, including broad-based light therapy, fractionated laser, ablative lasers, and nonablative lasers.

Broad-Based Light (IPL): Berlin et al. (2007) demonstrated the effectiveness of combining superficial Er:YAG ablative treatments and nonablative BBL (Intense Pulsed Light) treatments, leading to significant clinical improvements in photodamaged skin, enhanced collagen formation, and high patient satisfaction. Siperstein (2021) also demonstrated the safety and efficacy of BBL in improving the clinical appearance of senile purpura and reducing ecchymoses, making it a versatile treatment option.

MOXI (Fractionated Non-Ablative Thulium 1927 nm Laser): Vingan et al. (2023) highlighted the effectiveness and safety of non-ablative 1927 nm laser treatments in improving dyspigmentation, particularly in Fitzpatrick skin types I-IV, with a statistically significant reduction in spots and brown spots sustained over three months. Li et al. (2023) found that the 1927 nm fractional thulium fiber laser (FTL) effectively addressed photoaging, with significant improvements in various parameters and high patient satisfaction. Current studies are exploring the efficacy of this laser in Fitzpatrick skin types V-VI.

HALO (Dual Fractionated Hybrid Laser): Kislevitz et al. (2020) observed significant improvements in skin appearance after a single treatment with the 1,470/2,940 nm HALO laser, particularly in reducing UV spots and brown spots. Additionally, a study by Waibel et al. (2018) involving Fitzpatrick skin types I-IV demonstrated high patient satisfaction, significant skin improvement, and minimal adverse events when using this hybrid fractional laser for photodamaged skin.

The combined use of these lasers represents a novel approach to addressing diverse skin care goals. To our knowledge, this is the first study to investigate the combined effects of these three modalities on skin rejuvenation and overall skin health in a single setting.

Device	Characteristics Wavelength	Target	Previous Studies
BBL **Broad based light** **(BBL HERO)**	IPL Nonablative	Freckles Age Spots Cherry Angiomas Rosacea Dull complexion Acne Skin Laxity Unwanted hair	Berlin et al 2007 Siperstein et al 2021 Handler et al 2017
MOXI	Fractionated thulium Nonablative (1927 nm laser)	Pigmentation Sun damage (UV spots) Signs of aging (brown spots)	Vingan et al . 2023 Li et al 2023
HALO	Dual fractionated hybrid laser Non-ablative (1470 nm) & Ablative (2940 nm)	Fine lines & Wrinkles Sun damage & dyschromia Scar revision Pigmented lesions Enlarged pores	Kislevitz et al 2020 Waibel et al 2018

Purpose

This single-site clinical trial is being conducted over the course of 4 to 6 months. Healthy subjects will receive 1-2 treatments combining BBL/MOXI/HALO during this trial and be followed up 1 month and 3 months after their final treatment to assess noted changes.

The primary objective of the study is to assess the efficacy of this BBL/MOXI/HALO combination treatment.

Project Summary

Clinical Study

This is a single-site, non-randomized, non-controlled study at UT Southwestern Medical Center at Dallas in the Department of Plastic Surgery. The study is designed to follow up to 15 consenting subjects who may receive up to 2 BBL/MOXI/HALO treatments under an IRB approved protocol. The BBL/MOXI/Halo treatments are all within the Joule System and is used as separate or combination treatments as part of standard of care within the clinic.

The Principal Investigator (PI) has been selected based on expertise, qualifications, previous clinical research and interest in this field of research. Subjects will be identified and recruited from the clinic of plastic surgery at UT Southwestern Medical Center.

Subjects will be consented by a member of the research team and subjects will be numbered in the order that consent is obtained, and all assessments and documents will contain the assigned ID for the duration of the study. Subjects will receive 1-2 BBL/MOXI/HALO treatments. All 2nd treatments will be scheduled 4-8 weeks after the initial treatment to ensure the skin has enough time to recover. Overall assessments will be collected before the first treatment and at subsequent follow-up visits at 1 Month and 3 Months post final treatment. Identifiable full-face standard and close-up photography will be obtained and used to evaluate any changes. Subjects will also have photos obtained with the VISIA-CR Imaging System (Canfield Scientific, Parsippany, NJ). Quantitative analysis will be completed on the VISIA imaging system and be used to compare the effects of the treatments. Any improvements will be evaluated to pre-treatment assessments.

Primary Endpoints

Assessment of changes by VISIA Imaging System of photos obtained pre-treatment, 1 Month and 3 Months post-treatment.

- Calculate percent change from baseline in numeric analysis via the VISIA Imaging System
    - VISIA- CR Imaging system will be utilized to capture qualitative and quantitative data including, but not limited to: spots, wrinkles, texture, pores, UV spots, brown spots, red areas and porphyrins.
    - Clinician assessment of improvement using the Global Aesthetic Improvement Scale.

Secondary Endpoint

Monitor incidence, severity and relatedness of adverse events throughout the study.

Study Device Information

Proprietary Information		Device Description	Regulatory Information
Device Name: JOULE Multi-Platform System	Sciton BBL HERO	Aesthetic device utilizing broadband light to improve the appearance of aging, reduces rosacea, acne, melasma and sun spots	Class II 510(K) Number: N/A Regulation number: 878.4810
	Sciton MOXI	Aesthetic laser device that utilizes a fractionated laser to treat uneven pigmentation and heal photodamage skin	
	Sciton HALO	Aesthetic laser device that utilizes a hybrid fractionated laser to treat fine lines & wrinkles and reduce the appearance of enlarged pores, sun damage and dyschromia	

Study Population & Enrollment

Enrollment

Healthy subjects who are interested in being treated with BBL/MOXI/HALO will be recruited for the study through the Plastic Surgery Clinic at UT Southwestern. Subjects may include UTSW patients, employees, students and the general population. Prospective subjects will be screened by a member of the research team delegated by the PI in clinic or via a phone call. If the subject is deemed to be a good candidate for the study based off the eligibility criteria, a clinic appointment will be made where a member of the research team will explain the purpose of the study and all the procedures and assessments that will be completed. The subject will be given time to consider their participation in the study before the informed consent is signed.

Informed Consent Form
An IRB-approved informed consent form (ICF) will be provided to each prospective subject during the study teams initial contact with the subject. The ICF will contain information explaining the purpose, design, risks and duration of the study. The candidate will be given as much time as necessary to read the form and discuss the study with their family or doctor. Study team will answer any study-related questions to their satisfaction prior to signing of the ICF. An original signed copy will be filed in the subjects study file and a copy will be provided to the subject. Additionally, a scanned copy of the ICF will be included in the subjects electronic record.

Subject Identification
All subjects will be assigned a unique study ID and 2-digit number which will be used on all files and assessments to identify the subject. The ID will consist of a unique clinical study ID and the 2-digit number will be the sequential order of subject enrollment. The ID will remain with the subject throughout the study and should be used in all references to the individual. No ID will be reassigned once the study begins and the ID will not contain any identifiable subject information.

Eligibility Criteria

Inclusion Criteria:

1. Healthy male and female adults between 20-75 years of age
2. Fitzpatrick skin type 1-4
3. Individual deemed by the Investigator to benefit from skin resurfacing treatment(s)
4. Individuals willing to withhold aesthetic therapies that may potentially impact results to the treatment areas for the duration of the study
5. Women of childbearing potential:
   5.1. will be asked to agree to a pregnancy test before their screening visit in clinic
   5.2. must use an acceptable method of birth control
        - Hormonal contraception (oral, injected, implanted, patch or vaginal ring)
        - Barrier method with spermicide: condom or occlusive cap with spermicidal foam/gel/cream/suppository
        - Intrauterine device (IUD)
        - Surgical Sterilization (e.gh., vasectomy, tubal occlusion, hysterectomy, bilateral salpingectomy/oophorectomy)
        - Abstinence from heterosexual intercourse when this is in line with the preferred and usual lifestyle of the subject. Periodical abstinence and withdrawal methods are not acceptable forms of contraception.
6. Individuals who can read, speak, write and understand English and who are willing to provide written informed consent.
7. Individuals willing to sign a photography release with the understanding that their photos may be used during presentations at national conferences and/or published in journals
8. Individuals willing and able to cooperate with all study requirements for the duration of the study.

Exclusion Criteria

1. Fitzpatrick skin type V-VI
2. Known allergies to general skin care products
3. Sensitivity to topical local anesthetic
4. Current or recent history of skin diseases:

- Systemic granulomatous disease, either active or inactive, (e.g., Sarcoid, Wegener's, TB, etc) or connective tissue diseases (e.g., lupus, dermatomyositis, etc.)

5. Significant scars in the treatment area:
    - Severe or cystic and clinically significant acne or acne scars on the areas to be treated
    - Current or history of hypertrophic scarring or keloid scars
6. Tattoos in the area to be treated
7. Observable suntan, nevi, excessive hair, etc., or other dermal conditions that might influence study results on the face in the opinion of the Investigator
8. Individuals who currently have cancerous or pre-cancerous lesions in the area to be treated
9. Individuals with skin pathology and/or pre-existing dermatologic condition that the Investigator deems inappropriate for participation or could interfere with outcomes of the study, such as: psoriasis, rosacea, eczema, seborrheic dermatitis, vitiligo, etc.
10. History of chronic drug or alcohol use
11. Recent aesthetic treatments:
    - <4 weeks of microdermabrasion or glycolic acid treatment to the treatment area or who plan to have this treatment during the study
    - <2 weeks of any type of injectable filler
    - <1 week of neurotoxin's
    - <6 months of ablative resurfacing laser treatments
    - <6 months of non-ablative, rejuvenative laser or light treatment
    - <3 months of chemical peels or dermabrasion
12. Use of the following prescription medications:
    - <6 weeks of Accutane or other systemic retinoids on the treatment area
    - <4 weeks of topical retinoids
    - <4 months of prescription strength lightening medications (e.g., hydroquinone, tretinoin, AHA, BHA, poly-hydroxy acids, 4-hydroxyanisole alone or in combination with tretinoin)
    - <2 weeks of anti-wrinkle or skin lightening or topical systemic medication known to affect skin aging or dyschromia (e.g., alpha/beta/polyhydroxy acids, Vitamin C, soy, Q-10; hydroquinone, etc.,), TEGO, Cosmo C250, gigawhite, lemon juice extract (topically), or embilica extract
    - Antiplatelet agents/anticoagulant (Coumadin, Heparin, Plavix, chronic NSAID use)
    - Psychiatric drugs that would impair the subject from understanding protocol requirements or understanding and signing the ICF.
13. Individuals who are pregnant or planning to become pregnant during the course of the study
14. Immunocompromised individuals or those currently using immunosuppressive medications and/or radiation
15. Individuals with uncontrolled disease such as asthma, diabetes, hyperthyroidism, medically significant hypertension, or hypothyroidism.
16. Individuals with any planned surgeries, overnight hospitalization, and/or invasive medical procedures planned during the course of the study.
17. Individuals who, in the Investigator's opinion, have a history of poor cooperation, unreliability or noncompliance with medical treatment.
18. Individuals who are unable to understand instructions or give informed consent
19. Individuals who have physical or psychological conditions which, in the opinion of the Investigator, makes them unable to complete the study per protocol.

Study Timeline

Outline of Visits

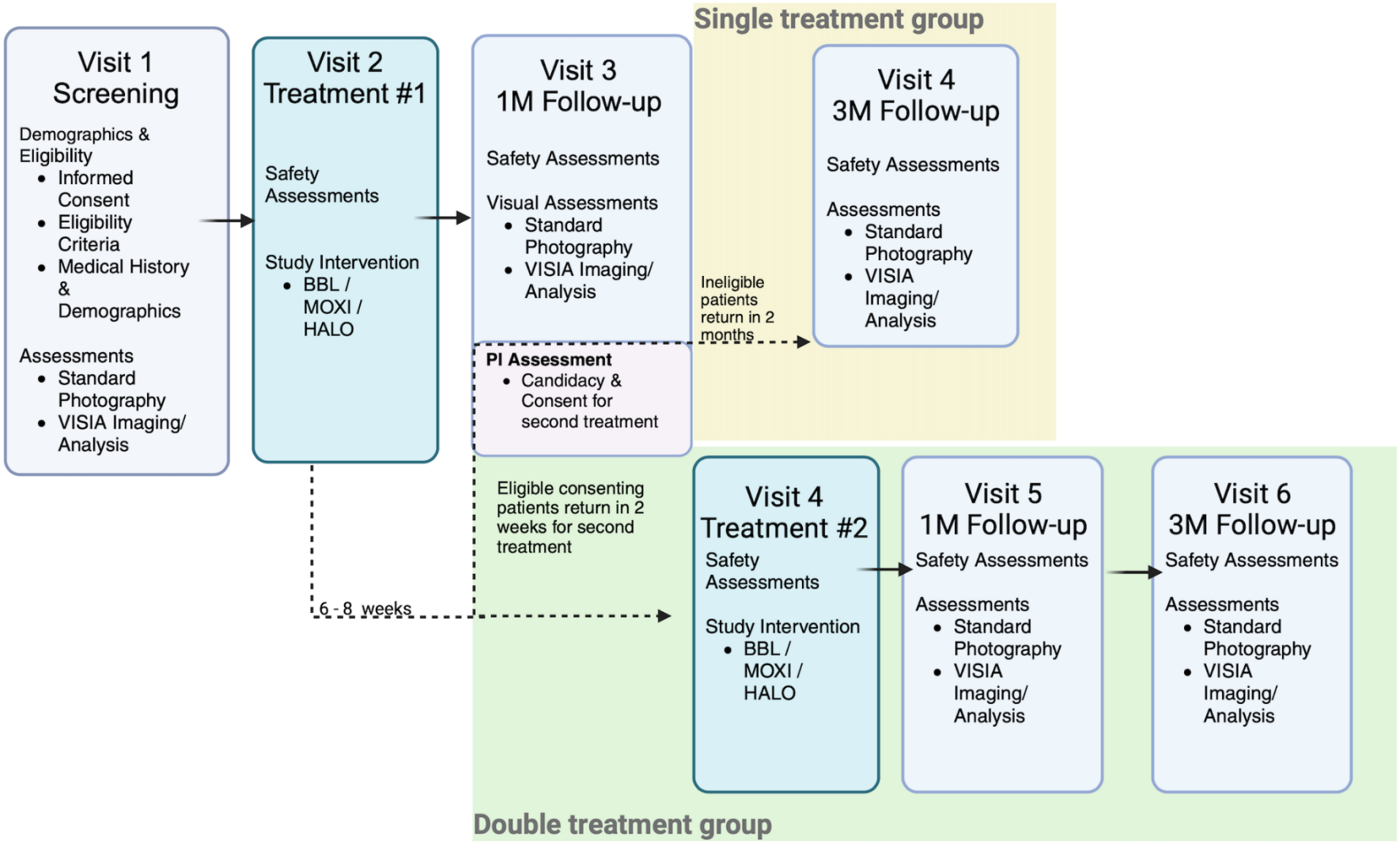
Single Treatment Arm

Study Procedures		Visit 1 Screening (Day -45 to 0)	Visit 2 Treatment #1 (Day 0)	Visit 3 Follow-Up #1 PI Assessment **Tx1 1M** (Day 30)	Visit 4 Follow-Up #2 **Tx1 3M** (Day 90)
Demographic & Eligibility	Informed Consent ; Eligibility Criteria Medical History & Demographics	X			
Safety Assessments	Adverse Events; Concomitant Medications		X	X*	X
Study Intervention	BBL /MOXI/ Halo		X		
Assessments	Standard Photography; VISIA Imaging/Analysis	X		x	X
Evaluations	Global Aesthetic Improvement Scale				X

Dual Treatment Arm

Study Procedures		Visit 1 Screening (Day -45 to 0)	Visit 2 Treatment #1 (Day 0)	Visit 3 Follow-Up #1 PI Assessment (Day 30)	Visit 4 Treatment #2 (Day 45)	Visit 5 Follow-Up #2 **Tx2 1M** (Day 75)	Visit 6 Follow-Up #3 **Tx2 3M** (Day 135)
Demographic & Eligibility	Informed Consent ; Eligibility Criteria Medical History & Demographics	X					
Safety Assessments	Adverse Events; Concomitant Medications		X	X*	X	X	X
Study Intervention	BBL /MOXI/ Halo		X		X		
Assessments	Standard Photography; VISIA Imaging/Analysis	X				X	X
Evaluations	Global Aesthetic Improvement Scale						X

*Visit 3 determine whether patient is candidate for second treatment.


Single treatment group
Visit 1
Screening
Demographics & Eligibility
Informed Consent
Eligibility Criteria
Medical History & Demographics
Assessments
Standard Photography
VISIA Imaging/ Analysis
Visit 2
Treatment #1
Safety Assessments
Study Intervention
BBL / MOXI / HALO
Visit 3
1M Follow-up
Safety Assessments
Visual Assessments
Standard Photography
VISIA Imaging/ Analysis
Ineligible patients return in 2 months
Visit 4
3M Follow-up
Safety Assessments
Assessments
Standard Photography
VISIA Imaging/ Analysis
PI Assessment
Candidacy & Consent for second treatment
Eligible consenting patients return in 2 weeks for second treatment
6 - 8 weeks
Visit 4
Treatment #2
Safety Assessments
Study Intervention
BBL / MOXI / HALO
Visit 5
1M Follow-up
Safety Assessments
Assessments
Standard Photography
VISIA Imaging/ Analysis
Visit 6
3M Follow-up
Safety Assessments
Assessments
Standard Photography
VISIA Imaging/ Analysis
Double treatment group

Study Visits

Pre-Study Procedures

Prior to the start of the study, potential subjects will be screened for eligibility requirements via chart review on EPIC. Prospective subjects will be informed of study details and study visit instructions as detailed in section 6. An appointment to visit the clinic for an official screening visit will be scheduled if interest is demonstrated. Additionally, if subjects express an interest in the procedure during a clinic appointment with Dr. Kenkel, he may discuss the study with them and assess the treatment area. If a subject is deemed a good candidate, they will be connected to a research coordinator to answer any further questions and provide consent.

Visit 1: Screening (Day -45 to 0)

The purpose of the study, eligibility criteria and potential risks will be discussed with the potential subject. All interested candidates will be given an IRB approved Informed Consent Form (ICF) as detailed in section 5.2, with adequate time for review. The Investigator and/or designee will address questions and/or concerns raised by the subject. Those subjects who elect to participate will sign the consent form prior to any study procedures. The subject will receive a signed copy of their ICF and the original will be kept in the study file. Subjects will then be screened to ensure they meet all study criteria. The following is a complete list of the screening and enrollment activities to be performed:

1. Obtain informed consent and HIPAA authorization.
2. Assign a screening number to candidate subjects that sign the initial paperwork.
3. Collect a brief medical history including current medications, skin type, allergies, major conditions, or illnesses, etc. and assess if subjects meet eligibility criteria.
4. For those that pass eligibility requirements and are females of childbearing potential, perform a urine pregnancy test. If the test is negative or candidate is male, the subject will be enrolled in the study and assigned a subject number.
5. Obtain close up and standard photography as described in section 8.1.
6. Obtain photographs and measurements using the Vectra H2 3D Imaging System and VISIA Imaging System as described in section 8.1.

This visit will take 30-45 minutes.

Treatment(s): Visit 2 (First treatment), Visit 4 (Second treatment* - if indicated, see Visit 3)

A member of the study team will record concomitant medications and will ask subjects if they have experienced any changes in their health since the previous visit. If an adverse event (AE) is reported then the Investigator will be informed, and an AE log will be completed/updated for PI review.

The following activities will be completed before the treatment:

1. Subjects will be asked to wash off all skincare products at least 30 minutes prior to each scheduled clinic visit using a cleanser of your choice. No other topical products should be applied to the treatment area until the study visit has been completed. If a subject arrives having not removed skincare products, she or he will be required to remove the residual product at the clinic and wait at least 20 minutes prior to procedures.
2. Subjects will acclimate to ambient temperature and humidity conditions for 15 minutes prior to any procedures being done.
3. A trained staff member will apply a topical triple anesthetic (benzocaine, lidocaine, tetracaine) to anesthetize the areas being treated. After allowing 30 minutes for the anesthetic to take effect, the skin will be cleansed and prepped with antiseptic.

The procedure will then be performed in our Plastic Surgery clinic following standard of care procedures. A trained staff member will treat the subject's face with BBL/MOXI/HALO. Treatment settings and parameters will be determined by the provider and will be chosen according to Fitzpatrick skin type and location of the body for which it will be used. Ultimately, 4-6 passes will be performed at the discretion of the provider.–Post-treatment cooling will be offered at the discretion of the treating provider and depending on clinical availability.

After the procedure, subjects will be provided appropriate post-treatment care instructions as deemed appropriate by the Investigator or study staff. Subjects will be instructed that blistering, bleeding, oozing, strong pain, swelling persisting for more than 72 hours, or signs of infection (e.g., pus, drainage, fever) are cause for immediate concern and they should contact the investigator and/or his designee, to be evaluated. Expected downtime after BBL/MOXI/HALO is expected to be 7-10 days.

The treatment visit(s) is expected to take approximately 1 hour.

*A subset of subjects will return for a second treatment 45-60 days after the initial treatment. The PI and/or Sponsor will make a determination if a second treatment would be beneficial to the subject. All follow up visits will be scheduled accordingly.

PI Assessment: Visit 3 (1-month follow-up from initial treatment)
The physician will assess the patient at their 1-month follow-up after the initial treatment. The treating physician will determine if a single treatment is sufficient for achieving aesthetic goals or a second treatment is indicated based on the patient's presentation. Candidacy for a second treatment may involve assessment of the following factors:

- Stage of healing
- Absence of complications and adverse events
- Treatment tolerance by patient
- Patient interest and consent
- Review of VISIA data and Photography

Follow Up Visits (1M & 3M post final treatment): Visit 3 & 4 (Single tx) or Visit 5 & 6 (Double tx)
At a minimum, all subjects will return for follow-up visits at 1 month (± 7 days) and 3 months (± 7 days) after the final treatment.

The following activities will be performed on all study subjects during the follow-up visits:

1. The physician or study staff will ask subjects if they have experienced any changes in their health since the previous visit. Changes will be recorded accordingly. If an adverse event (AE) is reported then the Investigator will be informed, and an AE form will be completed.
2. Subjects will acclimate to ambient temperature and humidity conditions for 15 minutes prior to any procedures being done.
3. The physician or study staff will perform an examination of the skin in the treatment area
4. Obtain post-treatment close-range and standard photography as described in section entitled, "Assessments", for research purposes.
5. Obtain post-treatment photographs and measurements using the Vectra H2 3D Imaging System and VISIA Imaging System as described in section entitled, "Assessments", for research purposes.

These visits will take about 30 minutes.

Assessments

Photography Procedures
NIKON D7200
Standard and close-range of the face will be utilized for evaluation of pigmentation. These photographs will be taken utilizing the Nikon D7200 at Baseline (Screening Visit), 1-month post-treatment and 3-months post-treatment.

VISIA CR Imaging System
Subjects will be instructed to adopt neutral, non-smiling expressions for each photograph. Images will be taken of each applicable subject with diffuse pigmentation of the face using the Vectra H2 3D Imaging System at Baseline, 1-month post-treatment and 3-months post-treatment. Each subject will have a total of 3 photos taken (right side, left side and center view).

Potential Risks

Risks of Anesthetic

Allergic Reaction (Rare)

There is a possibility of an allergic or toxic reaction to anesthesia used to numb the areas. Subjects will be questioned with regard to any history of allergies and carefully monitored for signs of allergic reaction.

Risks of Treatments

***BBL**: Broad Band Light*

Erythema: (Occasionally < 3%)

May develop within the irradiated areas but are usually temporary and fade within 24-72 hours. There is a 90% chance of transient edema and 99% chance of erythema to occur after treatment.

Swelling and/or itching: (Occasional <3%)

May occur in the area of treatment and may last up to several hours. The pattern of the treatment may be visible on the skin, but this usually fades with healing. Itching and hive-like appearance may also occur.

Bruising: (Rare < 1%)

A mild bruising may occur at the treatment area as a result of laser exposure. This is usually transient and resolves in a few hours to few days.

Skin roughness and/or peeling (Occasional <3%)

Patients can expect their treated skin to feel rough like sandpaper for a few days while the skin heals. This is transient and should resolve in a few days.

***Lasers**: MOXI (Non-ablative Laser Facial Resurfacing & HALO (Fractionated Laser)*

Blistering, burning, scaling and infection: Rare < 1%)

A crust, blister or superficial wound can occur at the treatment area. The risk of infection will be minimized by proper wound care.

Bruising: (Rare < 1%)

A mild bruising may occur at the treatment area as a result of laser exposure. This is usually transient and resolves in a few hours to few days.

Transient edema and/or erythema: (Occasionally < 3%)

May develop within the irradiated areas but are usually temporary and fade within 24-72 hours. There is a 90% chance of transient edema and 99% chance of erythema to occur after treatment.

Pigmentary changes: (Rare < 1%)

Laser exposure can cause pigmentary changes such as hyper- (3% chance) and hypo-pigmentation (<.5% chance). Although this is usually temporary, it may be permanent on rare occasions. Sun avoidance and/or the use of a total sun block (SPF 30 or higher) will help minimize the intensity and duration of any pigmentary changes.

Skin roughness and/or peeling (Occasional <3%)

Patients can expect their treated skin to feel rough like sandpaper for a few days while the skin heals. This is transient and should resolve in a few days.

Eye injury: (Rare < 1%)

There is a risk of eye injury associated with the use of this device. This risk will be minimized by wearing protective eyewear designated for use with this device. All subjects and other personnel must use proper protective eyewear during the use of this device.

Scarring: (Rare < 1%)

As with any form of laser exposure, there is a small risk of scarring. However, this is minimized by proper technique and wound care.

Risks of Photography:

The subject may be uncomfortable with sitting still for an extended period of time or from turning his/her body in various positions. Subjects may be sensitive to bright and repeating flashes from the camera, which can sometimes cause headaches, eye irritation, discomfort, aftereffects such as seeing spots, and in rare cases, could stimulate a migraine headache or epileptic seizure.

Photographs include a risk of identification, as these will be full face photos. Privacy will be protected to the greatest extent possible. Photos will only be identified by unique subject identification number that contains no personal

identifying information. All photos will be stored on a password secure drive, with only access by research personnel. For research purposes, photos may be used in scientific publications.

Adverse Events

At each visit, a member of the research team will question the subject about adverse events using an open-ended question. If a potential adverse event is reported by the subject or identified during examination, directed questioning and examination will be performed when appropriate. At this time, the following will be performed:

1. Obtain a complete history of the event in question as well as conduct an examination of the subject and determine if the reported event qualifies as an Adverse Event (AE). If the event is determined to be an AE, an AE case report form and Event Follow-up (EF) visit case report form must be completed. One AE case report form should be used to track the history of an individual AE throughout the period of the study.
2. Collect an updated medical and surgical history along with recording of concomitant medications or treatments.
3. Take photographs of the subject with attention to the area in question.
4. Render treatment for the event, if any, as determined by the medical judgement of the Investigator.

Photographs will be taken to document any AEs if possible.

For the duration of the study, medical assistance will be provided to the subject for study-related problems at no expense, if in the opinion of the Investigator, the reaction was caused by BBL/MOXI/HALO treatments. Should a subject choose to seek their own medical treatment, no reimbursement will be offered.

When an AE persists at the end of the study, the Investigator will ensure a follow-up of the subject until the Investigator believes that the event is satisfactorily resolved.

Subject Safety & Data Monitoring

Research Standards and Good Clinical Practice

The conduct of this study will follow all applicable guidelines for the protection of human subjects for research as outlined in 21 CFR 50, in accordance with the accepted standards for Good Clinical Practice (GCP), International Conference on Harmonization (ICH), and the standard practices of UT Southwestern.

Data Monitoring

For this protocol, which involves the use of a non-significant risk device, the Investigator will monitor accrual, subject experience, attrition, patterns of adverse events and/or unexpected adverse events, any protocol deviations, or violations any changes in the risk/benefit analysis.

Subjects will be asked about any adverse events throughout the study. Subjects will be asked to contact the Investigator if adverse events develop between visits. If necessary, an unscheduled visit will be arranged so that the Investigator can clinically evaluate and photograph these findings.

Procedures to Maintain Confidentiality

All study records and information will be identified by the subject number. All subject identifiers will be removed from all documents. The link between subject name and study ID number will be kept in separate password-protected files. Documents containing identifying information will be kept in locked files in the research staffs' locked office. All electronic study data will be password protected with access limited to members of the research team. No direct identifying information will be shared with any outside entities. Electronic data (electronic data entry - Case Report Forms) will be password protected.

Photographs of subject's faces will be taken at enrollment, treatment, and follow-up visits. These photographs will be identified by subject numbers. Subject confidentiality will be protected to the greatest extent possible

This study will be performed in accordance with Health Insurance Portability and Accountability Act. These guidelines will be followed specifically with regard to the privacy and confidentiality of patient care and study records. Personnel

associated with Investigator's office, the U.S. Food and Drug Administration (FDA) and the governing Institutional Review Board, have the right to review the data, including photographs, collected during this study.

Statistical Analysis

The per-protocol (PP) population will be the primary population for all statistical analyses. The PP population will include all subjects who received treatment and completed the study in general accordance with the protocol. Only the data of completing subjects will be analyzed.

This study will include descriptive statistics and change from baseline analysis.

The primary outcome of effectiveness will be a paired comparison of baseline to all applicable post-baseline time points for data obtained from VISIA Imaging Analysis results.

A descriptive statistical summary will be provided the VISIA Imaging Analysis. The descriptive statistical summary includes the number of observations (N), mean, median, and standard deviation (SD), minimum (MIN) and maximum (MAX) values at all applicable time points.

The following will be calculated and reported for each evaluation parameter at the applicable post-baseline time point(s):

$$\text{Percent Mean Change from Baseline} = \frac{(\text{Visit Mean Score} - \text{Baseline Mean Score}) \times 100}{\text{Baseline Mean Score}}$$

For each new measurement set we will conduct a repeated measures of analysis of variance to detect difference between sample distributions. If differences are detected, we will subsequently evaluate specific pairwise comparisons among the post treatment visit times using a paired T-test or Wilcoxon signed-rank tests. All statistical tests will have a significance level alpha =0.05. P-values will be reported to 3 decimal places (0.000).

References

Berlin AL, Hussain M, Phelps R, Goldberg DJ. Treatment of photoaging with a very superficial Er:YAG laser in combination with a broadband light source. J Drugs Dermatol. 2007 Nov;6(11):1114-8. PMID: 18038499.

Siperstein R, Wikramanayake TC. Intense Pulsed Light as a Treatment for Senile Purpura: A Pilot Study. Lasers Surg Med. 2021 Sep;53(7):926-934. doi: 10.1002/lsm.23358. Epub 2020 Dec 8. PMID: 33615512.

Handler MZ, Bloom BS, Goldberg DJ. IPL vs PDL in treatment of facial erythema: A split-face study. J Cosmet Dermatol. 2017 Dec;16(4):450-453. doi: 10.1111/jocd.12365. Epub 2017 Jul 27. PMID: 28752575.

[Vingan, 2023] Vingan NR, Panton JA, Barillas J, Lazzarini A, Hoopman J, Kenkel JM, Culver A. Investigating the efficacy of a fractionated 1927 nm laser for diffuse dyspigmentation and actinic changes. Lasers Surg Med. 2023 Apr;55(4):344-358. doi: 10.1002/lsm.23653. Epub 2023 Mar 23. PMID: 36950878.
[Kislevitz, 2020] Kislevitz M, Lu KB, Wamsley C, Hoopman J, Kenkel J, Akgul Y. Novel Use of Non-Invasive Devices and Microbiopsies to Assess Facial Skin Rejuvenation Following Laser Treatment. Lasers Surg Med. 2020 Nov;52(9):822-830. doi: 10.1002/lsm.23233. Epub 2020 Mar 15. PMID: 32173884.

Waibel S, Pozner J, Robb C, Tanzi E. Hybrid Fractional Laser: A Multi-Center Trial on the Safety and Efficacy for Photorejuvenation. J Drugs Dermatol. 2018 Nov 1;17(11):1164-1168. PMID: 30481954.