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Healing Efficacy of Applying Moist Exposed Burn Ointment Post Eyebrow Tattoo Procedure

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【**Abstract**】**Objective** To evaluate healing efficacy of applying Moist Exposed Burn Ointment (MEBO) post eyebrow tattoo procedure. **Methods** 40 female patients received eyebrow tattoo at Taiyuan Fashion and Beauty Clinic from December 2015 to January 2018 were enrolled in this study. After eyebrow tattoo procedure was finished, MEBO was applied at post-procedure site to promote healing. Healing efficacy and cosmetic outcome were studied. **Results** All patient's treated sites were healed within 7 days without infections, ulcers, and scabs. And all patients were satisfied with the treatment outcome of the procedure, and nil retouch of color was needed at 3 months follow-up. **Conclusion** The result indicated that applying MEBO after eyebrow tattoo could prevent infections, formation of scabs, and promote healing efficacy, therefore ensuring treatment outcome.

【**Key words**】 Eyebrow tattoo, Wounds, Moist Exposed Burn Ointment, Eyebrow shape, Eyebrow color, Efficacy.

Eyebrow tattoo is a cosmetic technique that filling dermis with tattoo ink at eyebrow site as designed to achieve ideal cosmetic results. However, treatment outcome could be various due to different skill levels of operators, and selection of healing techniques for treated sites. Treatment outcome might be affected if inappropriate healing techniques are chosen, which might result in infection and scab formation. Moist Exposed Burn Ointment (MEBO) was applied on treated sites after tattoo in this study to verify its impact on healing efficacy and treatment outcome.

1. Baseline data

40 females aged from 20-68 years old received eyebrow tattoo at Taiyuan Fashion and Beauty Clinic from December 2015 to January 2018 were enrolled in this study.

2. Methods

Eyebrow tattoo shape was designed according to patient's face shape, eyebrow shape, and preference of eyebrow shape. Before treatment, patient's local skin site was disinfected and local anaesthesia was given. During treatment, designed eyebrow shape was tattooed by round liner needles following

eyebrow growth direction, aseptic rules were obeyed to prevent infection. After treatment, exudate was wiped away by using sterile cotton stick. Then, 0.5mm thickness MEBO was smeared evenly every four to six hours until treated site was fully healed.

3. Results

All patients' treated sites were healed within 7 days without infection, ulcers, and scabs. All patients were satisfied with the shape and color of their eyebrows. Nil retouch of color was needed for all patients at 3 months follow-up. Treatment result of one patient is demonstrated in Figure 1-2.

Figure 1. 1 day after treatment

Figure 2. 8 days after treatment

4. Discussion

Skin tissues are injured by round liner needles pricking into skin when eyebrow tattoo is performed. Minor amount of exudate is secreted during this process. Thus, Mupirocin ointment is usually applied at treated site to promote healing. However, scabs may form during healing process, and unsatisfied treatment outcome such as uneven color could occur due to scabs peeling. Thus, retouch of color may be needed[1]. Besides, infection is another reason that affects treatment outcome. Infection may be caused by scratching because of itchiness. As a result, scars could form and affect patient's appearance[2].

To improve healing efficacy, MEBO was applied at treated sites after treatment. The reason of applying MEBO is that the healing process post eyebrow tattoo is similar to superficial degree burn. After MEBO was applied, it could form a membrane at treated sites. The membrane not only protects treated site from being infected by bacteria, but also maintains a moist healing environment, thus further preventing formation of scabs due to dryness, and reducing pain and itchiness caused by stimulation of peripheral nerves.

To sum up, MEBO could effectively prevent treated site of eyebrow tattoo from infection, promote healing efficacy, and improve treatment outcome.

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Application of Moist Exposed Burn Ointment after Double-eyelid Surgery

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【**Abstract**】**Objective** To evaluate the clinical efficacy of Moist Exposed Burn Ointment (MEBO) in treating post double-eyelid surgery incision. **Methods** 68 patients who received double-eyelid surgery in Kaifeng Central Hospital from February 2019 to January 2020 were randomly divided into study group (n=34) and control group (n=34). In the first 2 days after surgery, patients in study group were applied with MEBO while control group cold compress. Pain score, incision healing time and incidence of complications within 6 months after surgery between two groups were compared. **Results** Study group had significantly lower pain score 1.46±0.63 vs. 2.12±0.78 (t=3.838, p<0.001), shorter incision healing time 7.4±2.2 days vs. 10.4±2.5 days (t=5.253, p<0.001), and lower incidence of complications within 6 months after surgery 2.94% vs. 29.41% (χ^2=8.785, p=0.003) compared with control group. **Conclusion** MEBO could significantly relieve pain, accelerate incision healing, and reduce incidence of complications after double-eyelid surgery.

【**Key words**】Uneven double eyelids; Single eyelids; MEBO; Double-eyelid surgery; Incision; Pain;

Both single eyelids and double eyelids are normal. People with single eyelids have no crease in upper eyelids, their upper eyelid skin is relatively thick and their eyes tend to be relatively small. As they age, orbital septum fat and sagging subcutaneous tissue could cause ptosis, blocking vision or even affecting eye function. For those with double eyelids, they have a crease in upper eyelid, upper eyelid skin is relatively thin, and their eyes are relatively large. For those with uneven double eyelids, eye fissures are not symmetrical, which could cause cosmetic concerns in severe cases.[1-2] In recent years, people have higher requirements for appearance, and double-eyelid surgery has been widely used in clinical practice, with satisfying cosmetic effect.[3] However, postoperative healing time could be long and there could be various complications, so prognosis could be affected.[4] In this study, the efficacy of Moist Exposed Burn Ointment (MEBO) in the treatment of post double-eyelid surgery incision was studied.

1. Clinical data

1.1 Baseline data

68 patients with single eyelids or uneven double eyelids admitted to Kaifeng Central Hospital from February 2019 to January 2020

were enrolled and randomized into study group (n=34) and control group (n=34). Study group: male (n=11), female (n=23), age 26.89±2.96 years, single eyelids (n=14), uneven double eyelids (n=20); control group: male (n=9), female (n=25), age 25.65±3.28 years, single eyelids (n=15), uneven double eyelids (n=19). The differences on sex and eyelid type between two groups were compared using chi-squared test, χ^2 = 0.283, 0.060, p = 0.595, 0.806, (all p>0.05), and age compared using independent sample t-test, t=1.637, p=0.106 (p>0.05). This study was approved by the Ethics Committee of Kaifeng Central Hospital, and all patients signed informed consent document.

1.2 Inclusion and exclusion criteria

Inclusion criteria: single eyelids or uneven double eyelids[5]; signed informed consent document. Exclusion criteria: conjunctivitis or other eye diseases; severe dysfunction of heart, liver, kidney or other important organ; blood coagulation disorders; severe blood system diseases; tendency to develop scar; communication disorder; mental disorder; poor compliance; pregnant or breastfeeding women.

2. Methods

2.1 Treatment methods

Surgery was customized according to patient's face shape, eyelid type, and specific needs. After local anesthesia, surgery was performed on upper eyelid between medial canthus and lateral canthus. At 5 mm from the edge of upper eyelid an incision of about 5 mm long was made, reaching subcutaneous tissue. Part of orbicularis oculi muscle and capsulopalpebral fascia were removed, and orbital septum was opened and excess orbital septum fat was removed. Electrocoagulation was performed with the use of gauze to stop bleeding. After surgery, incision was sutured. For postoperative management of study group, MEBO was applied evenly at 1-2 mm thickness, and dressing change was performed 4-6 times a day until the incision completely healed; for control group, routine cold press was applied.

2.2 Clinical outcome

Pain score, incision healing time and incidence of complications within 6 months after surgery were compared between two groups. Visual analogue scale (VAS) was used to evaluate pain score.

2.3 Statistical processing

SPSS 22.0 was used for statistical analysis, count data was shown as frequency or percentage, and tested with chi-squared test; measurement data conformed to normal distribution and was shown as mean ± standard deviation ($\bar{x} \pm s$), and pairwise comparisons between 2 groups were performed with independent sample t-test, p<0.05 stood for statistical significance.

3. Results

3.1 Pain score

2 days after surgery, pain score of study group was significantly lower than control group: 1.46±0.63 vs. 2.12±0.78 (t=3.838, p<0.001).

3.2 Healing time of incision

Incision healing time of study group was significantly shorter than control group: 7.4±2.2 days vs. 10.4±2.5 days (t=5.253, p<0.001).

3.3 Incidence of complications

During the 6-month follow-up, incidence of postoperative complications of study group was significantly lower than control group: 2.94% vs. 29.4% (χ^2=8.785, p=0.003). Study group had 1 patient with persistent eyelid swelling, while control group 4 patients with persistent eyelid swelling, 3 with ecchymosis, and 3 with conjunctivitis.

4. Discussion

Double-eyelid surgery is a widely practiced minimally invasive surgery in clinical practice.[6-8] The surgery changes the structure of upper eyelid skin and subcutaneous tissue, which could help achieve symmetrical double eyelids for patients with uneven eyelids. After surgery, double eyelids are similar to natural ones with satisfying effect.[9-10] MEBO could form a transparent film on wound, protecting exposed nerve endings from external stimulation and mitigating water loss to prevent pain caused by dryness of wound.[11-12] Moreover, MEBO could activate potential regenerative cells in wound into stem cells, and the carbohydrates, fatty acids, amino acids, vitamins, etc. contained in it could provide sufficient nutrition, promoting skin cell regeneration and wound healing.

In this study, patients in study group were applied with MEBO to treat postoperative incision, with significantly shorter healing time, lower pain score, and lower incidence of complications compared with control group treated with routine cold compress.

In summary, MEBO could significantly shorten incision healing time, reduce pain and postoperative incidence of complications after double-eyelid surgery.

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Efficacy of Moist Exposed Burn Ointment in Treating Wounds after Spectra Dual-pulsed Laser Treatment for Freckles

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【**Abstract**】**Objective** To evaluate the clinical efficacy of Moist Exposed Burn Ointment (MEBO) in treating wounds after Spectra dual-pulsed laser treatment for freckles. **Methods** 174 patients treated with Spectra dual-pulsed laser for freckles in The First Affiliated Hospital of Zhengzhou University from March 2014 to September 2015 were randomly divided into study group (n=87) and control group (n=87). After laser treatment, wound treatment was given for 3 days, in which control group was treated with cold compress, and study group was applied with MEBO after cold compress. Wound healing time and incidence of pain between two groups were compared. **Results** Study group had shorter wound healing time 9.47±1.69 d vs. 10.71±1.95 d and lower incidence of pain 19.54% vs. 67.82% (both, $p<0.05$). **Conclusion** MEBO could significantly reduce wound healing time and relieve pain after Spectra dual-pulsed laser treatment for freckles.

【**Key words**】Moist Exposed Burn Ointment; Spectra dual-pulsed laser; Freckles treatment

Freckles are tawny and brown mottling or sesame-shaped pigmented spots that usually occur on sun-exposed areas of body, especially on face, neck, and hands.[1] Facial freckles particularly affect physical appearance thus causing great psychological burden to patients.[2] A variety of laser methods are used to treat freckles, and the action of mechanism of them is destroying melanin cells of skin through selective photothermal effect.[3] However, it takes relatively long for wound healing and causes pain after laser treatment, Moist Exposed Burn Ointment (MEBO) was used in this study so as to promote wound healing and relive pain.

1. Clinical data

1.1 General data

174 patients treated with Spectra dual-pulsed laser treatment for freckles in The First Affiliated Hospital of Zhengzhou University from March 2014 to September 2015 were randomly divided into study group (n=87) and control group (n=87). Among all the patients, male (n=6), female (n=168); age 20-57 (27.6±9.5) y. Patients with skin allergy or other skin diseases were excluded from this study. There was no significant difference in general data between two groups.

2. Methods

2.1 Treatment method

Spectra dual-pulse laser were used in both groups for treating freckles, parameters: wavelength 532nm, frequency 1-2Hz, energy density 0.8-1.5L/cm^2, and laser spot diameter 0.8-2.6mm. After laser treatment, treatment for wounds caused by laser was given for 3 days. Control group was given cold compress for 30-60 minutes, while for study group after cold compress MEBO was applied every 6 hours, and face was cleaned with cool water before each application of MEBO.

2.2 Clinical outcomes and evaluation criteria

(1) Wound healing time

Wound healing time was calculated from the time completing treatment to the time when scar naturally fell off.

(2) Incidence of pain

Incidence of pain= (total cases - cases of no pain) / total cases × 100%. Definition of no pain: slight pain sensation after freckles treatment and pain was significantly relieved within one day.

2.3 Statistical analysis

SPSS 19.0 was used for statistical analysis. Measurement data which follows the normal distribution was represented as mean ± standard deviation ($\bar{x}$±s), tested by *t* test. Count data was represented as frequency or n (%).

3. Results

3.1 Wound healing time

Study group had shorter wound healing time than control group 9.47±1.69 d vs. 10.71±1.95 d (p<0.05), as shown in Table 1.

3.2 Incidence of pain

Study group had lower incidence of pain than control group 19.54% vs. 67.82% (p<0.05), as shown in Table 2.

Table 1 Wound healing time ($\bar{x}$±s, day)

Group	Wound healing time
Study group (n=87)	9.47±1.69
Control group (n=87)	10.71±1.95

Table 2 Incidence of pain

Group	Cases of no pain	Incidence of pain (%)
Study group (n=87)	60	19.54
Control group (n=87)	18	67.82

4. Discussion

Laser treatment for freckles is to destroy melanin cells through selective photothermal effect without affecting normal skin tissues.[4] Spectra dual-pulsed laser is a YAG laser system that works in two different wavelengths and modes with high-peak efficiency and persistent stability, which results in great efficacy and less hyperpigmentation after treatment.[5] However, wound healing time is relatively long after laser treatment, and excessive laser density causes damage to the skin. Therefore, MEBO was used to improve wound healing in this sutdy.[6]

MEBO could greatly promote wound repair after laser treatment[7], the mechanism is as follows: (1) Created a moist environment. The moist environment formed by MEBO on wound surface provides an optimal condition for wound repair; (2) Analgesic effect. Nerve endings can be isolated from external stimulations, and the arrector pili muscles can be relaxed after using MEBO, thereby easing pain. Moreover, it can effectively relieve the pain caused by traction resulting from wound scab formation; (3) Enhance wound healing. After applying MEBO on wound, Potential Regenerative Cells of skin tissues can be converted into stem cells which will be differentiated and proliferated into normal skin cells, therefore accelerating wound repair in situ.[8]

In conclusion, MEBO could significantly reduce wound healing time and relieve pain for wounds after Spectra dual-pulsed laser treatment for freckles.

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Application of Moist Exposed Burn Ointment in Treated Area of Glycolic Acid Resurfacing Procedure

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【**Abstract**】**Objective** To study the clinical efficacy of Moist Exposed Burn Ointment (MEBO) in healing treated area of glycolic acid resurfacing procedure. **Methods** 40 patients with various skin conditions were enrolled in the study and randomized into study group (n=20) and control group (n=20). All patients underwent 5 sessions of glycolic acid resurfacing procedure, once every 4 weeks. In the first 2 weeks after resurfacing procedure, study group was applied with MEBO on treated area until it was healed, followed by polyhydroxy acid (PHA) lotion, and control group was only applied with PHA lotion. Average pain score and healing time were compared between 2 groups. **Results** Compared with control group, study group had lower average pain score 2.74±1.12 vs. 3.91±1.73, and shorter healing time 3.76±1.47 days vs. 6.23±2.01 days (both $p<0.05$). **Conclusion** Application of MEBO showed significant efficacy in healing treated area of glycolic acid resurfacing procedure for various skin conditions.

【**Key words**】MEBO; Glycolic acid resurfacing procedure; Analgesia; Healing time; Side effects

Glycolic acid resurfacing is an effective method for treating facial skin condition, on the other hand, there could be side effects such as redness, swelling, tingling, burning sensation, etc. following treatment. In this study, the efficacy of applying Moist Exposed Burn Ointment (MEBO) to treat post-resurfacing area was studied.

1. Methods

1.1 Clinical data

40 patients with various skin condition that planned to take glycolic acid resurfacing procedure were enrolled and randomized into study group (n = 20) and control group (n = 20). Male (n=18), female (n=22); age 18-49 years (mean 30.4 years). Type of skin condition: acne vulgaris, male (n=8) and female (n=7); melasma, male (n=2) and female (n=9); post-inflammatory hyperpigmentation, male (n=3) and female (n=2); enlarged pores, male (n=2) and female (n=4); mild scar, male (n=3) and no female.

1.2 Inclusion criteria and exclusion criteria

Inclusion criteria: meet the diagnostic criteria of acne vulgaris, melasma, post-inflammatory hyperpigmentation, enlarged pores, or mild scars.[1] Exclusion criteria: allergic to products used in this study; contact dermatitis at resurfacing site; bacterial or viral infection on face; have taken tretinoin 6 months prior to the study; photosensitive; insufficient protection against sunlight; sunburn.

1.3 Treatment method

1.3.1 Products for treatment

Glycolic acid, alpha hydroxy acid (AHA) lotion (ingredients: 8% glycolic acid, 2% citric acid, vitamin E, amphoteric hydroxyl complex, etc.), polyhydroxy acid (PHA) lotion (ingredients: 12% gluconolactone, 3% lactobionic acid, vitamin E, etc.), and MEBO.

1.3.2 Pre-procedure preparation

All patients were taken pictures and signed informed consent document before treatment. 2 weeks before the first resurfacing procedure, AHA lotion was applied and strict sun protection measures were taken.

1.3.3 Glycolic acid resurfacing

Patients underwent 5 sessions of glycolic acid resurfacing procedure, once every 4 weeks, and the respective glycolic acid concentration were 20%, 20%, 35%, 35%, 50%.

1.3.4 Post-procedure treatment

Study group: for the first 2 weeks after each resurfacing procedure, MEBO was evenly applied on treated area at 1 mm thickness every 4 hours until treated area healed. Subsequently, PHA lotion was used twice daily. After the first 2 weeks, AHA lotion was used for another 2 weeks. Control group: after each resurfacing procedure, PHA lotion was used for the first 2 weeks, and then AHA lotion for the following 2 weeks.

1.4 Clinical outcome

1.4.1 Pain score

The pain score was evaluated with numeric rating scale (NRS),[2] scale 0 to 10, 0 indicates no pain, 10 worst pain imaginable. Following each resurfacing procedure, patients rated their pain score at 10 minutes after the application of MEBO or PHA lotion. Average pain score for the 5 treatment sessions was used for comparison between 2 groups.

1.4.2 Healing time of resurfacing area

Healing was defined by subsiding of redness, swelling, etc., complete peeling of dead skin, and complete re-epithelialization. Average healing time for 5 treatment sessions was used for comparison between 2 groups.

1.5 Statistical process

SPSS 13.0 was used for statistical analysis, measurement data was represented as $\bar{x}\pm s$, tested with *t* test.

2. Results

After treatment, compared with control group, study group had lower pain score 2.74±1.12 vs. 3.91±1.73 and shorter healing time 3.76±1.47 days vs. 6.23±2.01 days (both $p<0.05$). (Table 1)

Table 1 Pain score and healing time

Group	Pain score	Healing time (day)
Study group (n = 20)	2.74±1.12	3.76±1.47
Control group (n = 20)	3.91±1.73	6.23±2.01
t	2.49	4.33
p	0.01	0.00

3. Discussion

Glycolic acid could promote skin peeling off to different depths with controlled use of different concentrations. Low-concentration glycolic acid solution disrupts the connection of stratum corneum cells, promoting the removal of dead epidermal skin cells; medium-concentration solution penetrates epidermis, and disrupts papillary dermis, promoting regeneration of epidermal cells and dermal collagen[3]; high-concentration glycolic acid solution damages dermis and makes all layers of skin peel off, and it takes about half a year for the collagen to rearrange after this.[4] With longer application of glycolic acid on skin, there would be a stronger effect of penetration and exfoliation,[5] leading to prolonged healing. Therefore, in clinical practice, glycolic acid of different concentrations could be used for varied duration according to the specific condition of individual patient. However, glycolic acid could cause burn damage to skin, with manifestations such as redness, swelling, tingling, blisters, etc. Therefore, this study was conducted to search for a method to reduce pain and promote healing after glycolic acid resurfacing procedure.

MEBO has an ointment dosage form,[6] and a three-dimensional net framework of beeswax containing droplets of sesame oil. MEBO could create a moist environment for the healing of resurfacing area, thereby providing analgesic effect. It could also react with necrotic tissue, and together go through a series of biochemical reactions, thus facilitating autolytic debridement and accelerating healing. As a result, MEBO has been used in the clinical treatment of various types of burns, scalds, etc., with satisfying results.

In conclusion, MEBO could provide analgesic effect and shorten healing time following glycolic acid resurfacing procedure.

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Efficacy of Fractional CO_2 Laser Combined with Moist Exposed Burn Ointment in Treating Traumatic Scars

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【**Abstract**】**Objective** To evaluate efficacy of fractional CO_2 laser combined with Moist Exposed Burn Ointment (MEBO) in treating traumatic scars. **Methods** 84 patients with traumatic scars were enrolled and randomly divided into study group (n=42) and control group (n=42). Both groups were treated with fractional CO_2 laser and ice pack was used to cool treatment site. Besides, for study group, MEBO was applied at treatment site after cooling. VSS score before and after treatment, treatment efficacy rate and side effects rate were compared. **Results** After treatment, for study group and control group, VSS score was 6.48±1.24 vs. 7.32±1.16, total efficacy rate was 95.24% vs. 80.95%, side effects rate was 7.14% vs. 23.81% (all $p<0.05$). **Conclusion** Fractional CO_2 laser combined with MEBO in treating traumatic scars could significantly improve quality of scars, treatment efficacy rate, and reduce side effects.

【**Key words**】Fractional CO_2 laser; Moist Exposed Burn Ointment; Traumatic scars.

Traumatic scar usually occurs among adolescents and middle-aged people. It bulges from skin and is in a dark color, which severely affects patient's appearance[1,2]. Fractional CO_2 laser is an emerging technology in treating traumatic scars. High-intensity laser could stimulate skin tissues in dermis to promote regeneration of collagen and boost skin tissues repair. However, side effects after treatment such as uneven pigmentation, swelling, etc. may affect healing efficacy. To increase treatment efficacy and improve quality of scars, applying Moist Exposed Burn Ointment (MEBO) after fractional CO_2 laser treatment was studied.

1.General data and method

1.1 Baseline data

84 patients with traumatic scars admitted to the 988th Hospital of People's Liberation Army Joint Logistic Support Force from March 2017 to March 2019 were enrolled and randomly divided into study group (n=42) and control group (n=42). In study group, male (n=17), female (n=25), 18-53 (35.51±5.92) years old; acne scars (n=18), atrophic scars (n=13), post-surgery scars (n=11). In control group, male (n=16), female (n=26), 17-56 (35.83±5.71) years old, acne scars (n=21), atrophic scars (n=12), post-surgery scars (n=9).

1.2 Inclusion and exclusion criteria

Inclusion: patients are diagnosed with traumatic scars[3], signed informed consent form. Exclusion: patients have received treatments prior to this study, diagnosed with other skin

diseases, systemic diseases, infection at local scar site, pregnant or lactating women, medications allergy.

1.3 Methods

Both groups were treated with fractional CO_2 laser once 4 weeks for 4 times. Before treatment, patient's face was cleaned and disinfected, and local anesthesia was given. Fractional CO_2 laser device was set to Deep mode, density 10-20%, energy 20-30 J/m2, wavelength 10,600mm, frequency 10-60Hz, spot size 3*3mm. Scan size was decided by the size of scar, and scanner was firmly in contact with local scars site. After treatment, an ice pack was applied to local treatment site to cool the skin. For study group, Moist Exposed Burn Ointment (MEBO) was applied 30 mins after cooling for three times a day until treated sites were fully healed.

1.4 Clinical outcomes

Scar quality (Vancouver Scar Scale)[4], treatment efficacy rate, and side effects rate were compared. Evaluation criteria of treatment efficacy is as follows, significantly effective: scars were smooth and nil obvious color difference comparing with surrounding skin, effective: 50%-80% scars were repaired, scar quality was improved compared with their condition before treatment, ineffective: <50% scars were repaired, nil improvement of scar quality. Total efficacy rate = (cases of significantly effective + cases of effective)/all cases*100%. Side effects including rashes, uneven pigmentation, swelling, and scabs were evaluated.

1.5 Statistical methods

SPSS 23.0 was used for statistical analysis. Measurement data were represented as mean ± standard deviation $\bar{x}\pm s$, tested by *t*-test. Count data were represented as n (%), tested by Chi-square.

2.Results

2.1 VSS score

For study group and control group, VSS score before treatment was 8.62±2.15 vs. 8.46±2.37 ($p>0.05$). After treatment, VSS score of study group was significantly lower than control group 6.48±1.24 vs. 7.32±1.16 (Table 1).

2.2 Treatment efficacy

For study group and control group, significantly effective rate was 54.76% vs. 42.86%, effective rate was 40.48% vs. 38.10%, ineffective rate was 4.76% vs. 19.05%, as for total efficacy, study group was significantly higher than control group 95.24% vs. 80.95% ($p<0.05$) (Table 2). Treatment result of a 27 years old female in study group (Figure 1-2).

Figure 1. Before treatment Figure 2. After treatment

2.3 Side effect

Various degrees of swelling, scabs, rashes, and uneven pigmentation often appeared after treatment, and most of them faded after 3-7

days with the longest for 14 days in some patients. Compared with control group, study group had significantly lower side effect rate 7.14% vs. 23.81% (p<0.05) (Table 3).

Table 1 VSS score ($\bar{x}$±s)

Groups	Before treatment	After treatment
Study group (n=42)	8.62±2.15	6.48 ±1.24
Control group (n=42)	8.46 ±2.37	7.32 ±1.16
t	0.324	3.206
p	0.373	0.001

Table 2 Treatment efficacy (n, %)

Groups	Significantly effective	Effective	Ineffective	Total efficacy rate
Study group (n=42)	23 (54.76%)	17 (40.48%)	2 (4.76%)	40 (95.24%)
Control group (n=42)	18 (42.86%)	16 (38.10%)	8 (19.05%)	34 (80.95%)
x^2				4.086
p				0.0

Table 3 Side effect (n, %)

Group	Rashes	Pigmentation	Edema	Scabs	Side effect rate
Study group (n=42)	1 (2.38%)	1 (2.38%)	1 (2.38%)	0 (0.00%)	3 (7.14%)
Control group (n=42)	3 (7.14%)	4 (9.25%)	2 (4.76%)	1 (2.38%)	10 (23.81%)
x^2					4.459
p					0.034

3. Discussion

Traumatic scars are formed after skin is injured by trauma, and over-grown scars have a negative impact on patient's appearance and daily living activities. Topical medication and surgery were mainly used to treat traumatic scars in clinical practice. Traumatic scars could be removed by surgery combined with skin grafting[6]. However, surgical methods may extend healing time and increase the risk of scar relapse. In the meanwhile, the efficacy of topical medication is affected by the medication's duration of action. Thus, as a new method, fractional CO_2 laser has been used widely to treat traumatic scars[7,8]. The mechanism of action of fractional CO_2 laser in the management of scars is stimulation of collagen and fibroblasts in the dermis, resulting in remodeling and shrinking of the scar. MEBO contains cortex Phellodendron, radix Scutellaria, sesame oil, and beeswax, which could provide nutrients for skin to repair and regenerate.

Thus, applying MEBO after fractional CO_2 laser treatment could improve treatment efficacy.

The result of this study indicated that after fractional CO_2 laser treatment compared with conventional care using MEBO could further improve scar quality, reduce side effects from thermal damage, and improve treatment efficacy.

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UltraPulse Fractional CO_2 Laser Combined with Moist Exposed Burn Technology in the Treatment of Photoaging in Asians

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【**Abstract**】**Objective** To study the efficacy of UltraPulse fractional CO_2 laser resurfacing (single-session) combined with Moist Exposed Burn Technology (MEBT) in the treatment of photoaging of facial skin in Asians. **Methods** 56 patients with photoaging of facial skin were treated with UltraPulse fractional CO_2 laser resurfacing combined with MEBT and 30 patients finished 5-year follow-up. At 1 month, 1 year and 5 years after treatment, modified Dover´s global photodamage scale was used to evaluate photoaging score. Satisfaction degree of patients and side effects were also evaluated. **Results** For the 30 patients, compared with photoaging score before treatment 3.23±0.72, scores at 1 month 2.43±0.85, 1 year 1.86±0.73, and 5 years 1.60±0.67 were significantly lower (all $p<0.01$), and differences among 3 follow-ups did not show statistical significance. **Conclusion** UltraPulse fractional CO_2 laser resurfacing combined with MEBT is efficacious in the treatment of photoaging in Asians, and the treatment efficacy could last 5 years.

【**Key words**】UltraPulse; Fractional CO_2 laser; MEBO; Regenerative medical technology; Photoaging; Wrinkles

Skin aging is a natural process influenced by genetic factors and environmental factors, and could be categorized into endogenous aging and exogenous aging. Endogenous aging is the result of function decline and changes of skin as human body ages. Clinical manifestations include tactile roughness, sagging skin, wrinkles, etc. Endogenous aging could not be prevented. Exogenous aging, also known as photoaging, is characterized by pathological and physiological changes caused by long-term sunlight exposure. The corresponding histopathological changes include uneven pigmentation, structural changes of blood vessels and collagen, etc. Clinical manifestations include sunspots, telangiectasia, etc. Severity of exogenous aging depends on patient's sensitivity to sunlight. Exogenous aging could be prevented.

In the past 20 years, fractional CO_2 laser has become an important treatment method for skin photoaging, but among dark-skinned Asians, most patients could have dyspigmentation after treatment. In this study, 30 patients with photoaging of facial skin were treated with single-session UltraPulse fractional CO_2 laser resurfacing combined

with MEBT and completed follow-up. Dover's photoaging score, satisfaction degree, and side effects were recorded.

1. Clinical data

56 patients with photoaging of facial skin were enrolled, and 30 of them completed 5-year follow-up: female (n=29), male (n=1); age 33-68 years (mean 45.9 years). Their Dover's photoaging score ranged from 2 to 4 before treatment. Exclusion criteria: 1. susceptible to sunburn and have existing hyperpigmentation on face; 2. pregnant or breastfeeding women; 3. have used tretinoin or glucocorticoids in the past six months; 4. have lesions in or around treatment area, or have herpes simplex virus (HSV) or papillomavirus; 5. have had sunburn about 1 month prior to treatment, or have possible sun exposure to a considerable extent after treatment; 6. mental disorders, or other systemic diseases 7. tendency to develop scar; 8. unrealistic expectations. All patients signed informed consent document before treatment.

2. Treatment

2.1 Anesthesia

After cleaning face, anesthetic cream (2.5% lidocaine & 2.5% prilocaine) was applied topically (Figure 1-2). An hour later, the cream was removed, and face was cleaned with skin disinfectant 3 times before treatment.

2.2 Resurfacing procedure

UltraPulse fractional CO_2 laser parameters were set according to patient's Fitzpatrick skin type, wrinkle depth, skin thickness, Dover's photoaging score, treatment site, etc. SuperPulse mode: energy 125 mJ-150 mJ, frequency 40 Hz; scan both sides of deep wrinkle line lengthwise once to make it smoother. Active FX mode: energy 150 mJ-200 mJ, frequency 40 Hz-60 Hz, computerized pattern generator (CPG) 3, size of laser matrix 4-7, density 3-5; scan the deepest part of wrinkle once, and then the entire face (for those having a small number of fine lines and no deep wrinkles, only scan the whole face once). Duration of the whole treatment was 10 - 20 minutes.

2.3 Post-procedure treatment

After resurfacing procedure, Moist Exposed Burn Ointment (MEBO) was applied topically on scanned area every 3 - 4 hours at about 1 mm thickness with no additional dressing. After dead skin of scanned area peeled off completely, application of MEBO was continued for another week, with gentle massage for maximum absorption. For patients allergic to sesame oil (one of the active constituents of MEBO), antibiotic ointment was used alternatively. Use of cosmetics was prevented during treatment. After treatment, patients took oral antibiotics for 5-7 days, and oral sodium aescinate for 3 days. After healing of wound, sunscreen (SPF > 30, PA + + or PA + + +) was used. Sun exposure was prevented for 3 to 6 months.

2.4 Efficacy evaluation

Front and lateral side (45°) facial pictures were taken using the same digital camera with the same background setting and lighting condition before treatment and in each follow-up by the same doctor. Treatment

efficacy, satisfaction degree and side effects were recorded. For follow-ups at 1 month, 1 year, and 5 years, treatment efficacy was evaluated according to modified Dover´s global photodamage scale (Table 1).[3] Patients rated treatment satisfaction into 4 degrees: very satisfied, satisfied, barely satisfied, and dissatisfied. After resurfacing procedure, doctor and patients jointly rated the side effects including redness, swelling, dyspigmentation, time lost for work and pain score (scale 0 - 9, 0 no pain, 9 severe pain resembling bee sting).

Table 1 Dover´s global photodamage scale

Score	0	1	2	3	4
Global score for photoaging	facial skin smooth to the touch, no significant fine lines, uneven pigmentation	one area (cheeks, forehead, or perioral area) of significant roughness, dyspigmentation or fine lines	two areas of significant roughness, dyspigmentation or fine lines or shows roughness, dyspigmentation, and fine line in one area	three areas of significant roughness, dyspigmentation or fine lines or shows roughness, dyspigmentation, and fine line in two areas	facial skin shows any degree of photodamage greater than 3
Fine lines	none	rare fine lines that are widely spaced	Several discrete fine lines	Moderate number of fine lines in close proximity	many lines, densely packed
Mottled pigmentation	evenly pigmented skin	Light dyspigmentation involving small areas	moderate dyspigmentation involving small areas or or light dyspigmentation involving moderate areas	moderate dyspigmentation involving moderate areas, light dyspigmentation involving large areas, or small areas of heavy dyspigmentation	marked dyspigmentation
Sallowness	pink	pale	slight suggestion of yellowness	pale, with moderate	pale, with distinct

				suggestion of yellowness	suggestion of yellowness
Tactile roughness	smooth	smooth, with occasional rough areas	mild roughness	moderate roughness	severe roughness
Wrinkles	none	one area of superficial wrinkle	more than one area of superficial wrinkle or one area of moderately deep wrinkle	more than one area of moderately deep wrinkle or one area of deep wrinkle	more than one area of deep wrinkle

2.5 Statistical analysis

SPSS13.0 was used for data processing, and Wilcoxon signed-rank test was used to analyze the results, and $p<0.01$ was considered statistically significant.

3. Results

In scanned area, there was immediate shedding of dead skin caused by the heating effect of laser beam. Skin became tightened with slight swelling and local redness. After resurfacing procedure, MEBO kept skin in a moist environment. As a result, patients' skin became fairer, more elastic, tightened and smoothed than before treatment, with shrunken pores, reduced dyspigmentation and fewer wrinkles.

Case report

Case 1: 35-year-old female; received UltraPulse fractional CO_2 laser in active FX mode, 125 mJ, 40 Hz, 3-6-5 CPG (Figure 3-6).

Case 2: 42-year-old female; received UltraPulse fractional CO_2 laser in active FX mode, 150 mJ, 40 Hz, 3-6-5 CPG. (Figure 7-9).

Case 3: 45-year-old female; received UltraPulse fractional CO_2 laser in active FX mode, 175 mJ, 40 Hz, 3-6-5 CPG (Figure 10-11).

Case 4: 64-year-old female; received UltraPulse fractional CO_2 laser in active FX mode, 175 mJ, 40 Hz, 3-6-5 CPG. (Figure 12-13).

Case 5: 50-year-old female; received UltraPulse fractional CO_2 laser in active FX mode, 150 mJ, 40 Hz, 3-5-5 CPG. (Figure 14-15).

Figure 1-2. Anesthetic cream applied for 1 hour;

Figure 3. Before procedure; Figure 4. Shedding of dead skin following procedure; Figure 5. 1-month follow-up; Figure 6. 5-year follow-up

Figure 7. Before procedure; Figure 8. 1-month follow-up; Figure 9. 5-year follow-up

Figure 10. Before procedure;
Figure 11. 5-year follow-up

Figure 12. Before procedure;
Figure 13. 5-year follow-up

Figure 14. Before procedure; Figure 15. 5-year follow-up

3.1 Dover's photoaging score

Dover's photoaging scores at 1-month 2.43±0.85, 1-year 1.86±0.73, and 5-year 1.60±0.67 follow-up were significantly lower than before treatment 3.23±0.72, all $p<0.01$. Differences on Dover's photoaging scores among three follow-ups did not show statistical significance. Differences on fine lines, mottled pigmentation, sallowness, tactile roughness, and wrinkles are shown in Table 2.

Table 2 Dover's photoaging score

	Global score	**Fine lines**	**Mottled pigmentation**	**Sallowness**	**Tactile roughness**	**Wrinkles**
Before treatment	3.23±0.72	3.20±0.71	3.36±0.71	3.43±0.72	3.53±0.68	3.50±0.68
1 month	2.43±0.85	1.96±0.66	2.53±0.68	2.36±0.66	2.00±0.64	2.23±0.67
1 year	1.86±0.73	1.40±0.56	1.63±0.66	1.60±0.72	1.46±0.62	1.60±0.62
5 years	1.60±0.67	1.43±0.56	1.40±0.62	1.30±0.46	1.33±0.60	1.33±0.54
p	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

3.2 Satisfaction

At 1-month follow-up, all patients were very satisfied or satisfied with the treatment result. At 1-year follow-up, satisfaction remained at the same degree. At 5-year follow-up, most patients were still satisfied and willing to recommend this method to others.

3.3 Side effects

One week after treatment, swelling subsided, but slight redness remained visible. One patient (3.3%) was found to have recurrence of perioral herpes infection. After antiviral treatment, this patient healed in about 2 weeks, with no side effects such as dyspigmentation, etc.

At 1-month follow-up, redness disappeared. 3 patients had varied degrees of dyspigmentation, among whom 1 patient had aggravation of preexisting dyspigmentation, and 2 others developed dyspigmentation following resurfacing procedure. After 3 sessions of optimal pulse therapy, application of whitening agent (containing arbutin cream), and oral administration of asiaticoside tablets, uneven pigmentation relieved significantly.

Average pain score was 4.5 (1-8) during procedure. There was no pain after treatment, but with a burning sensation lasting 30-60 minutes; average time lost for work was 4.5 days (4-8 days).

4. Discussion

After UltraPulse fractional CO_2 laser procedure, type I collagen denatures and coils, and its length deceases by 30%. Subsequently, the denatured collagen will go through a degradation process, and the products will facilitate the synthesis of new collagen.[8-9] As this process could last for months or even years, Dover's photoaging score was still significantly lower 1 year and even 5 years after treatment compared with before treatment in this study.

With UltraPulse fractional CO_2 laser

resurfacing, MEBO is delivered deeper into skin through microscopic columns created by laser beam, creating a three-dimensional environment for wound healing.[11] Beeswax, oleic acid, linoleic acid, various amino acids, vitamins, and trace elements, etc. contained in MEBO provide nutrients for cell regeneration. In addition, MEBO could effectively activate potential regenerative cells in wound into stem cells, promoting wound healing in situ.

In conclusion, with 5 years of follow-up, UltraPulse fractional CO_2 laser resurfacing combined with MEBT is efficacious in the treatment of photoaging in Asians, and the efficacy could last 5 years.

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Kevin Xu was Invited to Attend the 2023 United Nation Economic and Social Council Partnership Forum

Economic and Social Council (ECOSOC) of the United Nation plays an important role in connecting global economy, society, and environment actions. UN ECOSOC Partnership Forum of 2023 was held both online and offline on January 31 at the United Nation headquarters in New York. “Accelerating the Recovery from Coronavirus Disease (COVID-19) and the Full Implementation of the 2030 Agenda for Sustainable Development at All Levels” is the theme of this forum. President of ECOSOC H.E. Ms. Rachezara Stoyeva and Deputy Secretary General of ECOSOC H.E. Ms. Amina Mohammed attended this forum and gave opening speeches.

Following speeches were given by members from representative and observer nations of UN, international organizations, and companies. Efforts to make innovation were discussed to nudge implementation of sustainable development of UN. Key message of this forum will be written into a report which will be an important information resource for High-Level Political Forum and Sustainable Development Goals Summit in July 2023.

Kevin Xu, Chairman of Board of MEBO Group was invited to attend this forum. MEBO International has been dedicating itself to assist the achievement of the UN 2030 sustainable development goals. The National Rongxiang Xu Foundation joined the UN ECOSOC in May 2016. Its main focus is facing problems in variety of areas and assisting with accelerating implementation of “2023 Sustainable Development Agenda”.

President Lin Songtian of Chinese People's Association for Friendship with Foreign Countries Visited Bay Area Council

Lin Songtian, president of Chinese People's Association for Friendship with Foreign Countries (CPAFFC) and the delegation visited the headquarter office of the Bay Area Council, which was located at Pier 9 at San Francisco on February 21, 2023.

Jim Wunderman, president of the Bay Area Council, Kevin Xu and Florence Fang, China Committee Co-Chairs of Bay Area Council, Jianmin Zhang, Consul General of China in San Francisco, and Simon Pang, friend of MEBO International attended this meeting and warmly welcomed President Lin Songtian and his delegation.

The aim of this visit is to communicate and promote cooperation between CPAFFC and the Bay Area Council. Besides, Kevin Xu stated the 2023 major claim of China Committee of Bay Area Council is to build a bridge to reload communication and cooperation between diverse areas.

MEBO International is a member of United Nations Every Woman Every Child China Partnership Network (EWECCPN) which initiated by CPAFFC. Life Regenerative Action was launched by MEBO International and recognized by other partners in the program. Furthermore, MEBO International plays an important role in enhancing cooperation between Informal Economic Forum Economic Club and CPAFFC. Moreover, Li Xiaolin, former president of CPAFFC and member of senior steering committee of EWECCPN highly recognized contributions made by MEBO International during COVID-19 pandemic.

International Society for Burn Injuries and American Burn Association Joined “Mending Europe: Empowering the Establishment of Regeneration Network” Initiative

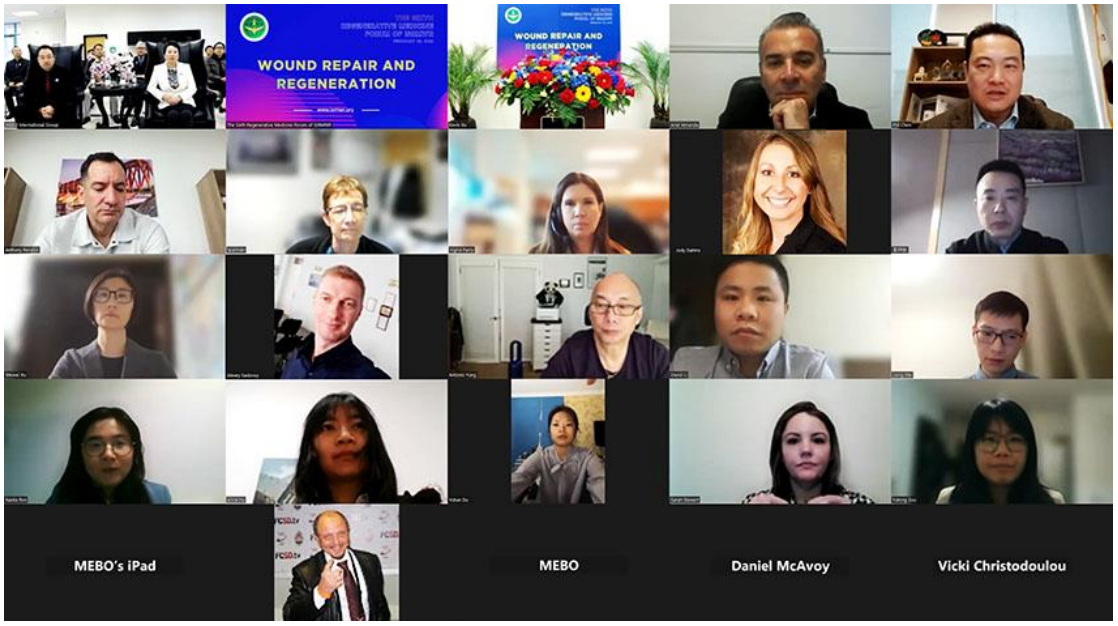
Recently, International Society for Burn Injuries (ISBI) and American Burn Association (ABA) had joined the Clinton Global Initiative (CGI) program, which is “Mending Europe: Empowering the Establishment of Regeneration Network” raised by Bill Clinton, former President of the United States, and Kevin Xu, Chairman of Board of MEBO Group. ISBI and ABA will be fulfilling this initiative with MEBO International and the International Society of Regenerative Medicine and Wound Repair (ISRMWR) together to make a series of training courses to give an instruction of burn prevention to both medical professionals and the public.

Previously, MEBO International had provided regenerative medicine trainings to medical professionals in Asia, Africa, Latin America, etc. “Mending Europe: Empowering the Establishment of Regeneration Network” aims to establish a regeneration network in Europe through providing medical trainings, medical supplies and fundings, therefore helping medical facilities and medical professionals in local area to master regenerative medicine techniques and gain abilities to deliver medical treatments during emergencies in disasters.

MEBO International and ISRMWR had provided online regenerative medicine trainings for more than 140 medical professionals from Bulgaria and Ukraine under this CGI program. In the future, ISBI and ABA will cooperate with MEBO International together to keep delivering more online and offline trainings.

The Sixth Regenerative Medicine Forum of International Society of Regenerative Medicine and Wound Repair was Successfully Held

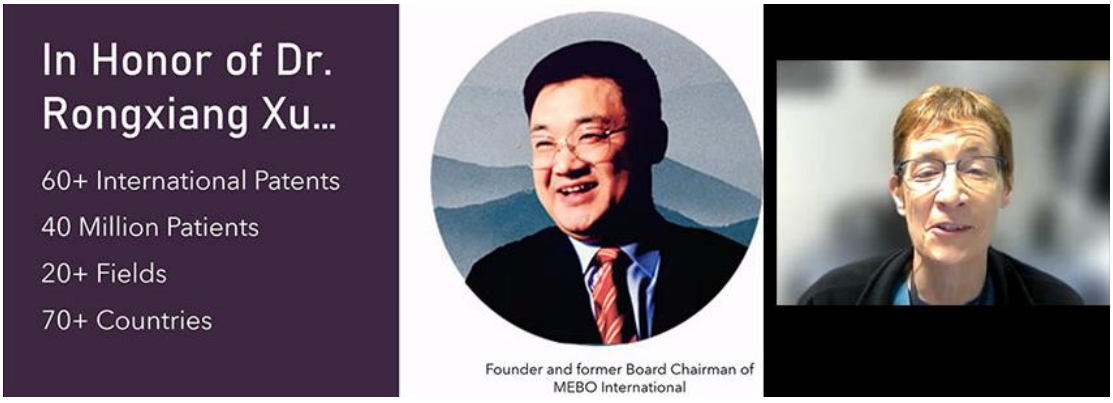
On February 28, 2023, the 6th Regenerative Medicine Forum of International Society for Regenerative Medicine and Wound Repair (ISRMWR) was held with the theme of "Wound Repair and Regeneration". Kevin Xu, chairman of ISRMWR, and Li Li, board director of MEBO Group attended this forum.



Anthony Rendon, the current speaker of California State Assembly expressed his gratitude to Kevin Xu, Li Li and ISRMWR for their contributions in the field of regenerative medicine.

Kevin Xu, Chairman of ISRMWR and MEBO Group, shared his views and insights on regenerative medicine, and announced two new influential members, the International Society for Burn Injuries (ISBI) and the American Burn Association (ABA) to the program "Mending Europe: Empowering the Establishment of Regeneration Network" – a new Clinton Global Initiative (CGI).

Dr. Tina Louise Palmieri, former president of ABA, treasurer of ISBI, and professor of Burn Surgery Department at the University of California, Davis Medical Center, demonstrated the outstanding contributions that Professor Rongxiang Xu had made to promote the development of burn filed, and introduced the FDA phase II trial of Moist Exposed Burn Ointment in their medical center.



Dr. Rodolfo Ariel Miranda Altamirano, president-elect and secretary-general of ISBI, who spoke about the latest advances in wound healing and regeneration, and shared his experience in treating patients.

Professor Sadovoy Alexey Stanislavovich from Ukraine introduced the current situation of wound treatment in Ukraine, explained the significant advantages of Moist Exposed Burn Technology, and pointed out that this CGI program has provided a valuable platform for Ukrainian doctors.

At this forum, participants gained a better understanding of the development of regenerative medicine, and realized the importance of further research in the field of wound repair and regeneration.

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