

**CASE STUDY**

# Use of post-procedural hydrogel and natural ingredient masks (Maskād™) to improve clinical outcome of cryogen therapy with micro-needling: A split-face case study

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## Abstract

**Background:** Controlled and clinically administered regenerative therapies that promote acute cellular disharmony, to trigger dermal restructuring and rejuvenation, continue to be the most effective in the arsenal of tools against chronological dermal corrugation and vascular deterioration. Cryogen therapy and micro-needling are popular choices because of the accelerated rate of change to the dermis achieved with minimal to no scarring or fibrosis development. However, both cosmetic procedures create temporary discolouration and microinflammation that compel candidates to refrain from social activities or visiting their workplaces. It is considered dangerous to use make-up to cover these disagreeable effects, potentially leading to infection, granuloma, or antagonism of the clinical objective. Hence, candidates seek a solution to reduce 'down-time' and optimise the aesthetic outcome from these procedures.

**Methods:** One 55-year-old Caucasian female received cryogen therapy to her face at  $-78^{\circ}\text{C}$ , followed by micro-needling. A post procedural hydrogel mask (Maskād™ Professional Post Procedure Mask) was applied for 15 minutes, only to the left side of her face for advanced hydration and as a hygienic barrier. Over the five days after the procedure the candidate applied a natural ingredient mask (Maskād™ At Home Post Procedure Mask) only to the left side of her face, 30 mins a day, twice a day. High-definition and thermal images were taken at all stages pre and post procedure. A 5-point Likert scale was used to assess pain, redness, and peeling.

**Results:** The candidate demonstrated less inflammation and discolouration on the left side of the face, corresponding to the area covered by the mask. These reduced negative effects were evident at all stages of post procedure. A thermal image demonstrates that the left side of the face is emitting less heat, confirming reduced inflammation and discomfort.

**Conclusion:** The post procedural masks accelerated recovery from cryogen therapy and micro-needling. Positive effects included reduced microinflammation, reduced cosmetic effects (redness and peeling), and reduced discomfort (pain).

TL21-3

## Introduction

In the modern world, the process of dermal ageing for the average candidate is accelerated beyond chronological age, because of the nutritional disadvantage associated with starch subsistent society. The dermatological effects of lifestyles that promote cardiovascular diseases exaggerate the effects of extrinsic stressors, such as UV-radiation, pollution, and autoimmune challenge. Consequently, people in mid-life are perceiving that their external age is not consistent with the projected truth. In light of this, amelioration of the long-term effects of extrinsic insult to the dermis is considered a significant milestone in achieving both physical and psychological health<sup>1</sup>, because both are listed as objectives of 'successful ageing'. Aesthetic procedures are therefore in place to help realign the individual's external with the internal self.

There is a growing view in contemporary society that challenges to physical and dermal health are an outcome of distance from natural organic lifestyles. Furthermore, concern for the negative effects of synthetics or retinoids has persuaded candidates to explore the plant-world for ingredients that restore the dermis to a functioning, healthy and protected organ<sup>1,2</sup>. Hence, natural ingredients are considered adjuvants to moderately invasive procedures, by safely guarding against the negative effects of microinflammation.

Cryogen therapy and micro-needling mimic skin injury without rupturing the dermis. The extracellular matrix of the dermis remains intact, which prevents cellular proliferation and scar formation, yet the metalloproteinases are expressed in response, causing a rise in

signalling peptides that are derived from enzymatically sliced proteins<sup>2</sup>. The outcome is a dermal restructuring episode that rejuvenates collagen and maintains the high collagen-1 to collagen-3 ratio of normal skin.

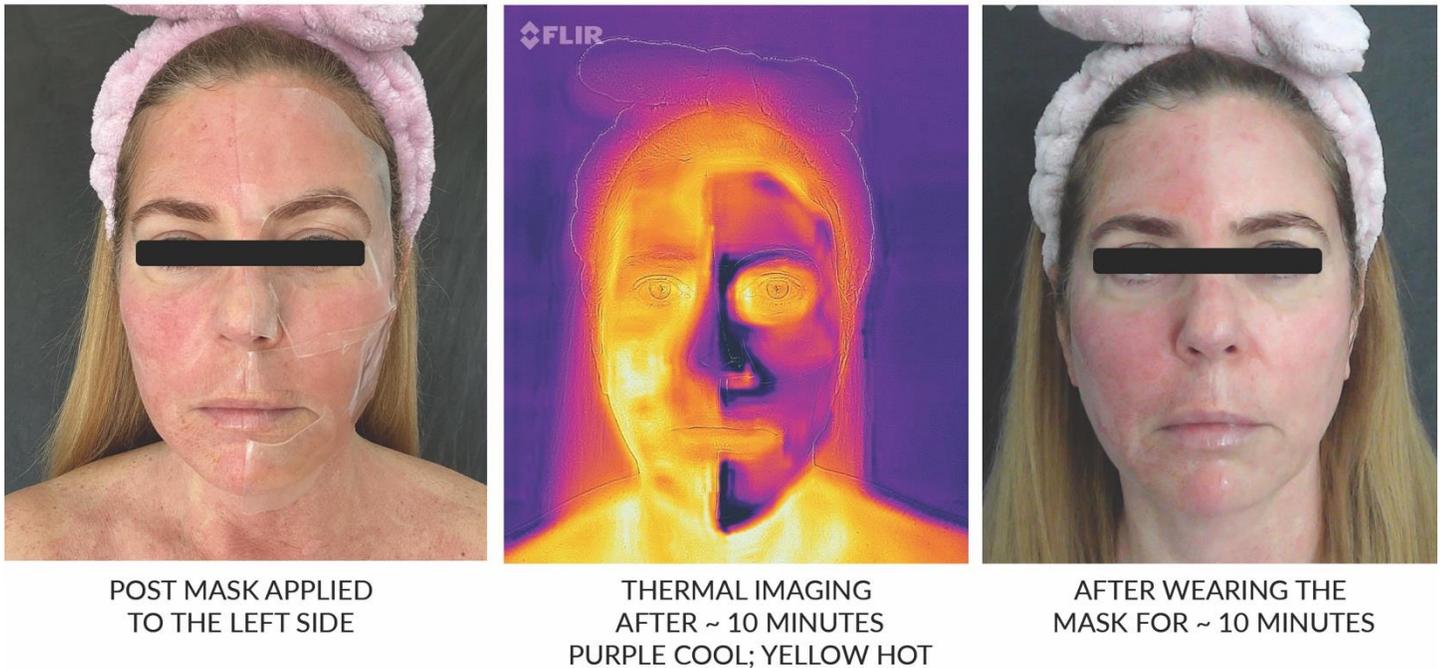
There is a risk that post procedural infections and scars can form if candidates fail to adequately care for the treated tissues. Post procedural topicals should aim first to hydrate as efficiently as possible to streamline biochemical processes involved in tissue recovery and repair, and also to optimise skin penetrating effects of post-procedural ingredients that target reactive oxygen species and microinflammation<sup>3</sup>.

Unfortunately, microinflammation occurs in most candidates post procedure, due to the release of inflammatory mediators from micro injury. The outcome includes vasodilatation, erythema, edema and discomfort or pain. Topical ingredients that are adequately delivered by enhancing the barrier water content of the dermis, can significantly attenuate the inflammatory effects and neutralise the reactive oxygen species generated, streamlining the rejuvenation process of aesthetic procedures<sup>4</sup>.

In the current case study, a hydrating mask that delivers natural ingredients into the dermis was used to accelerate post procedural recovery. The composition delivers vitamin E and the anti-inflammatory hydrosol of chamomile to the hydrated dermis, which penetrate deeply and enacts positive biological effects. By using the split-face approach the outcome is demonstrated lucidly (Figure 1).

**Figure 1 – Split-face demonstration of post procedural cosmetic and thermal effects with mask (our right her left), and without mask (her right our left).**

### SPLIT FACE STUDY



**Figure 1 – Split-face demonstration of post procedural cosmetic and thermal effects with mask (our right her left), and without mask (her right our left).**

### Method

Controlled medical grade cryogen therapy at  $-78^{\circ}\text{C}$ , followed by micro-needling was performed on the face of a 55-year-old Caucasian female with moderate sun damage. Treatment focused on areas between the hairline and jaw line, avoiding the eyes, nostrils and lips. Following treatment, the skin was gently cleansed with cool water and the hydrogel mask was applied to the left side of the face only (treated side). The untreated side was exposed to air and no further treatment was applied.

After 15 minutes, the mask was removed, and thermal and high-resolution photography was taken (Figure 1). The patient was

instructed to keep applying the post treatment mask only to the left half of the face (our right, her left) at least twice daily for 30 minutes at a time, while not treating the right side whatsoever. High-resolution images were taken before the procedure and again on days 1, 3 and 5 post treatment. The patient was asked to rate the PAIN, REDNESS and PEELING of the treated side versus the untreated side.

A 5-point Likert scale was used to describe the level of PAIN, REDNESS and PEELING with 1 being very minor, 2 being mild, 3 being moderate, 4 being moderate to severe and 5 being extremely severe.

### Results

Subjective and objective evaluation immediately after treatment, following the first application of the hydrating mask demonstrated a pronounced positive aesthetic. Redness and heat retention (Figure 1) is reduced as perceived by the naked eye and thermal imagery respectively.

Assessment according to the Likert scale demonstrates an interesting pattern up to 5 days post procedure. Table 1 and Figure 2 include data from the assessment. In all cases pain or discomfort is resolved completely 24 hours post treatment. This may be related to the initiative shown at the most critical point, immediately following

treatment, and the continued 'at home' practice. Redness was more persistent than pain, which was completely resolved between 24 to 72 hours post treatment, contrasting with persistent redness throughout the five days without the use of masks, only attenuating slightly on the fifth day. As expected, peeling in the 'no mask' group increased during the five days. It is therefore serendipitous that the treatments prevented most of the peeling from occurring, resolving completely by the fifth day. If these clinical outcomes are averaged, as in the fourth panel in Figure 2, then the overall score for the masking procedures is overwhelmingly in the positive.

	PAIN		REDNESS		PEELING	
	TREATED	UNTREATED	TREATED	UNTREATED	TREATED	UNTREATED
IMMEDIATE	2	5	3	5	-	-
DAY 1	1	4	2	5	3	4
DAY 3	1	4	1	5	2	5
DAY 5	1	3	1	4	1	5

**Table 1 – Tabulated post procedural assessment, using the 5-point Likert scale, panels for redness, pain and peeling.**

## Discussion

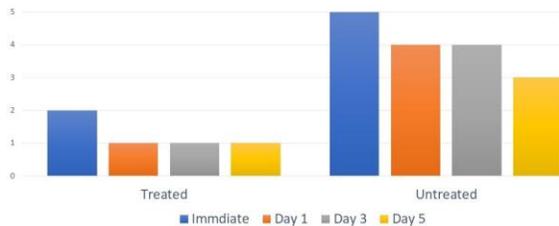
Because the first few hours following treatment are considered most critical in achieving a desirable long term aesthetic outcome, hydration with purified water, in the absence of extraneous ingredients that risk granuloma formation, is a recommended initiative. Not only is the candidate protected against undesirable side effects of treatment, but the candidate is rewarded with a reassuring self-portrait, i.e., if the candidate witnesses less redness, experiences less pain and discomfort they will feel reassured of the success of the treatment.

The natural ingredient composition of the ‘at home’ mask confers a buffering effect against the oxidation by-products that accumulate from transcription events, monosaccharide oxidation and the immune cell signalling cascade, which in other circumstances become a bottleneck to rejuvenation and recovery. For example, the use of arnica and chamomile hydrosol confers an anti-inflammatory effect that is expected to modulate the activity of the immune

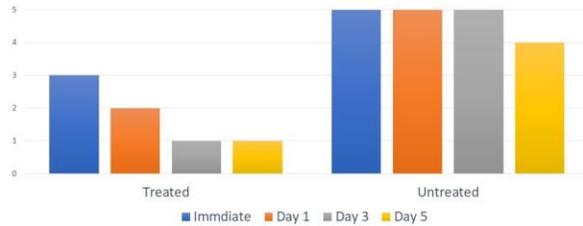
system and allow for normal biochemical processes associated with dermal restructuring to take effect. Furthermore, the changed gene expression profile, and keratinocyte-fibroblast crosstalk, is most fluent when reactive oxygen species are quenched. Transforming growth factor beta (TGF-beta) isotypes elicit different gene expression events in the presence of reactive oxygen species that promote fibroses development<sup>5</sup>, causing scars. The use of vitamin E and green tea extract in the natural ingredient composition quenches free radicals and attenuates the fibrosis progression, cuts the ‘vicious cycle’ and enables normal collagen isotypes to be built into the extracellular matrix.

Nevertheless, by providing candidates with an improved post procedural experience, the use of moderately invasive procedures in aesthetic dermatology is likely to grow. The perception that it is safe and convenient is a necessary milestone.

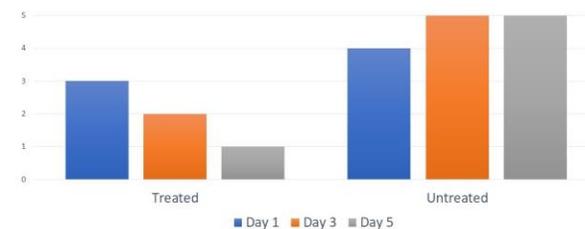
PAIN Score (1-5)



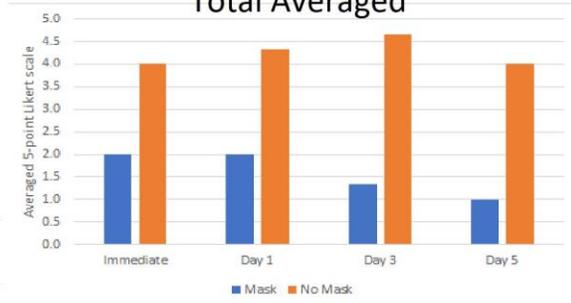
REDNESS Score (1-5)



Peeling Score (1-5)



Total Averaged



**Figure 2 – Histograms of post procedural assessment, using the 5-point Likert scale, panels for redness, pain and peeling.**

## Conclusion

The post treatment 'in office' hydrating mask dramatically attenuated the discomfort and clinical manifestation of inflammation within a short timeframe (15-45 mins). The continued use of the mask with the natural ingredient composition (at home mask) in the following days post procedure reduces discomfort (pain), redness and skin peeling significantly. It is expected that the positive effects derived from the mask initiative will reassure the patient of the procedure's success and furthermore, accommodate an improved long-term outcome.

## References

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