Recovery from Burn Injury with Innovative Topical Formulations (EctoSeal P2G and PracaSil-Plus)

A scalding incident resulted in a second-degree burn which was treated with two topical formulations including innovative compounding bases (EctoSeal P2G and PracaSil-Plus). Following 14 days since the injury, the burnt skin was almost fully recovered. According to the patient, the treatment outcomes were beyond expectations.

Introduction:

According to the World Health Organization (WHO), burns are a global public health problem, accounting for an estimated 180,000 deaths annually. Burns occur mainly in the workplace and at home, with domestic kitchens being at higher risk[1]. Scalds are a type of thermal burn caused by heat from hot liquids or steam. Scalding can be very painful and may cause red or peeling skin, blisters, swelling, white or charred skin[2]. Burns are classified as first-degree (superficial), second-degree (partial thickness), or third-degree (full thickness), in relation to how deep and severely they penetrate the surface of the skin[3] (Figure 1). If not too serious, it may be possible to avoid the emergency services and treat the burns at home[2].

The purpose of this case study is to present the management of a second-degree burn with two topical formulations including innovative compounding bases.

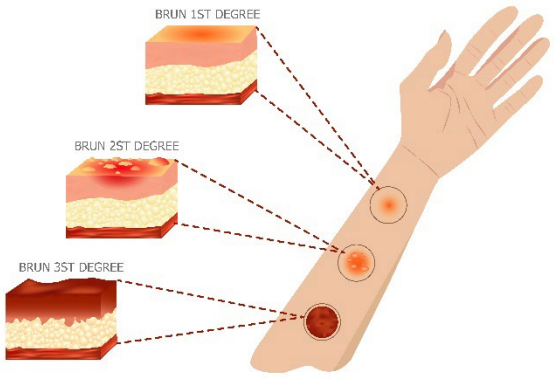

Figure 1. *Types of burns. Adapted from Songtum Prakobtieng /Shutterstock.com (stock vector ID 1327467386).*

Case Report:

A 49-year-old woman was cooking bacon on a sheet pan in the oven. As she was pulling the pan out of the oven to set on top of the stove, the sheet pan bumped on the corner of the stove and the bacon grease spilled all over the floor and her wrist/forearm. A second-degree scalding burn developed immediately, and it was very painful for several days.

The patient was recommended two topical formulations to be applied as follows: In the morning, Mupirocin 2% Topical Gel (PracaSil-Plus) (Table 1), for the local treatment of a potential skin infection. At night, before bedtime, Phenytoin 2% and Aloe Vera 0.6% Topical Hydrogel (EctoSeal P2G) (Table 2), to manage the pain and to facilitate the healing process. The topical compounded treatment was initiated 2 days post-injury.

The patient completed a burn-specific metric, the Adult Burn Outcome Questionnaire (ABOQ)[4] to evaluate the outcomes of the topical compounded treatment. This validated questionnaire comprises 14 items plus 2 additional items, a stem question and a branch question both related to returning to work. The ABOQ addresses multiple domains including pain, itch, perceived appearance, emotion, physical function, social function, and family function[4].

Rx	
Mupirocin USP Micronized	2 g
Propylene Glycol USP	2 mL
Base, PCCA PracaSil®-Plus	q.s. 100 g

Table 1. *Mupirocin 2% Topical Gel (PracaSil-Plus): PCCA Formula 10843.*

Rx	
Phenytoin USP	2 g
Aloe Vera Powder Freeze Dried 200:1	0.6 g
Base, PCCA EctoSeal P2G™ Powder	20 g
Benzyl Alcohol NF	1.5 g
Propylene Glycol USP	10 g
Purified Water, USP	65.9 g

Table 2. *Phenytoin 2%/Aloe Vera 0.6% Topical Hydrogel (EctoSeal P2G): PCCA Formula 15309.*

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Results and Discussion:

The patient followed the treatment as prescribed and took photographs of the burnt skin up to 1-month post-incident (Figure 1A-1E). The patient also completed the ABOQ twice, with reference to before and after treatment. The burnt injury affected mainly the domains of pain, itch and perceived appearance, which were scored the highest. Following the topical compounded treatment, the scores were reduced to the minimum which shows the best possible treatment outcomes. These results are consistent with the clinical improvements observed with the photographs. By day 14, the burnt skin was almost unnoticeable (Figure 1D). According to the patient, the treatment outcomes were beyond expectations: *I am so pleased with the results. You can't even see that I had an injury!*

References:

1. WHO (2023) Burns. Available at: https://www.who.int/news-room/fact-sheets/detail/burns (Accessed: 07.08.2024).

2. NHS (2022) Overview: Burns and Scalds. Available at: https://www.nhs.uk/conditions/burns-and-scalds/ (Accessed: 07.08.2024).

3. Johns Hopkins Medicine (2024) Health: Burns and Wounds. Available at: https://www.hopkinsmedicine.org/health/conditions-and-diseases/burns (Accessed: 07.08.2024).

4. Chen L, Lee AF, Shapiro GD, Goverman J, Faoro N, Schneider JC, Kazis LE, Ryan CM. The Development and Validity of the Adult Burn Outcome Questionnaire Short Form. J Burn Care Res. 2018 Aug 17;39(5):771-779. doi: 10.1093/jbcr/irx043.

Skin burn incident | *3 days post-treatment* | *5 days post-treatment*

14 days post-incident | *1 month post-incident*

Figure 2. *Digital photographs of the patient's left arm before treatment (A), during treatment (B,C) and after treatment (D,E).*