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Efficacy and safety of 2% fluorescein solution for post-procedural scar prevention care

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Letter to the Editor

Dear Editor,

For decades, sodium fluorescein has been used in the medical field, primarily by ophthalmologists, either as an intravenous contrast medium for angiographic procedures or as eye drops to diagnose corneal erosions (1). Nowadays, epicutaneous labelling and intradermal injections with fluorescein have been employed in confocal microscopy for diagnostic purposes (1, 2). More recently, a new fluorescein product has been manufactured containing topical 2% fluorescein solution combined with allantoin, Melaleuca alternifolia and Uncaria tomentosa.

Fluorescein is a non-bromate precursor of eosine with bacteriostatic and regenerative properties, mainly used in exsudative cutaneous afflictions; allantoin has a significant hydrating and healing effect, melaleuca alternifolia has an additional antiseptic action, and Uncaria tomentosa is a natural anti-inflammatory agent that activates natural killer lymphocytes (3). Unfortunately, to the best of our knowledge, no studies investigating the efficacy of 2% fluorescein solution as a regenerative agent have been published in the literature so far. Therefore, we aim to observe the efficacy and safety of 2% fluorescein solution

administered to patients undergoing minor surgical procedures.

We retrospectively included 15 patients attending the Dermatology Clinic of Campus Bio-Medico in Rome with various skin tumours treated by either excisional surgery or CO2 laser. Immediately after the surgical procedure, the first dose of topical 2% fluorescein solution was administered, with treatment continuation at home, twice daily, for 3 weeks. Patients were instructed to apply 2 drops of the fluorescein solution twice daily on the surgical wound and, in the case of any adverse events, immediately stop the treatment and contact the lead investigator. They were followed up for two months. Sixteen lesions from 15 patients were assessed: 14 resulting from excisional surgery and 2 after CO2 laser destruction. The majority of the lesions were located in sun-exposed areas (Table I, Fig. 1).

Tab I. *1. Patient #1, presenting with blue nevus, surgically excised. Before (a) and 3 weeks after 2% fluorescein solution application (b), with slight erythema and no residual scarring.*

Patients	Sex, Age (years)	Diagnosis	Location	Treatment	Post-procedural adverse events
1	F, 79	Blue nevus	Upper extremity	Surgery	No
2	M, 75	Actinic keratosis	Face	Surgery	No
3	F, 54	Neurofibroma Neurofibroma	Trunk Upper extremity	Surgery Surgery	No No
4	M, 69	Impetigo	Upper extremity	Surgery	No
5	F, 42	Compound nevus	Abdomen	Surgery	No
6	M, 73	Actinic keratosis	Scalp	CO2 laser	No
7	F, 76	Blue nevus	Abdomen	Surgery	No
8	F, 35	Nevus	Abdomen	Surgery	No
9	M, 12	Pseudolymphoma	Trunk	Surgery	No
10	M, 37	Nevus	Trunk	Surgery	No
11	M, 71	Basal cell carcinoma	Face	Surgery	No
12	F, 31	Nevus	Acral	Surgery	No
13	F, 77	Melanoma	Trunk	Surgery	No
14	M, 53	Compound nevus	Trunk	Surgery	No
15	F, 48	Junctional nevus	Trunk	CO2 laser	No

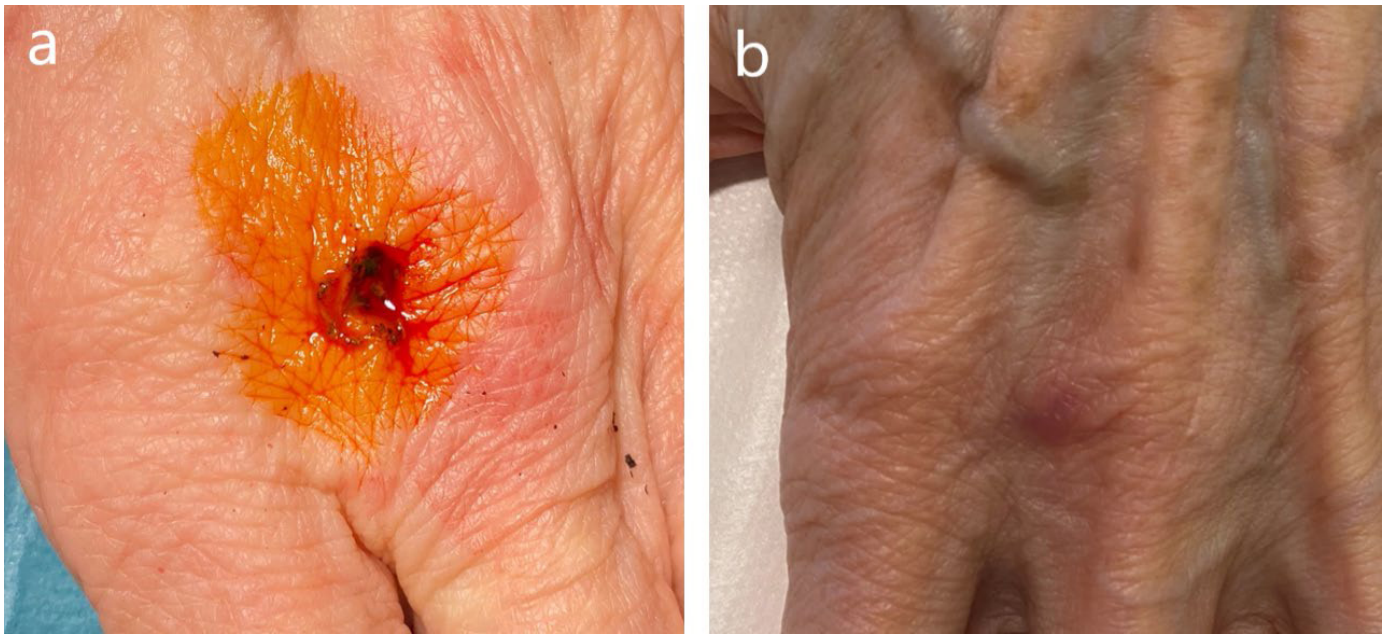

Fig. 1. *Patient #1, presenting with blue nevus, surgically excised. Before (a) and 3 weeks after 2% fluorescein solution application (b), with slight erythema and no residual scarring.*

All 16 lesions completely healed after 3 weeks of topical 2% fluorescein solution. In addition, no adverse events were reported after 2% fluorescein solution application: no keloid or atrophic scars, no pigmentary alterations or infections at the excision site. However, slight erythema and scales were still noticeable in some of the lesions (Fig. 2).

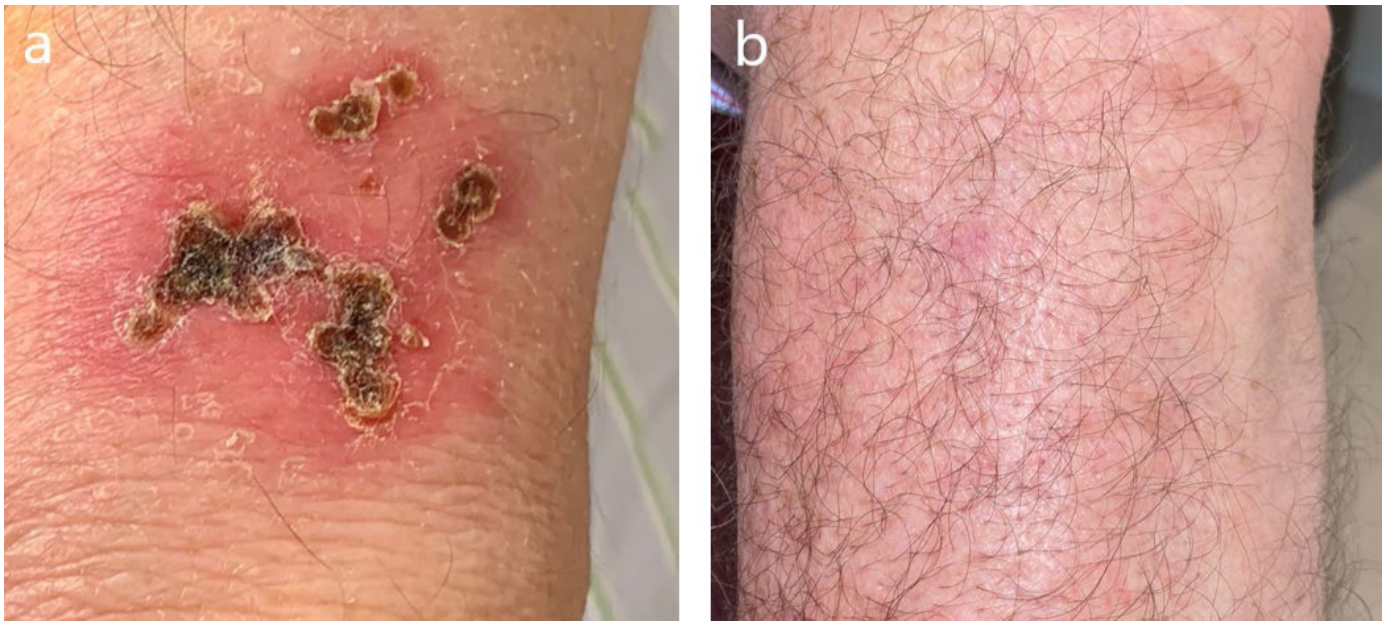

Fig. 2. *Patient #4, presenting with impetigo, surgically excised. Before (a) and 3 weeks after 2% fluorescein solution application (b), with slight erythema and no residual scarring.*

Many over-the-counter topical treatments have been advertised as effective in preventing or improving scar appearance and symptoms. The most common ingredients were onion extract, silicone and vitamin E (4). However, the clinical efficacy of onion extract is still unproven, while vitamin E appears to be highly ineffective in scar prevention and might even have harmful effects. On the other hand, silicone, tension reduction, and wound edge eversion appear to be valid measures in preventing hypertrophic scar formation (5); however, high prices of most dermatocosmetics are a deterrent to many patients, which highlight the need for more accessible products. The price of this 2% fluorescein solution is very low and, thus, affordable for all patients. No data has been published regarding any pregnancy or breastfeeding toxicity. Pediatric use has no contraindications; actually, it is largely used with encouraging results in the pediatric population.

Our research demonstrates that 2% fluorescein solution is highly effective after 3 weeks of treatment, has no side effects and prevents local infection, thus showing strong bacteriostatic and regenerative properties. Additionally, its price is accessible, making it an ideal alternative to the more expensive scar management products.

Limitations of our study consist in the small number of patients included. Further research is needed to accurately assess and define the efficacy and safety of topical 2% fluorescein solution.

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Only records of patients who had given informed consent to acquire photographic images and medical data were included.

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