Combined treatment with hydrocolloid dressing and hyaluronic acid in a superficial friction wound: a case report

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Keywords

Friction wound, delayed healing, hydrocolloids, hyaluronic acid, skin moisture, advanced dressing

Abstract

Traumatic injuries of the malleolar region can be challenging to manage due to persistent friction and moisture. The novelty of this case lies in the delayed healing observed in a young, otherwise healthy patient without predisposing conditions.

We report the case of a 32-year-old Caucasian male in good general health who sustained a traumatic abrasion of the left medial malleolus after rubbing against a fibreglass surface. Despite the absence of comorbidities, the wound showed delayed healing. Initial treatment with hydrocolloid dressings for 7 days was followed by topical hyaluronic acid application, leading to complete resolution.

This case highlights the importance of tailoring wound management to the local characteristics of the lesion, even in young and healthy individuals, in order to optimise healing outcomes.

Introduction

Friction wounds are superficial skin lesions caused by mechanical rubbing, often considered minor and self-limiting in healthy subjects. However, under certain local conditions, such as persistent moisture, unfavourable anatomical location or the presence of repeated friction, healing may be slowed or complicated [1,2].

Modern wound management is based on a customised and dynamic approach that takes into account the balance between moisture, protection and stimulation of tissue regeneration [3]. Advanced dressings such as hydrocolloids provide a controlled moist environment that promotes autolysis and cell proliferation, while topical hyaluronic acid products are known for their healing and moisturising properties [4,5].

Although the literature often focuses on more severe wounds or patients with comorbidities, even apparently simple cases in young, healthy subjects can pose a clinical challenge due to interfering local factors.This case report, written following the CARE guidelines for clinical case reports [6], describes the effective treatment of a delayed healing friction wound in a healthy patient, emphasising the importance of individualised wound management.

Patient information

A 32-year-old Caucasian male, in good general health. Smoker, takes no medication. No known chronic pathology.

Remote and family pathological history: no significant previous pathology. No family history of dermatological diseases or delayed healing.
Physiological history: active life, sports practised at an amateur level. Good hygiene. No relevant risk factors for impaired healing (e.g. diabetes, obesity, use of corticosteroids).
Reason for request for specialist: The patient came to the attention of the nurse specialist in Wound Care for a superficial friction wound, located in an area subject to persistent rubbing and dampness that showed no signs of spontaneous healing after several days.
Symptoms and initial course: The lesion was abrasive in appearance, not bleeding, with sharp edges and slight exudate. Absence of fever, moderate pain only from rubbing. No clinical signs of infection.

Clinical data

A 32-year-old Caucasian male, in good general health, smoker, without chronic disease or medication use, sustained a superficial friction wound localised to the left medial malleolus. The injury, which was abrasive in nature, was not infected, but showed little evolution towards healing after a few days.

The patient independently performed home dressings following standard clinical indications. Every 24-48 hours, the wound was: 1. irrigated with sterile saline to remove debris and maintain a clean environment; 2. wound edges locally disinfected with 10% iodopovidone in an aqueous solution, applied with sterile gauze, avoiding direct contact with the wound bottom; 3. The bottom of the wound was then protected with greasy gauze (non-adherent base), to promote tissue hydration and prevent removal trauma; 4. Finally, the whole was covered with a sterile adhesive plaster, to maintain a protected environment and reduce rubbing against clothing.

After consultation with the Nurse Specialist in Wound Care, advanced hydrocolloid dressings were applied to promote skin regeneration, followed by the application of topical hyaluronic acid to facilitate the tissue repair process by modulating inflammation and promoting cell migration.

The patient was initially treated with a hydrocolloid dressing for 7 days (dressing changed every 48h). Subsequently, topical application of hyaluronic acid was chosen, with daily application. The lesion completely resolved in 10 days, with no complications and/or adverse events.

Timeline

TIMING	IMAGE	DESCRIPTION	TREATMENT
T0		Type of lesion: Superficial friction wound Appearance: Oval ulcer with sharp edges, slightly hyperemic margins, mixed background Fibrinous/yellowish exudate (lower part of bed) Granulation tissue (upper part reddish, vascularised) Perilesional: Skin reddened, slightly oedematous, marginal maceration, probably from dampness Signs of infection: No purulent discharge, necrosis or massive oedema observed	Irrigated with sterile saline, disinfected with 10% Iodopovidone in aqueous solution and dressed with greasy gauze and sterile plaster.

		Extent: 3 mm in diameter, superficial lesion, non-penetrating, limited to superficial dermis Localisation: left medial malleolus	

T1 (End of hydrocolloid treatment) **Day 0 to day 7 (3 dressing changes)**		Appearance: oval lesion, more superficial than at initial stage. Marked reduction in size and depth. Presence of granulation tissue and shiny yellowish film compatible with dry serous exudate or protective film from dressing Borders: Well defined, no longer macerated, no signs of expansion Perilesional skin: Less reddened than the previous previous No visible oedema, active secretions or signs of inflammation. No signs of infection	Treatment was started with hydrocolloid dressings, applied every 48 hours, after thorough cleansing of the wound. Prior to application, the wound was irrigated with sterile saline, the edges disinfected with iodopovidone 10% solution aqueous, and the area was then covered with a sterile plaster for mechanical protection and maintaining of the environment moist environment.

		Developmental status: Advanced granulation phase / initial epithelialisation The wound is drier, more superficial and less inflamed Good healing progress is observed, with regression of maceration and reduction of the fibrinous component	

T2 (End of hyaluronic acid treatment) **Day 7 to Day 10**		The lesion appears completely reepithelialised, with complete closure of the margin and absence of exudate, scabs, fibrin or inflammatory signs. The overlying skin is intact, homogeneous in colour, slightly lighter than the perilesional skin, as is typical in the post-remodelling phase. There are no signs of hyperemia, oedema, maceration or scar	A topical treatment with hyaluronic acid was then started, applied once a day after irrigation of the lesion with sterile saline. The product was evenly distributed over the affected area and then covered with a sterile plaster to protect it from external trauma and maintain
		hypertrophic. The area is not painful and does not show any thickening or changes in the skin texture. Healing can be described as complete and clinically satisfactory, with restoration of tissue continuity and absence of complications or recurrences.	the moist environment controlled.

Diagnostic evaluation

The diagnosis of superficial friction wound was made on a clinical basis, in the presence of an oval, sharp-edged skin lesion, located in an area subject to persistent rubbing and moisture. The presentation was compatible with a superficial epidermal and dermal loss of continuity, without deep tissue involvement.

No laboratory or instrumental examinations were required, as there were no systemic signs of infection (absence of fever, lymphadenopathy, general symptoms) and the appearance of the wound was compatible with an uncomplicated course, free of necrosis, pus or severe pain.

During the course, the wound was monitored by direct clinical assessment.

No relevant differential diagnoses were made, as the clinical picture was clearly referable to mechanical friction trauma in a non-pathological context.

Therapeutic interventions

Wound treatment was conducted in two successive phases, under home care, with good patient adherence to the treatment plan.

1. Advanced hydrocolloid dressing (time 0 to day 7)

Therapy with hydrocolloid dressings was initiated, applied every 48 hours for a total of 4 dressings in 7 days. Each dressing change included:

- Irrigation with sterile saline;
- Disinfection of skin margins with iodopovidone;
- Application of sterile hydrocolloid bandage, covered with a protective plaster.

This phase resulted in an improvement of the wound base, with the appearance of viable granulation tissue, but still partial healing.

2. Topical therapy with hyaluronic acid (from day 7° to day 10)

From day 7, treatment was completed with daily topical application of hyaluronic acid. After irrigation with saline solution, the product was distributed on the bottom of the lesion and the area was covered with a sterile plaster.

Follow-up and outcome

Throughout the entire course, the patient monitored independently with telemedicine support for clinical assessment by the specialist, day by day, by direct visual inspection and subjective detection of symptoms (pain, discharge, inflammation).

After 7 days of hydrocolloid dressing therapy, a reduction of the fibrinous fundus and the appearance of healthy granulation tissue was noted, but with healing still incomplete.

The switch to hyaluronic acid therapy, applied locally for 3 consecutive days, resulted in a rapid acceleration of re-epithelialisation. At the end of the treatment, the wound was completely healed, with:

- Intact, dry skin, without exudate
- Homogeneous, slightly hypopigmented complexion
- Absence of pain, itching or signs of infection
- No pathological scarring (e.g. keloid, hypertrophic)
- No distant recurrence

The patient showed no complications or side effects related to the products used, nor did he require further treatment. No specialist follow-up or instrumental diagnostics were necessary.

Discussion

Friction wounds, although common, can become difficult to manage in particular anatomical or environmental contexts. In this case, the absence of comorbidities did not prevent an abnormal course, confirming that the local wound environment plays a crucial role in healing [1,3].

After 7 days of treatment with hydrocolloid dressing, a partial improvement of the wound was observed, with reduction of exudate and appearance of granulation tissue.

Topical treatment with hyaluronic acid was then initiated, applied once daily after irrigation of the wound with sterile saline. The product was evenly distributed over the affected area and then covered with a sterile plaster to protect it from external trauma and maintain a controlled moist environment.

After a few days, progressive and rapid closure of the lesion was observed, with complete re-epithelialisation and absence of pain, discharge or perilesional inflammation. At the end of the treatment, the skin was intact, homogenous in appearance and without signs of infection, maceration or abnormal healing.

The use of hydrocolloids promoted protection and management of the initial exudate, while switching to a hyaluronic acid-based product promoted tissue regeneration [4,5]. This case demonstrates the effectiveness of a multiphasic approach to wound management, even in healthy patients.

The proper management of apparently simple wounds may require dynamic adaptation of therapeutic strategies. In this case, the sequential combination of hydrocolloid dressings and hyaluronic acid resulted in a complete resolution without complications, even in the presence of unfavourable local factors.

Otherwise, the course took place in a favourable clinical context: the patient was in good general health, young and free of comorbidities, factors that probably facilitated spontaneous healing. This makes it difficult to extend the results to other patient profiles, in particular frail, elderly subjects or those with chronic diseases that may adversely affect the skin repair process.

Furthermore, the treatment adopted has not been compared with other alternative therapeutic approaches, and the very nature of the case report, based on the observation of a single case, does not allow definitive conclusions to be drawn on the efficacy of individual interventions or their superiority over others.

Patient perspective

The patient reported being fully satisfied with the treatment received and of the overall development of the wound. He appreciated the simplicity and practicality of the home dressing, which did not interfere with daily activities or cause significant discomfort.

He perceived a steady improvement from the first days and described the whole healing process as "quick, effective and uncomplicated". At the end of the treatment, he stated that he was "very happy with the final result" and that he had not experienced any side effects, noticeable scar residue or functional limitation.

The patient also expressed gratitude for the clarity of the instructions received and for having been able to manage the entire healing process successfully on their own.

Declarations

Ethics approval and consent to participate: all procedures were conducted in accordance with the ethical standards of the Declaration of Helsinki. Patient confidentiality and data protection were ensured in compliance with the EU General Data Protection Regulation (GDPR). Written informed consent was obtained from the patient for participation in this case report.

Patient consent was obtained: written informed consent was obtained from the patient for the publication of this clinical case and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Availability of data and materials: all data supporting this case report are in the possession of the author and are available for review upon request.

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