Case Report

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Management of Rare Isolated Second Degree Pinna Burns with Collagen Dressings with Good Cosmetic Outcome: A Case Report

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Abstract

Purpose: *Burns of the pinna are associated with high morbidity due to the thin skin, minimal subcutaneous tissue, and underlying avascular cartilage, which predispose to infection, cartilage necrosis, and poor cosmetic outcomes. Conventional management of second-degree pinna burns often results in prolonged healing and suboptimal aesthetics. This report aims to highlight the effectiveness of collagen dressings as a primary, non-surgical treatment for bilateral second-degree pinna burns.*

Methods: *A 26-year-old male presented with bilateral second-degree pinna burns following accidental flame exposure from a diesel-powered fogging machine. Initial management included intravenous antibiotics, fluids, and silver sulfadiazine dressings. Despite improvement of associated back burns, both pinnae developed perichondritis with abscess formation, which required incision and drainage. Due to poor healing and loss of overlying skin, collagen sheet dressings were applied to both pinnae, with regular monitoring and repeat applications as needed.*

Results: *Marked clinical improvement was observed within three days of initiating collagen dressings, with healthy granulation tissue formation. Complete healing of both pinnae was achieved within 14 days of collagen therapy. At three-month follow-up, the patient demonstrated well-healed pinnae with preserved contour, excellent cosmetic outcomes, and no evidence of infection, scarring, or deformity.*

Conclusion: *Collagen dressings offer a safe, effective, and cosmetically superior non-surgical option for managing partial-thickness pinna burns. Early use of collagen dressings may promote rapid healing, reduce complications, and preserve auricular form, making them a valuable addition to auricular burn management.*

Keywords

Auricle, Pinna, Pinna Burns, Auricular Burns, Collagen Dressing

Introduction

Our pinnae are extremely predisposed to thermal injury owing to their bilaterally projected position with respect to face. In clinical practice, pinna burns are most frequently encountered along with facial burns. Auricular burns account for approximately 22% of facial burn cases, often involving flame injuries and affect both ears [1]. Burns of the external ears account for a significant subset of facial burns and are associated with disproportionately high morbidity [2]. The pinna's thin skin, limited subcutaneous tissue and underlying avascular cartilage predispose it to complications such as chondritis, cartilage necrosis, and permanent deformity. Preservation of form and function is critical, as even minor scarring can result in significant cosmetic and psychological impact [3].

Conventional management of second-degree pinna burns includes topical antimicrobial agents like mafenide acetate and silver-based creams, pressure avoidance, frequent dressings and close monitoring for infection. However, these approaches may be associated with prolonged healing times, patient discomfort and suboptimal cosmetic outcomes [4]. Collagen dressings, widely used in burns and chronic wound management, promote wound healing by providing a biological scaffold, maintaining a moist wound environment and modulating inflammation. Despite their proven utility in partial-thickness burns elsewhere on the body, their use in auricular burns is relatively underreported [5].

The case being reported describes successful use of collagen dressings in managing bilateral pinnae second-degree burns emphasizing the innovation, optimal clinical outcomes and cosmetic benefits.

Case Report

26 years old male presented to our accident and emergency department with alleged history of accidental burns of both pinnae while operating a fogging machine. On detailed interrogation, the individual gave history of using fogging machine with a backpack filled with diesel being operated to achieve mosquito control that suddenly caught fire. Fortunately, the patient realised it within seconds and he douched the fire himself by rubbing his back over sand placed nearby. Clinical evaluation revealed deep dermal burns over back and second degree burns of bilateral pinnae. He was managed with intravenous (IV) Cephalosporins, IV fluids and regular dressings with silver sulfadiazine. He responded well to treatment. The burns on the back started healing however his bilateral pinnae developed perichondritis with abscesses (Fig 1a & 2a). These abscesses were incised and drained followed by regular dressing under IV antibiotic cover. Over next few days, the bilateral pinnae did not show any signs of healing. As the overlying skin of pinnae had been lost secondary to burns, it was decided to use collagen sheet for dressing of both pinnae. Three days after first placing the collagen dressings, when the pinnae were inspected, both pinnae showed significant improvement with healthy granulation tissue (Fig 1B & 2B). Repeat dressings with collagen were done (Fig 1C & 2C) and after 14 days (almost three week after initiation of collagen dressings) both pinnae had completely healed (Fig 1D & 2D). The patient was discharged on 10th day after admission. Further follow up at 3 months showed bilateral well healed pinnae with good cosmesis and no sequelae.

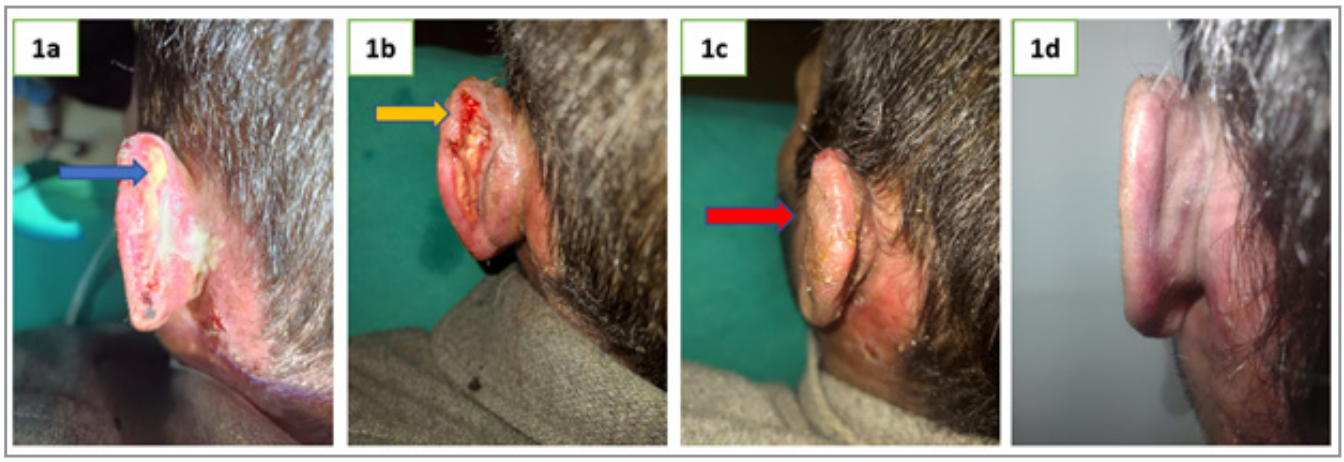

Figure 1:

1a) Gross photo of left ear showing second degree pinna burn which later got infected despite IV antibiotic cover and developed perichondritis and later abscess (blue arrow)

1b) Gross photo showing healthy granulation tissue seen after first application of the collagen dressing (yellow arrow)

1c) Gross photo showing serial application of collagen dressings to affected ear (red arrow)

1d) Gross photo showing well healed wound of left ear without any cosmetic defect.

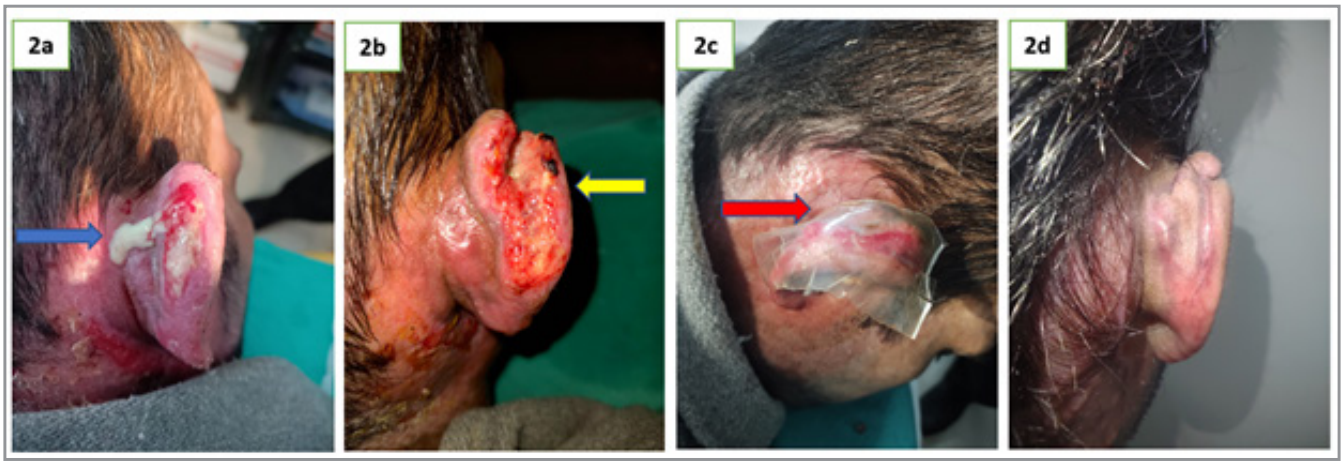

Figure 2:
2a) Gross photo of right ear showing second degree pinna burn which later got infected despite IV antibiotic cover and developed perichondritis and later abscess (blue arrow). The abscess was drained and wound was covered with collagen dressing.
2b) Gross photo showing healthy granulation tissue seen after first application of the collagen dressing (yellow arrow)
2c) Gross photo showing serial application of collagen dressings to affected ear (red arrow)
2d) Gross photo showing well healed wound of left ear without any cosmetic defect.

Discussion

Management of pinna burns is challenging due to anatomical and physiological constraints. The goals of treatment include prevention of infection, protection of exposed cartilage, promotion of rapid epithelialization, and preservation of auricular contour. Surgical interventions such as skin grafting are generally reserved for full-thickness burns or cases complicated by cartilage exposure or necrosis, as surgery itself may compromise cosmesis [6].

Collagen dressings offer several advantages that make them particularly suitable for auricular burns. Collagen acts as a natural extracellular matrix, facilitating fibroblast migration and keratinocyte proliferation [7]. It also helps regulate protease activity within the wound bed, thereby promoting organized healing and reducing excessive inflammation [8]. The semi-occlusive nature of collagen dressings maintains a moist environment, which is essential for epithelialization and pain reduction [8, 9].

In the present case, the use of collagen dressings allowed atraumatic wound coverage conforming closely to the complex contours of the pinna. This eliminated the need for bulky dressings or frequent manipulation, thereby reducing patient discomfort and the risk of mechanical trauma. The antimicrobial barrier function of collagen also contributed to the absence of local infection or chondritis, a feared complication in ear burns [10].

Notably, healing occurred without hypertrophic scarring, contracture, or distortion of the auricular framework. The cosmetic outcome was excellent, with preservation of natural contours and symmetry. Compared to traditional topical agents that require frequent dressing changes, collagen dressings reduced nursing burden and improved patient compliance [9, 10].

This case supports the concept that early application of collagen dressings can serve as a definitive, non-surgical treatment for partial-thickness pinna burns. While larger studies are needed to establish standardized protocols, this approach appears to be a safe, cost-effective, and cosmetically superior alternative in selected cases [9, 11]. The case being reported stands out as there are very few articles which highlight good results achieved from collagen dressings in managing bilateral second degree pinnae burns. Every such success story must be reported and deserves publication as it shall facilitate a valid statistical analysis and will help to formalize a standardized protocol.

Conclusion

Bilateral second-degree burns of the pinna can be effectively managed using collagen dressings as a primary treatment modality. This innovative approach promotes rapid healing, minimizes pain and infection risk and achieves excellent cosmetic results without the need for surgical intervention. Collagen dressings represent a valuable addition to the armamentarium for auricular burn management and should be considered early in the treatment of partial-thickness pinna burns to optimize functional and aesthetic outcomes.

Conflicts of Interest

NIL

Consent for Publication

Informed consent was taken from the patient to publish his details and pictures for the purpose of publication in a medical journal.

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