

# Role of Topical Application of Cholecalciferol with Mupirocin Ointment Combination in Management of bedsore

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## Abstract

The pressure ulcer also called bedsore or decubitus ulcer is one of the complications seen in bedridden patients and is very difficult to treat as well. Cholecalciferol has been used in a variety of disease conditions with various uses. Topical cholecalciferol has been used to be helpful in wound healing. There is evidence that vitamin D can enhance initial inflammation, advantageous during both infection and wound healing, and also promotes resolution and avoids chronic, damaging inflammation. Mupirocin is an antibiotic which can prevent infection. This article highlights the role of topical cholecalciferol and mupirocin ointment combination in wound bed preparation in the case of a pressure ulcer.

**Keywords:** Topical cholecalciferol; pressure ulcer.

## INTRODUCTION

Pressure ulcers are commonly seen in critically-ill patients. Surgery may be required to cover

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the raw area but should be used as the last resort, as recurrence is often the rule. Also, the general condition of the patients who acquires the pressure ulcer often renders them unfit for reconstruction surgery. For these reasons, pressure ulcers are mostly managed by conservative treatment. Various local wound therapies have been advocated for use in this difficult to treat the condition. The various modalities include platelet rich fibrin matrix, autologous platelet rich plasma, prolotherapy, negative pressure wound therapy etc.

Recently we have come across the journal about the role of topical cholecalciferol in wound healing. In this article, we share our experience of using topical cholecalciferol in the case of a pressure ulcer.

## METHODOLOGY

This is a case report of the use of topical cholecalciferol in a case of pressure ulcers. This study was conducted in a tertiary care hospital in 2019. The patient was 30 year male with post-spinal cord injury pressure ulcers on the bilateral ischial region (Figure 1) for 3 months. Regular cleaning and dressing were done, and antibiotics given according to culture and sensitivity, but the wound was not showing any good sign of healing. To hasten the wound bed preparation decision was made to give a trial of topical cholecalciferol with mupirocin ointment combination.



Fig. 1: Wound at the time of presentation

After debridement of the wound, topical cholecalciferol with mupirocin ointment was applied uniformly on the wound (Figure 2). Over that non-adherent dressing was placed, and the dressing was done. Every third or fourth day, the dressing was opened and the wound was assessed. Repeat debridement was done if found necessary and topical cholecalciferol and mupirocin ointment (Figure 3) was applied and the dressing was done. Eight such sessions of topical cholecalciferol application were done over four weeks. the cost of cholecalciferol was 30 to 50 rupees per sachet.



Fig. 2: Topical application of cholecalciferol



Fig. 3: Cholecalciferol for topical application

## RESULT

After the application of topical cholecalciferol, the wound started granulating, the amount of slough and pus discharge also reduced. After eight sessions of topical cholecalciferol therapy over four weeks, the wound bed was prepared for the final reconstruction (Figure 4). No adverse local or systemic effect was noted with the use of topical cholecalciferol therapy.



Fig. 4: Healed wound bed

## DISCUSSION

Various topical antimicrobial delivery systems are available such as gentamicin in collagen dressings, minocycline in chitosan-polyurethane foam, ofloxacin from silicone sheets, dialkylcarbamoyl chloride in cotton wool dressing, etc.<sup>7,8</sup> These delivery system allows for better drug delivery and also aids in wound healing.

Vitamin-D or cholecalciferol is known for its role in calcium homeostasis. Apart from this, its role in immunomodulation has also been described. It has

been found that Vitamin D is useful in the healing of diabetic wounds when administered systemically.<sup>9</sup> It also reduces inflammation associated with diabetic wounds. And also as a drug delivery agent for local wound healing. It has been found to improve corneal wound healing.<sup>10</sup>

Vitamin-D act as an antiproliferative, prodifferentiative, antiapoptotic, and immunomodulator. Its use both astopical and systemic have been proved beneficial in skin diseases. The vitamin-D enhance the production of anti-microbial peptides (AMP) like - defensin and cathelicidin. These AMP increases the keratinocyte production and migration as well as also increase the productions of the chemokines like IL-8. It also has an immunosuppressive action in the skin. It decreases the antigen presentation by its effect on Langerhans cells and by modulating cytokine production by keratinocyte cells.<sup>11</sup>

## CONCLUSION

Topical cholecalciferol is found useful to facilitate healing in chronic wounds in our study. However, the study was done on a single patient and needs large population-based control trials to apply in clinical practice.

## DECLARATIONS

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