

# ACCELERATING WOUND HEALING IN CHRONIC WOUND AND POST SURGICAL WOUND WITH 100% CHITOSAN AND BIOACTIVE MICROFIBER GELLING TECHNOLOGY (BMG): A CASE STUDIES



SYAFIQAH M.S. , N.HAMIZAH A. , HAMISHATUL S.A.M , SHUKUR A.  
ADVANCED WOUND CARE UNIT , HOSPITAL TELUK INTAN, PERAK

## INTRODUCTION

Chitosan which is derived from chitin has destructive effect on microorganism through leakage of proteinaceous and other intercellular constituents. It exhibits analgesic properties due to absorption of bradykinin and proton ions that release from inflammatory site<sup>(1)</sup>. This study will evaluate the impact of MaxioCel which is chitosan wound dressing with bioactive microfibre gelling (BMG) technology in chronic and post-surgical wounds.

## METHOD

A prospective study using cases to assess the effectiveness of MaxioCel on chronic and post-surgical wounds. Wound assessment of patients documented including assessment of wound bed, exudate level, wound size, peri wound condition, wound pain and wound management.

## CASE STUDY 1

A 48-year-old female with underlying Diabetes Mellitus Type 2. History of dorsum part of left foot infection in October 2022. Underwent wound debridement in October 2022

### On initial assessment (17/11/2022):

- Wound located over the dorsum of left foot.
- Wound size: 10.8 cm(L) x 12.4 cm (W)
- Wound bed: slough 5%, exposed tendon 20%, granulation 75% with clear moderate exudate, advance epithelialization with intact peri wound.
- No infection.
- VAS pain score: 4

Started on MaxioCel dressing for 4 to 5 days duration for 12 weeks.



### After 12weeks (7/2/2023):

- Wound size: 3.5cm x 6.6 cm
- Wound bed: granulation 95%, slough 5% with clear, moderate exudate, advancing epithelialization, and intact peri wound.
- No infection
- VAS pain score: 0



## RESULT

One patient with chronic wound and another patient with post-surgical wound we selected. They were evaluated for 12 weeks. Results showed significant improvement in:

- Reduction in wound size.
  - o In post surgical wound, wound size reduced significantly about 80% after 12 weeks on MaxioCel dressing.
  - o In chronic wound, wound size reduced about 30% to 50% after 12 weeks on MaxioCel dressing.
- Promoting granulation and epithelialization from 75% to 95% granulation tissue.
- Exudate control in both cases.
- Peri wound skin showed no maceration in both cases due to exudate locking ability of the dressing.
- Reduction in wound pain in both cases during application and removal of dressing.

## CASE STUDY 2

A 58-year-old male with underlying Diabetes Mellitus type 2, hypertension and dyslipidemia. History of right lower limb necrotizing fasciitis on June 2022. Underwent wound debridement in June 2022.

### On initial assessment (14/11/2022):

- Wound location : medial and lateral right leg.
- Wound size: lateral: 34.9 cm x 9.5 cm , medial : 22.2 cm x 8 cm
- Wound bed: 20% slough, 80% granulation with clear, moderate exudate with dry peri wound and advance epithelialization.
- No infection.
- VAS pain score 3.

Started on MaxioCel dressing for 4 to 5 days duration for 12 weeks.



Lateral right leg (14/11/2022) : 34.9 cm x 9.5 cm



Medial right leg (14/11/2022) : 22.2 cm x 8 cm

### After 12 weeks on MaxioCel dressing (14/2/2023):

- Wound size: lateral: 20.6 cm x 8cm, medial: 19.6 cm x 6.6 cm
- Wound bed: 5% slough, 95% granulation with clear, moderate exudate with dry peri wound and advance epithelialization. No infection.
- VAS pain score 0.



Lateral right leg (14/2/2023): 20.6 cm x 8cm



Medial right leg (14/2/2023): 19.6 cm x 6.6 cm

## DISCUSSION

Management of wounds is important as its impact on the patient's psychology includes pain management,<sup>(2)</sup> exudate control that leads to control of malodor, reduction of dressing leakage, prevention of infection, and improvement to peri wound<sup>(2)</sup>.

In these case studies, MaxioCel achieved positive outcomes based on a significant reduction in wound size in both chronic and post-surgical wound. Reduction in pain perception during application and removal of the dressing, easy-to-use dressing, good absorption capability, and intact peri wound was observed in both case studies. The fluid-locking ability in BMG dressing prevents saturation and thus peri wound maceration. The dressing conforms to the wound bed thus maintaining the moisture for the wound healing process to occur thus reducing bioburden within the wound as microorganisms are trapped and immobilized within the gelling structure<sup>(2)</sup>.

## CONCLUSION

MaxioCel has properties of exudate absorption, analgesic properties, and reduction in wound size. Good exudate absorption capability leads to healthy peri wound and potentially reduces dressing changes. The dressing is easy to apply and conforms to the wound bed and can be removed without trauma to surrounding tissue. A positive outcome was achieved in this chitosan wound dressing with BMG technology.

## REFERENCE

1. Joy Tickle, Evaluation of a chitosan dressing in the management of hard-to-heal wounds- British Journal of Nursing 2023, Vol 32, No 4: Tissue Viability Supplement
2. Jing Liu, Hong Sen, Clinical efficacy of chitosan-based hydrocolloid dressing in the treatment of chronic refractory wounds, 2022, DOI: 10.1111/iwj.13801