

# ROLE OF PAPAYA (CARICA PAPAYA) DRESSINGS IN THE MANAGEMENT OF CHRONIC ULCER

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## Orthopaedics

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### Abstract:

**Background:** A practical definition of a Chronic Ulcer is one that has failed to heal within 3 months. Although there are a variety of underlying causes, most can be categorized as pressure sores, diabetic foot ulcers or leg ulcers. Different strategies including honey dressings, medicated dressings, povidone iodine dressings, platelet rich plasma dressings, saline dressings, vacuum dressings and papaya dressings are available in the management of Chronic Ulcer. Papaya has been studied from a pharmacologic perspective. Green papaya is rich in two enzymes (papain and chymopapain) that have very strong digestive properties, with an ability to dissolve dead tissue. The extracts of ripe and unripe papaya fruit and of the seeds are active against gram-positive bacteria. Strong doses are effective against gram negative bacteria. The substance has protein-like properties and yields the aglycone of glucotropaeolin benzyl Isothiocynate (BITC) which is bacteriostatic, bactericidal and fungicidal.

**Aim:** To study role of papaya dressing in management of chronic ulcer in manner of cost and healing duration and further surgical treatment.

**Results:** Maximum numbers of patients were in the age group of 50 to 60 years. Majority were males (80%) with male to female ratio of 4:1. There were seventy five (55.6%) patients with grade II. Ninety Six patients (71.11%) were operated for debridement and thirty nine patients (28.89%) didn't require any surgical treatment. After the initial surgical treatment and dressing 120 (88.89%) patient needed no further surgery. Fifteen patients (11.11%) were operated for further debridement.

**Conclusion:** Topical papaya dressing provides cost effective and favorable outcome in patients with Chronic Ulcer by decreasing the healing duration, reducing surgical interventions.

**Key Words:** Ulcer, Pappaya, Dressing

### Introduction

A practical definition of a Chronic Ulcer is one that has failed to heal within 3 months. Although there are a variety of underlying causes, most can be categorized as pressure sores, diabetic foot ulcers or leg ulcers.

In the management of Chronic Ulcer early recognition of severe infections, diabetes control, appropriate and effective antibiotic selection, early surgical intervention, wound debridement; wound washing, appropriate dressings and definitive wound closure are the key components.<sup>1</sup>

Safe and effective debridement method for the patient with a chronic diabetic wound is yet to be elucidated completely. Clinical experience strongly favors the combined therapy, such as initial surgical debridement followed by serial debridement using an enzymatic agent, is effective for many patients with chronic, indolent, or non healing wounds.<sup>2</sup>

Different strategies including honey dressings, medicated dressings, povidone iodine dressings, platelet rich plasma dressings, saline dressings, vacuum dressings and papaya dressings are available in the management of Chronic Ulcer.<sup>3-7</sup> Papaya has been studied from a pharmacologic perspective. Green papaya is rich in two enzymes (papain and chymopapain) that have very strong digestive properties, with an ability to dissolve dead tissue. The extracts of ripe and unripe papaya fruit and of the seeds are active against gram-positive bacteria. Strong doses are effective against gram negative bacteria. The substance has protein-like properties and yields the aglycone of glucotropaeolin benzyl Isothiocynate (BITC) which is bacteriostatic, bactericidal and fungicidal.<sup>8</sup>

## Material & Methods

This is prospective longitudinal study performed at Pravara Rural Hospital, a constituent hospital of Rural Medical Collage Loni, Taluka-Rahata, District-Ahmadnagar from 2<sup>nd</sup> may 2014 to 31<sup>st</sup> April 2016.

Patients (n=135), with Chronic Ulcer up to grades 3, were included. Age of the patients ranged from 40 to 70 years. Patients with recurrent diabetic foot, poorly controlled blood sugar, peripheral ischemic disease, chronic renal failure, ischemic heart disease, hepatitis, malignancy and chronic ulcer of grade 4 & grade 5 were excluded. Grades of Chronic Ulcer were classified according Wagner's classification system (Table 1).

Grade	Lesion
1	Superficial diabetic ulcer
2	Ulcer extension involving ligament, tendon, joint capsule, or fascia with no abscess or osteomyelitis
3	Deep ulcer with abscess or osteomyelitis
4	Gangrene to portion of forefoot
5	Extensive gangrene of foot

Initial management included empirical antibiotics, surgical debridement, control of glycemia with the help of physicians and then wound care with the help of papaya

dressings.

An Unripe papaya was taken and washed with normal saline and spirit and put in sterile dressing pad.(Fig.-1) Multiple stabs were given on the papaya with the help of sterile blade or knife to extract papaya milk which was directly applied on ulcer.(Fig.-2)



Fig.-1

Fig.-2



Fig.-3

Fig.-4



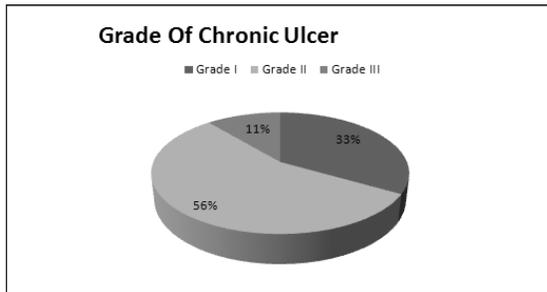
Fig.-5

Fig.-6

Skin of the papaya were discarded and multiple slices were made. The wounds covered with sterilized gauze pieces and the slices were applied to the wounds over sterilized gauze pieces for dressing.(Fig.-3,4,5) Patients and attendants were also educated for the dressing. Dressings were changed after every 48 hours. Patients were discharged after initial wound management and control of blood sugar. Rest of the dressings was carried out on OPD basis. The wounds were declared healthy when they were filled with healthy granulation tissue and had epithelial growth on their edges. After that papaya dressings were discontinued and simple dressings without any medications were carried out till the complete closure of wound.

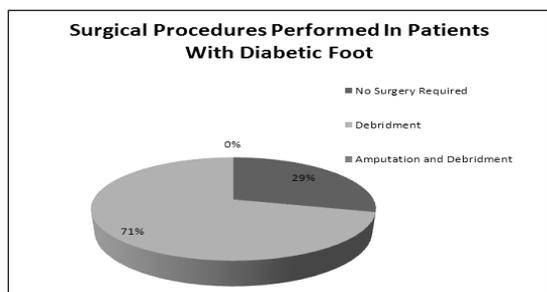
**Results**

Grades	No(%)
Grade I	45 (33.33%)
Grade II	75 (55.56%)
Grade III	15 (11.11%)

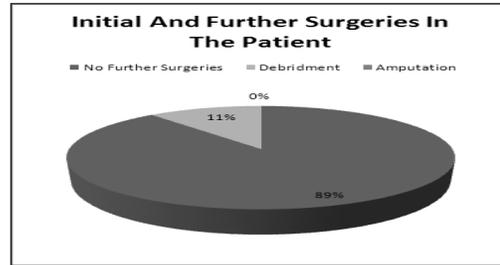


In this study the age of patient ranged from 40 years to 70 years. Maximum number of patients were in the age group of 50 to 60 years. Majority were males (80%) with male to female ratio of 4:1. There were forty five (33.33%) patients with grade I, seventy five (55.6%) patients with grade II and fifteen (11.11%) patient with grade III (Table 2). Ninety Six patients (71.11%) were operated for debridement and thirty nine patients (28.89%) didn't require any surgical treatment (Table 3). After the initial surgical treatment and dressing 120 (88.89%) patient needed no further surgery. Fifteen patients (11.11%) were operated for further debridement (Table 4).

Initial surgery performed	No(%)
No Surgery Require	39 (28.89%)
Debridement	96 (71.11%)
Amputation and Debridement	00(0%)

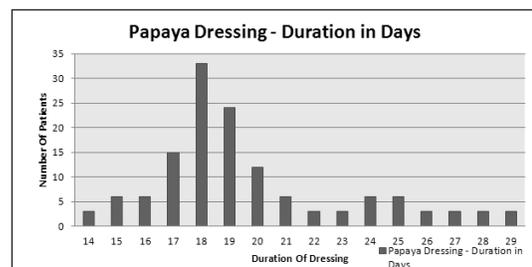


Further surgery after initial treatment	No (%)
No Further Surgery	120 (88.89%)
Debridement	15 (11.11%)
Amputation	00 (0%)



Healing time ranged from 14 to 29 days. Mean healing duration was 19.65 days with Standard Deviation (SD) of ±3.47. Majority of the patients (51.11%) had healing duration of 18 to 20 days (Table 5). The healing was labeled to those wounds which had a healthy granulation tissue and having growing epithelium on their margins.

Duration in days	No Of Patient
14	3
15	6
16	6
17	15
18	33
19	24
20	12
21	6
22	3
23	3
24	6
25	6
26	3
27	3
28	3
29	3



## Discussion

Each of the patients had chronic medical conditions which both caused skin ulceration and mitigated against their prompt healing. All had tissue ischemia as the underlying process.

In each of these cases that had an arterial origin, the Papaya (*Carica Papaya*) dressings treatment appears to have improved arteriolar circulation, but only in tissue which was ischemic and not necrotic and which was sufficiently viable progressed to healing

Moreover, the quality of the skin around the ulcer improved markedly and rapidly in all cases. The initial improvement and closure of the wound was quite rapid, which was followed by healing at a rate more in keeping with that expected in normal skin. It may be that Papaya (*Carica Papaya*) dressings normalized the skin micro-environment, allowing healing to take place at the normal rate.

The papaya dressings in our study significantly reduced the risk of multiple surgical interventions and amputations.

Many studies suggested use of papaya for wound bed preparation.<sup>9-11</sup> The additional effect of papaya dressing beside the micro-debridement is antibacterial activity which is also mentioned in the international literature.<sup>12</sup>

## Conclusion

Topical papaya dressing provides cost effective and favourable outcome in patients with Chronic Ulcer by decreasing the healing duration, reducing surgical interventions.

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