

Comparative Study of 200 Cases Between Hydrocolloid Control Gel Formulas Dressing vs Conventional Dressing in Ulcer

Nishith A Chaudhary¹, Rajan B Somani², Samir M Shah³

¹Junior Resident, ²Additional Professor, ³Professor & Head, Dept. of General Surgery, Sir T. Hospital & Govt. Medical College, Bhavnagar, Gujarat 364001, India.

How to cite this article:

Nishith A Chaudhary, Rajan B Somani, Samir M Shah. Comparative Study of 200 Cases Between Hydrocolloid Control Gel Formulas Dressing vs Conventional Dressing in Ulcer. New Indian J Surg. 2019;10(4):417-422.

Abstract

Introduction: The management of ulcers is expensive and economic burden it throws on our expanding geriatric population is tremendous. Thus it is paramount to carefully evaluate the efficacy of different wound dressings and a cost-benefit analysis to optimize health care spending. A hydrocolloid dressing is a water type of dressing that contains gel-forming agents in an adhesive compound laminated into a flexible, water-resistant outer layer. Some formulations contain an alginate to increase absorption capabilities. These are self adhesive and available with or without an adhesive border and in various thicknesses and precut shapes for such body areas as the sacrum, elbows and heels.

Objective: To establish the role of Hydrocolloid dressing in wound management and also its superiority with other methods.

Methods: This is comparative randomize study in which we will take 200 cases. We will applied hydrocolloid dressing in group A (100 cases of ulcers) while remaining group B (100 cases) will be applied conventional dressing and during study time of period we will compare both groups and see which dressing is superior.

Results: In this study, comparison of wound dressing done between hydrocolloid dressing and conventional dressing by various measures such as

early granulation tissue, decrease hospital stay and early skin grafting, which conclude that hydrocolloid dressing is more efficacious than conventional dressing.

Conclusion: Hydrocolloid dressing helps in making healing process faster in such way making ulcer with early healthy granulation tissue, so patient undergone early in skin grafting and hospital stay will be decreased.

Keywords: Hydrocolloid dressing; Conventional dressing; Ulcer.

Introduction

Ulcers cases are very frequently admitted in this Hospital are a major cause of morbidity and long hospital stay. Increase bed occupancy by ulcer cases, ultimately resulting in a rise in number of limb amputations is a cause of concern. An early debridement, proper wound dressings and prompt grafting once the ulcer bed is ready to accept a graft, is obviously a welcome step.¹

- The etiopathology of ulcer formation and healing process is complex and extensive. The concepts of moist wound healing came to light in 1960s and several studies have been conducted since then. Varieties of wound dressings have been devised but the cost factor of various wound dressings varies greatly.
- The management of ulcers is expensive and the economic burden it throws on

Corresponding Author: Nishith A. Chaudhary, Junior Resident, Dept. of General Surgery, Sir T. Hospital & Govt. Medical College, Bhavnagar, Gujarat 364001, India.

E-mail: nitsechaudhary@gmail.com

Received on 04.11.2018, **Accepted on** 03.12.2018

our expanding geriatric population is tremendous. Thus it is paramount to carefully evaluate the efficacy of different wound dressings and a cost-benefit analysis to optimize health care spending.

- A hydrocolloid dressing is a water type of dressing that contains gel-forming agents in an adhesive compound laminated into a flexible, water-resistant outer layer.^{2,3}
- Some formulations contain an alginate to increase absorption capabilities.
- These are self adhesive and available with or without an adhesive border and in various thicknesses and pre-cut shapes for such body areas as the sacrum, elbows and heels.

Aims and Objective

Aims

To compare hydrocolloid dressing with conventional dressing about,

1. Decrease hospital stay
2. Decrease dressing frequency
3. Early granulation tissue
4. Early skin grafting
5. Decrease morbidity and local pain

Objectives

To establish the role of hydrocolloid dressing in wound management and also its superiority with other methods.

Material and Methodology

This is comparative randomize study in which we will take 200 cases. We will applied hydrocolloid dressing in group A (100 cases) of ulcers while remaining group B (100 cases) will be applied conventional dressing and during study time of period we will compare both groups of cases and see which dressing is superior.

Inclusion criteria

Sr. No.	
1.	Age >5 years
2.	Infective ulcer
3.	Non infective ulcer
4.	Ulcer with exudates

Exclusion criteria

Sr. No.	
1.	Age <5 years
2.	Intreated underlying osteomyelitis <ul style="list-style-type: none"> – Exposed arteries or veins – Malignancy within wounds – Dry gangrene – Wounds resulting from electrical, chemical, or radiation burns

How to compare

We will compare both groups of dressing after pre-and post-dressing and see how much slough is removed and red healthy granulation tissue appears. Also compared it with pre-and post-dressing photographs and early granulation tissue and time of skin grafting.

How to apply

- Scrub your hands and put on sterile gloves.
- Remove the soiled dressing and place it in a trash bag.
- Remove your gloves, wash your hands, and put on new autoclave gloves.
- Clean the wound with normal saline solution or prescribed cleanser.
- Use clean gauze to pat dry the tissue surrounding the wound.
- Apply liquid barrier film or moisture barrier to the periwound area.
- For deep wound, apply wound filler or packing materials as indicated.
- Before applying the hydrocolloid dressing, warm it by holding it between your hands to increase adhesive ability.
- Remove the paper backing from the dressing.
- Gently fold the dressing in half lengthwise and apply it from the center of the wound outward.
- Smooth the dressing in place from the center outward. Hold the dressing in place for few seconds to improve adhesion.

Action

Hydrocolloid dressings are occlusive, so they provide.

- A moist healing environment
- Autolytic debridement

- Insulation

When to use^{2,3}

A hydrocolloid dressing is appropriate for following situation:

- Non-infected wound with scant to moderate discharge
- Necrotic or granular wound
- Partial or full-thickness wound
- Protection of intact skin or newly healed wound

Follow up

Dressing changes on day of 3rd, 5th, and 7th to see the presence of infection, discharge or slough.

Observations and Results

Table 1: Comparison of age distribution between hydrocolloid dressing and conventional dressing

Age	Hydrocolloid dressing (No. of patients)	Conventional dressing (No. of patients)
<30 years	14	08
31-40 years	20	13
41-50 years	21	20
51-60 years	26	31
61-70 years	14	16
>70 years	05	12
Total	100	100

Table 2: Comparison of sex distribution between conventional dressing and hydrocolloid dressing

Type of dressing	Female	Male
Hydrocolloid dressing	31	69
Conventional dressing	38	62

Table 3: Comparison of duration of Hospital Stay between conventional dressing and hydrocolloid dressing

Duration of Hospital stay	Hydrocolloid dressing (No. of patients)	Conventional dressing (No. of patients)
<20 days	79	57
21-40 days	17	40
41-60 days	01	02
>60 days	03	01

In this study of 200 cases, in which hydrocolloidal dressing is applied, 79% patients can be discharge within 20 days while in case of conventional dressing 57% patients are discharged within 20 days. If patient require more than 40 days of hospital it doesn't signify application of any dressing. *p* value is significant <.0001 (Table 3).

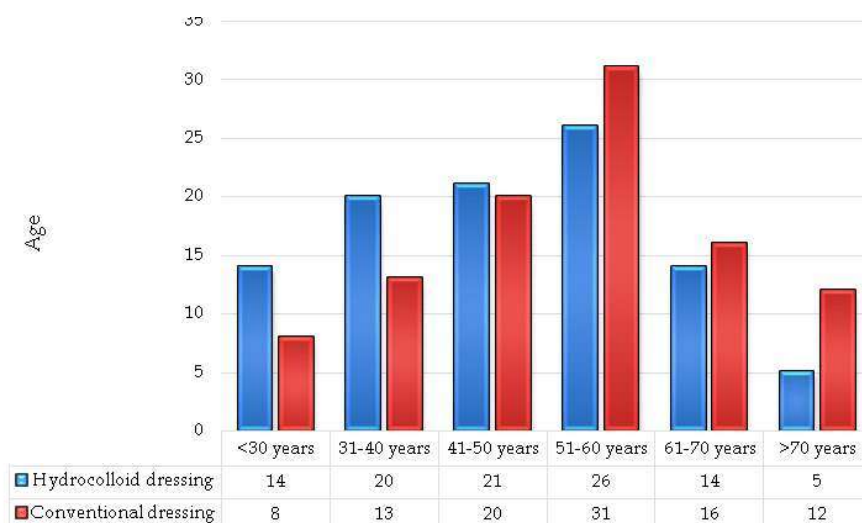
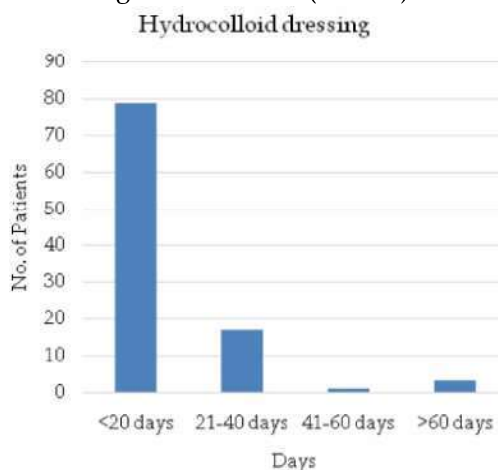


Chart 1: Comparison of Age distribution between Hydrocolloid dressing and conventional dressing.



Chart 2: Comparison of Duration of Hospital Stay between Conventional dressing and Hydrocolloid dressing.

Table 4: Comparison of granulation tissue between conventional dressing and hydrocolloid dressing

Days of Granulation tissue	Hydrocolloid dressing (No. of patients)	Conventional dressing (No. of patients)
< 7 days	74	21
8-15 days	13	58
16-25 days	08	17
>25 days	05	04

In this study, in which hydrocolloidal dressing is applied, 74% patient having granulation tissue appear within 7 days, while in conventional dressing granulation tissue appear after 7 days. *p* value is significant <.0001 (Table 4).

Table 5: Comparison of Hydrocolloid dressing and Conventional dressing in the management of Ulcer

Type of Ulcer	Hydrocolloid dressing (No. of patients)	Conventional dressing (No. of patients)
Diabetic ulcer	59	58
Traumatic ulcer	15	16
Ischemic ulcer	04	06
Others	22	20
Total	100	100

Table 6: Comparison of early Skin Grafting between hydrocolloid dressing and conventional dressing

Days of Skin Grafting	Hydrocolloid dressing (No. of patients)	Conventional dressing (No. of patients)
<10 days	72	25
11-15 days	07	43
16-20 days	06	09
>20 days	08	19
NA	07	04

In this study, in which hydrocolloidal dressing is applied, 72% patient achieves skin grafting within

10 days while in conventional dressing it required more than 10 days. *p* value is significant <.0001 (Table 6).

Table 7: Comparison of days of Skin Grafting between hydrocolloid dressing and conventional dressing according to different age groups

Age	Hydrocolloid dressing (mean \pm sd)	Conventional dressing (mean \pm sd)
<30 years	8.85 \pm 5.21	15.12 \pm 5.76
31-40 years	8.05 \pm 5.36	11.92 \pm 3.45
41-50 years	10 \pm 5.75	14.11 \pm 6.07
51-60 years	9.42 \pm 7.53	14.83 \pm 5.90
61-70 years	12.14 \pm 14.01	12.25 \pm 6.31
>70 years	12.6 \pm 12.3	14.5 \pm 8.43

In this study, as per the age distribution skin grafting comes early in hydrocolloid dressing less than 50 years of age, while in more than 50 years of age, there is no significant different between hydrocolloid and conventional dressing (Table 7).

Table 8: Comparison of days of hospital stay between hydrocolloid dressing and conventional dressing

Age	Hydrocolloid dressing (Mean \pm SD)	Conventional dressing (Mean \pm SD)
<30 years	20.5 \pm 19.79	22 \pm 7.69
31-40 years	13.52 \pm 6.13	17.61 \pm 5.14
41-50 years	16.13 \pm 7.18	23.15 \pm 11.21
51-60 years	19.80 \pm 11.48	21.16 \pm 7.33
61-70 years	19.07 \pm 14.75	23.93 \pm 19.16
>70 years	30.61 \pm 23.57	23.16 \pm 10.64

In this study, as per the age distribution decrease hospital stay in hydrocolloid dressing less than 50 years of age, while in more than 50 years of age, there is no significant different between hydrocolloid and conventional dressing (Table 8).

Table 9: Comparison of days of granulation tissue between hydrocolloid dressing and conventional dressing

Age	Hydrocolloid dressing (Mean \pm SD)	Conventional dressing (Mean \pm SD)
<30 years	9.64 \pm 13.81	12 \pm 5.45
31-40 years	5.78 \pm 3.67	8.84 \pm 2.96
41-50 years	6.27 \pm 5.42	13.35 \pm 10
51-60 years	9.65 \pm 9.17	10.93 \pm 4.97
61-70 years	8.64 \pm 13.08	14 \pm 17.86
>70 years	20 \pm 20.64	13 \pm 7.92

In this study, as per the age distribution granulation tissue comes early in hydrocolloid dressing less than 50 years of age, while in more than 50 years of age there is no significant different between hydrocolloid and conventional dressing (Table 9).

Table 10: Comparison of comorbidity associated with the disease condition between hydrocolloid and conventional dressing

Morbidity Parameter	Hydrocolloid dressing (No. of days)			Conventional dressing (No. of days)		
	STSG	GT	HS	STSG	GT	HS
Diabetes mellitus	10	10	20	13	12	22
Traumatic	9	8	17	15	11	20
Ischemic	10	7	17	13	9	18
Others	8	5	15	16	12	22

Table 11: Comparison of Sex distribution between hydrocolloid dressing and conventional dressing

Gender Parameter	Hydrocolloid dressing (Mean ± SD)			Conventional dressing (Mean ± SD)		
	STSG	GT	HS	STSG	GT	HS
Male	9.72 ± 8.06	8.59 ± 11.10	19 ± 14.21	14.27 ± 6.29	12.53 ± 10.28	22.54 ± 11.78
Female	9.80 ± 7.97	8.45 ± 8.06	17 ± 9.65	13.26 ± 5.69	11.05 ± 7.71	20.71 ± 9.46

In this study, in traumatic and other patients (hypertension, tuberculosis, cardiovascular stroke) application of hydrocolloid dressing which gives good result as compare to colloidal dressing, while in case of diabetic and ischemic patients, it doesn't have any significant results in both groups (Table 10).

In this study, as per the sex distribution hydrocolloid dressing gives good result as compare to conventional dressing in both as well as in male and female (Table 11).

There is study done by R.K. Shastri *et al.*⁴ in which he compare the wound dressing done by foam and conventional dressing by various outcome measures such as pain on dressing removal and patients comfortable and he concluded that foam dressing is more efficacious than conventional dressing.

In this study, comparison of wound dressing done between hydrocolloid dressing and conventional dressing by various outcome measures such as early granulation tissue, decrease hospital stay and early skin grafting, which conclude that hydrocolloid dressing is more efficacious than conventional dressing.

In my result patients with hydrocolloid dressing, there is early healing, early granulations and decrease hospital stay, which signifies it is useful same is as study done Thomas and Harding published by NCBI, which suggest hydrocolloid is beneficial over conventional dressing in many ways.⁵

Discussion

This was comparative prospective study of 200 cases between hydrocolloid control gel formula

dressing vs conventional dressing of an ulcer during the period of September 2016 to August 2018 in department of surgery, Govt. Medical College and Sir T. Hospital Bhavnagar.

Patients in which hydrocolloid dressing applied, 79% patients can be discharge within 20 days while in case of conventional dressing 57% patients are discharged within 20 days. If patient require more than 40 days of hospital it doesn't signify application of any dressing.

In hydrocolloidal dressing, 74% patient having granulation tissue appear within 7 days, while in conventional dressing granulation tissue comes after 7 days.

In 72% of patients with hydrocolloid dressing, Skin Grafting applied within 10 days while in conventional dressing it required more than 10 days.

As per the Age distribution, early Granulation tissue, early Skin Grafting and decrease hospital stay seen in hydrocolloid dressing in less than 50 years of age, while in more than 50 years of age, there is no significant difference between hydrocolloid and conventional dressing.

In traumatic and other patients (hypertension, tuberculosis, cardiovascular stroke) patient application of hydrocolloid dressing gives good result as compare to conventional dressing, while in case of diabetic and ischemic patients, it doesn't have any significant difference.

As per sex distribution, both male and female have good result with hydrocolloid dressing as compare to conventional dressing.

Conclusion

General consideration for ulcer management is proper identification and treatment of underlying conditions like complicating metabolic factors and optimization of the local wound environment. Proper dressing improves quality of life of the patient and decreases treatment costs. Optimal healing of ulcer is based on the principle of a moist wound environment, requiring a prompt debridement, control of exudates, infection, edema and proper periwound skin care.

Foam closely complies with all criteria for ideal ulcer dressing which includes the ability to maintain moisture in wound bed, easy to remove, protect the periwound skin, act as barrier for bacteria, maintains wound temperature, provides mechanical protection, cushioning, and conforms to body shape even fits to deep cavities.

In present study, hydrocolloidal dressing helps in making healing process faster in such way making ulcer with early healthy granulation tissue, so patients achieve early skin grafting and decrease hospital stay.

References

1. Textbook of medicine. Cecil. 1996.
2. Sprung P, Hon Z, Ladin DA. Hydrogels and Hydrocolloids: An objective product comparison. *Ostomy Wound Manage* 1998;44:36-46.
3. Banks V, Hagelstein S, Thomas N, *et al.* Comparing hydrocolloid dressings in management of exuding wounds. *Br J Nurs*. 1999; 8:640-6.
4. Shastri RK. A Comparative Study of Foam Dressings And Conventional Gauze Dressings In The Management of Chronic Non-healing Ulcers. *IOSR Journal of Dental and Medical Sciences (IOSRJDMS)*. 2017;16(9):7-81..
5. Seeley J, Jensen JL, Hutcherson J. A randomized clinical Study comparing a hydrocellular dressing to a hydrocolloid dressing in the management of pressure ulcers. *Ostomy Wound Manage*. 1999;45(6):39-44, 46-7.

