Clinical Outcome of Non-occlusive Versus Occlusive Dressing in Postoperative Sutured Wounds

DINESH KUMAR1, AMOL DANIEL2

ABSTRACT

Introduction: The main objective of dressing wounds is to prevent wound infections. Successful wound management depends on an understanding of the healing process combined with knowledge of the properties of the various dressings available. Wounds can heal primarily, secondarily, or by delayed primary closure. The method of dressing includes occlusive and non-occlusive dressing.

Aim: To evaluate the clinical outcome of non-occlusive versus occlusive dressings in postoperative sutured wounds.

Materials and Methods: This was a prospective study done on 298 patients over a period of one and half years from 1st January 2012 to 30th June 2013. All elective inpatients with sutured wounds in the Department of General Surgery requiring local wound care postoperatively were included in this study.

INTRODUCTION

Wound management requires dressing materials and techniques that address the specific needs of the wound. The method of dressing ranges from totally occlusive where the gauze is completely covered by adhesive plaster to non-occlusive where light gauze dressing is held in place by few tape strips [1]. An ideal dressing should provide an optimum environment for moist wound healing because research demonstrates that a moist environment encourages wounds to heal more quickly than a dry one [2]. If left to dry, wounds form a scab or eschar which forces migrating epidermal cells to move deeper, prolonging the healing process [2].

The vast majority of these ‘modern’ dressings are described as occlusive. Occlusive dressings affect wounds by trapping moisture next to the wound bed. This moisture is thought to protect the wound surface by preventing desiccation and additional trauma [3]. It may consist of a sheet of thin plastic affixed with transparent tape” [4]. The majority of non-occlusive dressings include wound dressing pads which includes knitted viscose dressings and gauze dressings [5].

Only few studies have been done on the outcome of occlusive versus non-occlusive dressings in postoperative sutured wounds [6,7]. These constitute a substantial number of publications but an overall low amount of evidence. Hence, virtually no guidelines but a wide range of opinion exist. This study has been planned to obtain a high-level of evidence on the clinical outcome of non-occlusive versus occlusive dressings in postoperative sutured wounds.

MATERIALS AND METHODS

The study was conducted in the Department of General Surgery at Christian Medical College and Hospital, Ludhiana, Punjab, India, from 1st January 2012 to 30th June 2013. It was a hospital based, time bound, prospective study and included patients with postoperative sutured wounds requiring local wound care. The patients were only included after explanation of the study and who gave written informed consent. Ethical clearance was obtained from the Institutional Ethical Committee (IEC).

The patients were divided into two groups according to the type of dressing used i.e., occlusive or non-occlusive. The results obtained were statistically analysed by student t-test and Chi-square test.

Results: In our study, we found that wound infection and wound dehiscence were noted more in non-occlusive dressing group. We also found that mean cost of dressing, frequency of dressing changes, the pain during dressing change, mean duration of hospital stay for non-occlusive dressing was more than occlusive dressing.

Conclusion: After a careful review of current study on wound management and type of dressing, it is evident that occlusive dressing had better clinical outcomes as compared to non-occlusive dressing.

Keywords: Wound dehiscence, Wound infection, Wound management

STATISTICAL ANALYSIS

The results obtained were statistically analysed by student t-test and Chi-square test and p-value less than 0.05 was considered to be statistically significant. Permutated block randomization was carried out using randomization software (RALLOC). Blocks of four were used.
RESULTS

In our study, out of total 298 patients there were 150 (75 male and 75 female) patients in Group A and 148 (72 male and 76 female) patients in Group B. Majority of the studied patients (115 (38.6%)) were in the age group between 46-60 years and the least number (8 (2.7%)) of them were of ages between 76-90 years. Age groups between 15 to 90 years were included in the study. In all the age group, patients were almost equally randomized to Group A and Group B [Table/Fig-1].

The pain occurring during change of dressing was reported more in the non-occlusive dressing group. In both groups, it was seen that the VAS was usually two and three. Mild pain (score=one) and severe pain (score=five) was rarely reported in both the groups [Table/Fig-2]. We found that the majority of patients, 89 (59.3%) and 142 (95.9%) had once daily dressing change in non-occlusive and occlusive dressing group respectively [Table/Fig-3]. We also found that the non-occlusive dressings were changed sooner than the occlusive ones.

The duration of stay in the hospital was almost equal in the two groups where majority of the patients stayed in the hospital for two to seven days. However, a small number of patients in non-occlusive dressing group also had a more prolonged stay for more than 13 days [Table/Fig-4]. Mean duration of hospital stay for non-occlusive dressing group was 6.59 days while for occlusive dressing group it was 3.71 days. Only a minor number of patients from the group with occlusive dressing stayed in the hospital for longer than 7 days.

Wound infection was reported more in those patients who were treated with non-occlusive dressing (28%) as compared to occlusive dressing (10.1%) [Table/Fig-5].

Wound dehiscence was not a common finding in our study. Only eight (2.7%) of the overall patients had wound dehiscence and all of them were from non-occlusive dressing group [Table/Fig-6]. On comparing the cost of dressing, it was noted that total cost of dressing used in both the groups was mainly between Rs. 60–500. Amongst these, it was the occlusive group that had more number of patients with a lower cost of dressing. Mean cost of dressing for non-occlusive dressing group was Rs. 365.49/- while for occlusive dressing it was Rs. 265.18/- [Table/Fig-7].

DISCUSSION

The present study was conducted to assess the clinical outcomes of occlusive and non-occlusive dressings in postoperative sutured wounds.

In the present study, it was observed that the pain occurring during change of dressing was reported significantly more in Group A. This is similar to the finding by Provan A and Phillips TJ who found that the pain was lesser in occlusive type of dressing [10]. This may be due to non-occlusive dressings (particularly gauzes) easily stick to the wound when left in situ and cause pain on removal. This was apparent in our study.

Our results are in agreement with study by Ubbink DT et al., which reported that frequency of dressings changes are significantly lower in Group B patients when compared with Group A patients [11]. Factors contributing for decrease frequency of dressing change in occlusive dressing could be due to the properties of waterproof, conform to body contours, and may stay in place for longer periods of time [12].

In our study, the duration of stay in the hospital was reported significantly more in Group A. This finding is similar to findings by and Mertz PM and Harris B et al., [12,13]. This could be possible as occlusive dressings provide a moist environment, retain wound fluid that contains growth factors, and the potential abilities of proteinases to activate latent growth factors and generate chemotactic peptides through connective tissue breakdown may also contribute to the enhanced healing of occluded wounds [14].

It is generally assumed that occlusive dressing increases the risk for infection by completely sealing the wound and allowing the bacterial count to increase [15,16]. However, we found that the frequency of occurrence of infections were significant more in Group A as compared to Group B. This could be mainly due to the better
Are modern wound dressings a clinical and cost-effective alternative to the use of gauze bandages during postoperative wound care? Our study was designed to compare the cost, bacterial load, and clinical outcomes in postoperative wounds using non-occlusive versus occlusive dressings.

**CONCLUSION**

Occlusive dressings simplify wound care and are an excellent choice in the management of most postoperative wounds. We found superiority of occlusive dressings for postoperative wound care regarding wound healing; wound complication, patient comfort, costs of dressing and nursing time in a clinical setting of surgical patients with sutured wounds. The results of this study have been implemented on our surgical wards and have led to a change in postoperative wound care.

**REFERENCES**