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Comparison of the healing effect of occlusive hydrocolloid dressing and conventional gauze dressing concerning hernia operations in children

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Abstract

The purpose is using the occlusive hydrocolloid dressing (OHD) and gauze dressing (GD) to compare incidence of infection of wound and cost-effectiveness of dressing after hernia operation in children. Eighty children were undergoing hernia surgery, wounds were dressing by OHD or GD. Hydrocolloid dressing was remaining till suture was removed, and GD changed every day after operation. Calculations of cost dressing mean dressing alterations frequency and cost for each dressing in every treatment cluster. There are no variances amongst the two clusters concerning the incidence of wound infection. OHD was less costly and complex than GD, and GD necessary to be altered each day ($p = 0.001$). In conclusion, OHD is less costly to use, and less complex than GD because GD wanted to be altered more times during the period of healing.

Keywords: Hydrocolloid Dressing, Gauze dressing, Inguinal hernia, Wound infection

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Introduction

A wound is an interruption of the epithelial covering stability of the mucosa or skin after thermal injury or physical injury. Consistent with the period and environment of the process of healing, the wound injury is classified as acute and chronic injury [1, 2]. An acute wound injury is damage to the skin area that happens abruptly due to accident or operating injury. It restores at predictable period frequently within 2 weeks' dependent on the extent and deepness of injury in the dermis and epidermis of skin layer [3][4]. Wound curing is an active and hard development of tissue restoration and growth development over 4 stages (i) the coagulation and hemostasis stage (nearly after injury); (ii) the inflammatory stage, (just after the injury to tissue) during which swelling happens; (iii) the proliferation stage, where new tissues and blood vessels are molded and (iv) the maturation stage, in which makeover of new tissues happens [5-9]. Advancement of these stages are mostly determined by type of injury, wound dressing, and its associated pathological circumstances [10].

With the progression in equipment, at present, different wound dressing ingredients types are existing for all wounds types. Wound, whether it is a minor incision or a major incision, it is essential to repair it properly, it is repaired include dressing. The dressing is scheduled to be in contact with the wound, which is unlike strapping that grasps it in place. Generally, for injuries needing debridement, wet-to-dry dressings have been used widely.

Wound curative is the outcome of crossing point between cytokines, growth factors, blood, and the extracellular matrix. The healing process stimulated by cytokines by different pathways such as

encouraging the creation of constituents of the basement membrane, inhibiting dehydration, increasing inflammation and the development of granulation tissue. There are various local and systemic factors affecting These pathways [11]. Local factors consist of hypothermia, pain, infection, radiation, and tissue oxygen tension directly affect the features of the wound whereas systemic factors are the general health or disease state of the individual that affects an individual's ability to rebuild [7]. Recent wound dressing appearance was in the 20th century [12].

Old fashioned injury dressing products comprising gauze, lint, plasters, bandages (natural or artificial) and cotton are dry and used as major or minor dressings for guarding the incision from infections. Gauze dressings prepared from woven and non-woven fibers of cotton, rayon, polyesters give particular defense counter to bacterial infection. Particular disinfected gauze packs are used to absorb exudates and liquid in an open injury with the aid of fibers in these dressings. These dressings need recurrent altering to guard against the maceration of healthy tissues.

Due to too much injury drainage, dressings come to be soaked and adherent to the injured area and when removing it become hurting. Hydrocolloid dressings are between the most commonly used interactive dressings and are made up of two coats, inner colloidal coat, and outer water-impermeable coat. These dressings are consisting of a mixture of gel-forming mediators (carboxymethylcellulose, gelatin, and pectin) with other materials such as elastomers and adhesives [13]. Hydrocolloids are penetrable to water vapor but impervious to bacteria and also have the possessions of debridement and absorb injury exudates [14].

On mild to moderately exudating wounds such as pressure sores, minor burn wounds, and traumatic wounds, hydrocolloids are used. hydrocolloids dressings are suggested for pediatric injury repair management, because they don't cause discomfort when removed [15]. When these hydrocolloids in touch with wound exudate, they form gels and offer a humid situation that aids granulation tissue protection by absorbing exudates. Granuflex™, Comfeel™, Tegasorb™ are existing in formula of pieces or thin layers. hydrocolloid disadvantages are not designated for neuropathic ulcers or highly exudating wounds, and they are frequently used as secondary dressings [13].

This study aimed to compare incidence of infection of wound and cost of dressing after hernia operation in children when using the occlusive hydrocolloid dressing and gauze dressing.

Method

Since November 2016 toward September 2019, eighty children operated on for inguinal hernia were assessed. All operations were doing by the Sector of urology Surgery, Ar-ramadi teaching Hospital. We are divided eighty children to two clusters, we use OHD (comfeel) in one cluster and GD in another cluster. We give cefixim antibiotic postoperatively for 7 days to all child. This study was accepted by the scientific committee of the hospital.

Dressings were assessed by every day wound check till the patient was discharged. Exudate, leakage, adhesion of the dressing to the skin, and transparency were noted. Dressings were altered only if the dressing oozed or glided and if a proven infection of wound is established (identified by presence pus, pyrexia, redness, and confined painfulness).

Removal of gauze dressing is accomplished by postoperative third day (as stated by the sector's routine) to be altered, but Hydrocolloid Dressing was remained in dwelling till stitches were detached at the 7th day of operation. Cosmetic result was evaluated 3 months after operation at the ending of follow-up. This study was planned to match the incidence of infection, and the cost for each dressing kind. The cost calculation signify the number of dressings needed for every treatment cluster by means of the rate of dressing alterations and cost for each dressing. Furthermore, the used constituents fee (OHD, GD, povidone-iodine for disinfection, and cotton balls) throughout the time of wound observation was intended for the OHD and GD clusters.

We clarified the principles of this study to all patients and informed agreement was got from the patient earlier incoming the experimental. These data are studied by using (Statistical Package for the Social Sciences) for windows version 20. Outcomes are articulated as means ± SD. The t-test is used to match the mean values of constant variables. A P-value of lesser than 0.05 was reflected statistically important.

Results

Eighty children involved in this study, 40 were enrolled in to the Occlusive Hydrocolloid Dressing cluster and another 40 into the Gauze Dressing cluster. There aren't patients were omitted in our study. There are sixty-three male and seventeen female; the age mean was 3.2 ± 2.0 years (range, 0.5 – 8 years). The sex and age scattering didn't vary between the 2 clusters. All cases existing with inguinal hernia and undescended testis (in a male).

Mean incision measurement was 2.9 ± 0.33 cm in both clusters (Table 1). During the whole postoperative period, the OHD was entirely transparent, there is no so opaque dressing and the incisions and stitches, in all OHD cases, could be seen from the dressing (Figure 2). Wound infection happened in 15 patients postoperatively, eight in Occlusive Hydrocolloid Dressing cluster and seven in Gauze Dressing cluster (p=0.778) table 1. There are alterations concerning the requirement for dressings to be changed (no. of dressing) and the cost of dressing between the two groups (p =0.001). The mean sequel period was 60 days in together OHD and GD clusters. In OHD cluster, the mean scar thicknesses were 2.2 ± 0.37 mm and in GD cluster were 2.37 ± 0.4 mm (Table 1 & figure1). OHD had been altered less frequently than GD. Though, OHD wasn't costly than GD, and GD had been altered every day (Table 1).

Table 1.

Outcomes of the occlusive hydrocolloid dressing (OHD) and gauze dressing (GD) clusters

characteristics of wound	OHD	GD	P.value
length Width (cm)	2.93 ± 0.32	2.91 ± 0.33	0.736
Optimum time (min)	20.4 ± 5.3	20.3 ± 4.1	0.925
Scar width (mm)	2.2 ± 0.37	2.37 ± 0.4	0.089
No. of dressing	1.15 ± 0.36	5.07 ± 0.76	0.001
Cost of dressing (ID)	8.44 ± 2.51	25.5 ± 5.40	0.001
Incidence of infection	1.8 ± 0.41	1.82 ± 0.38	0.778

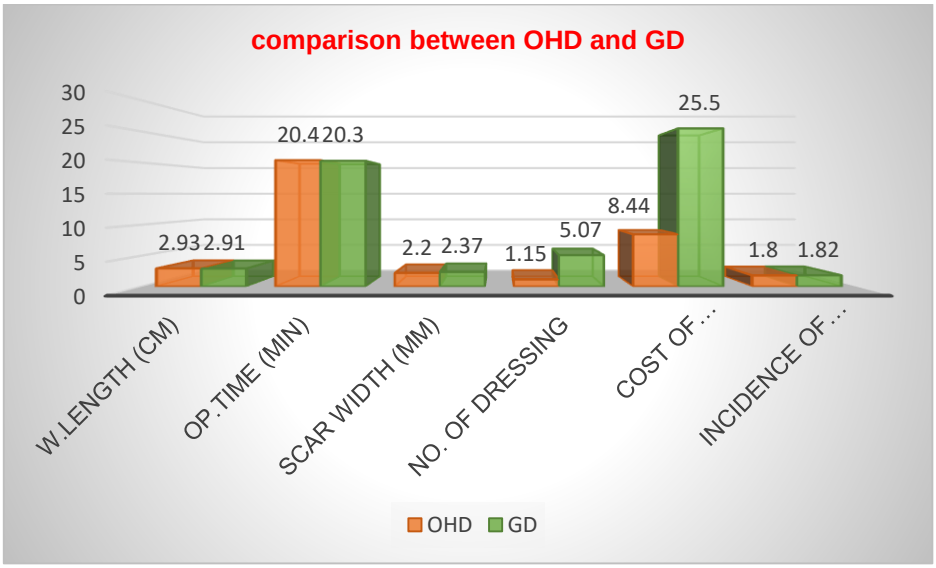

Figure 1.

Comparison between OHD and GD**.**

Figure 2.

During the whole postoperative period, the OHD was entirely transparent, there is no so opaque dressing and the incisions and stitches, in all OHD cases, could be seen from the dressing.

Discussion

In this study, the results demonstrate that regardless of the lower fee of schedule using gauze dressings but it is more expensive and fewer cost-effective thana schedule using occlusive hydrocolloid dressing. Repetitive dressings of wound stitches are built on practice and, to our information, the use of such dressings is not reinforced systematically. In our study, we assessed the presentation of a translucent OHD on I.H incisions during the initial period postoperatively. We establish that the OHD stick to the skin firmly till removal of stitches, it isn't become loose or sliding at the boundaries in most cases. The small quantity of exudates that leakages from the incision is simply enclosed beneath dressing. Leakage and exudate are not a problem.

The outcomes of this study are reliable with the widespread of earlier studies that matched costs and healing in patients treated with the current occlusive hydrocolloid dressing. As reported before the dressings persist translucent till removal of stitches, therefore permitting good controller of the incision region and stiches during all period postoperatively. In our study, only a small cloudiness was distinguished, and such cloudiness didn't hinder assessment of the incision region. Children described discomfort with removal of dressing once used GD, and this type of dressing was costly. Though, OHD wasn't further costly than GD which had been altered everyday [16][17]. Karaya gum has an action of growth-inhibiting against both Pseudomonas aeruginosa and Escherichia coli bacteria [18]. Our outcomes approve the statistics that have been designated by others: that the frequency of infection of incision doesn't rise when using OHD on operating wound.

Using of an impermeable incisional guard edge resulted in decrease in postoperative infection of incision proportions in the contaminated cluster matched to patients that not used incision guard [19] in the current study The main element of cost-effectiveness was the lower frequency of dressing alteration detected in the occlusive hydrocolloids treatment procedure. it is constant with further studies and The greatest obvious truth concerning usage of OHD in the management of acute injuries (a surgical incision) is more obedience to patients because of they are expert insignificant pain score and they are

talented to perform their normal regular actions, containing bathing or showering, without any evident influence on the wound dressing.

We are unable to approve the results of earlier information which recommended that the healing of moist incision might decrease disfiguring and tenderness[16][17]. incisions concealed with an occlusive hydrocolloid dressing documented a decrease inflammatory reaction and less inflammatory scar [16]. While some alterations were seen three months after operation in our documents, the incision scars width in children using Occlusive Hydrocolloid Dressing was small. Additional studies are essential to clear up the outcome of occlusive hydrocolloid dressings on scarring formation.

Conclusion

Accordingly, to our study OHD is less costly to use, and less complicated than GD because GD needed to be changed more times during the period of healing. The greatest obvious truth concerning usage of OHD in the management of acute injuries (a surgical incision) is more obedience to patients because of they are expert insignificant pain score and they are talented to perform their normal regular actions, containing bathing or showering, without any evident influence on the wound dressing.

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