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Application of Alginate Oligosaccharides and Sodium Alginate in Breast Abscess Incision and Drainage

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Abstract. Objective: To evaluate the efficacy of alginate oligosaccharides and sodium alginate (seaweed biological glue) after incision drainage for breast abscess. Methods: randomly selected 80 patients with breast abscess, observation group and control group 40 cases, observation group using alginate oligosaccharides, sodium alginate (seaweed biological glue) for postoperative patients with breast abscess incision drainage treatment disposal, the control group with saline treatment disposal, using t test to compare two groups of patients with postoperative incision healing time, switching frequency, the satisfaction degree of the patients of postoperative scar, using chi-square test to compare the postoperative recurrence rate. Results: the incisions of the two groups were completely healed, and the observation group had shorter healing time, fewer drug changes, lower recurrence rate and higher satisfaction to postoperative scars than the control group. Conclusion: the treatment of patients with breast abscess after open and drainage with algal oligosaccharide and sodium alginate (alginate biogel) after operation can significantly shorten the wound healing time of patients, reduce The Times of dressing changes, and improve patients' satisfaction with scars and reduce recurrence.

1. Introduction

Breast infections are divided into lactation and non-lactation, or puerperal and non-puerperal. They may be associated with superficial skin or underlying lesions. Breast abscesses are most common in lactating women, but also in non-lactating women [1]. Breast abscess is a painful infection caused by bacteria, which is the accumulation of local pus in the mammary gland, usually caused by the improper treatment of infection mastitis [2].Once an abscess has formed in the breast, purgation is a fundamental principle of medical intervention. The recommended treatment for breast abscess is surgical incision and drainage [2].However, patients with this method have a longer wound healing time, more frequent dressing changes, and need to endure the pain caused by frequent dressing changes. Moreover, scars affect the appearance of the breasts, and the recurrence rate is higher [3]..It is believed that the formation of bacterial biofilm is the main obstacle of chronic wound healing [4]..Once the wound forms biofilm, the bacteria will have a strong resistance, so that the wound in the presence of bacterial biofilm is prone to long-term non-healing. How to effectively destroy and remove the bacterial biofilm and prevent the formation of bacterial biofilm is the key point to treat the chronic and difficult wound. In this study, a randomized controlled trial was conducted on the treatment of patients with breast abscess who underwent surgical drainage with alginate oligosaccharides and sodium alginate (seaweed biological glue) , and it was found that alginate oligosaccharides and sodium alginate (seaweed biological glue) were significantly effective in the treatment of breast abscess.

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2. Materials and Methods

2.1. General Information

The breast abscess patients admitted to our hospital were all diagnosed as breast abscess by imaging examination and puncture cytology [5], and 80 patients were randomly selected, divided into observation group and control group, excluding lactation and other basic diseases.

2.2. Treatment Method

Both groups of patients with breast abscess were given open drainage for breast abscess.

Matched Group Methods: after open drainage and drainage, the wound and surrounding skin were sterilized by iodine fu, and the abscess cavity was rinsed repeatedly with normal saline. Sterile gauze was filled and drainage was given, and the outer layer of sterile gauze was wrapped and fixed. Change the dressing regularly according to the exudation of gauze. The method of dressing change is the same as above.

Observation Group Methods: after incision and drainage of breast abscess, the wound and surrounding skin were sterilized with iodine fu, and the cavity was repeatedly rinsed with alginate oligosaccharides, sodium alginate (seaweed biological glue), sterile gauze was filled and drainage, and sterile gauze was wrapped and fixed. Change the dressing regularly according to the exudation of gauze. The method of dressing change is the same as above.

2.3. Observation Indicators and Evaluation Criteria

Time of wound healing, number of dressing changes, recurrence rate and patients' satisfaction with scar were observed. Wound healing: the wound was completely closed without swelling, exudation, subcutaneous hydrops, and color doppler ultrasonography without effusion residue. Recurrence rate: patients were followed up regularly for 1 year after discharge. Scar satisfaction: 1-10, with 10 being very satisfied.

2.4. Statistical Methods

Application SPSS13.0 statistical software for statistical analysis. The quantitative data were represented by x plus or minus s, and t test was used for inter-group comparison. Comparison of recurrence rate between the 2 groups was performed by screening 2 test, $P < 0.5$.The difference was statistically significant.

3. Results

All incisions were healed in both groups. Compared with the control group, the observation group had shorter wound healing time, fewer drug changes and lower recurrence rate, and the patients had higher satisfaction scores on scars.

See the table below:

Table 1. Compared average number of drug changes (the control group vs. the observation group).

	n	**Healing time**	**Average number of drug changes**
Matched Group	40	13.2(±1.85)	6.5
Observation Group	40	26.2(±2.15)	18.5
P	——	P<0.05	P<0.05

Table 2. Compared scar satisfaction scores (the control group vs.the observation group).

Group	**n**	**Scar satisfaction scores**
Matched Group	40	3.5
Observation Group	40	6.8
P	——	P<0.05

Table 3. Compared the recurrence rate (the control group vs.the observation group).

Group	n	The number of cases of recurrence	The recurrence rate
Matched Group	40	4	10%
Observation Group	40	0	0
P	——	0.32	

4. Discussion

Breast abscess is breast-feeding women's common diseases, multiple in first-time mothers, much less than for mastitis treatment or treatment is not completely, causes mainly milk deposition and bacteria invasion, once formed, abscess drainage operation is the effective means of treatment, but the traditional therapy in patients with treatment time is long, dressing change frequently, a certain amount of pain to the patient, causing fear and psychological burden of patients, and the recurrence rate is higher. Negative psychological feelings can affect wound healing. Winter, a British zoologist, has confirmed through research that wound healing in the wet healing environment is twice as fast as that in the dry environment, which leads to the wet healing theory. Wet healing can promote wound healing [6].The treatment of wound infection mainly targets at bacteria and the biofilm formed by them. Therefore, in the treatment, thorough debridement and drainage should be conducted in time to destroy the bacterial biofilm, reduce the number of bacteria and repair the wound as soon as possible. Traditional dressing cannot keep the wound moist. The adhesion of the wound causes pain when dressing is changed. After the secretion infiltrates the dressing, the pathogen can invade the tissue and cause infection. The traditional dressing can not lock the percolation, and frequent dressing changes, resulting in long wound healing time. Seaweed biological glue) is a kind of liquid gel made of alginate oligosaccharides and sodium alginate extracted from the natural Marine plant alga via enzymolysis reaction. It is a very good washing fluid for trauma wound, which is passed to cells

Function protection, regulation and maintenance of various biological factors, so as to enhance the t-pa activity of intercutaneous tissue, promote the complete repair of intercutaneous tissue and maintain its integrity; Due to the protection of normal biological activity of tissues, the exudation of inflammation is very little, edema is eliminated, and pain should be alleviated accordingly [7].The product is rich in Marine biological active material brown algae polysaccharides. Studies have shown that brown algae polysaccharides can effectively inhibit the reproduction of bacteria [8], and have such biological activities as antioxidant, anti-tumor and immune regulation [9].

In this study, alginate oligosaccharides and sodium alginate (seaweed biological glue) were used to achieve a cure rate of 100% without recurrence, which was significantly higher than the traditional treatment, shortening the healing time, reducing The Times of dressing changes, indirectly alleviating the pain caused by patients' dressing changes, and significantly improving patients' satisfaction with scars.

Above all, alginate oligosaccharides, sodium alginate (seaweed biological glue) has significant curative effect in the mammary gland abscess incision drainage, alginate oligosaccharides, sodium alginate (seaweed biological glue) used for wound after formation of biological isolation barriers, thereby reducing the activity of bacteria and the ability to reproduce, and provide weak acid wet for wound healing environment, the survival of the center of this kind of environment is ideal for granulocyte, prompting neutrophils play to the role of the engulf bacteria, and to keep the cell vitality, promote wound healing, protection of new granulation, debridement effect; Effectively remove the wound exudate, along with the drainage of the bacteria to remove, then reach the role of antimicrobial resistance to infection, accelerate cell growth, and the scar after mild, improved wound healing rate and reduce the wound infection rate, effectively prevent reinfection, can effectively control infection, reduce the switching frequency, reduce the pain of patients for treatment, promote the healing of the wound, reduce scar formation. In addition, seaweed bio adhesive is good histocompatibility, biodegradable and absorbable to prevent tissue adhesion, which can avoid the adverse reactions of currently sold anti-inflammatory drugs. It is suitable for any shaped inflammatory wound, and can be effectively used for the prevention and treatment of external inflammation, and can promote the healing of traumatic wound.

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