Use of Undecylenamide Propyl Betaine and Polyhexamidine in the Treatment of Mammary Abscess with Mammotome System

Ya-Yun MIAO\textsuperscript{1,a}, Guang SUN\textsuperscript{1,b,*}, Yu-Xi JIA\textsuperscript{2,c**}

\textsuperscript{1}Breast Surgical Department of China-Japan Union Hospital Jilin University, 126 Xiantai Street, Changchun 130033, P.R. China
\textsuperscript{2}Department of Dermatology of China-Japan Union Hospital Jilin University, 126 Xiantai Street, Changchun 130033, P.R. China

\textsuperscript{a}miaoyayun@foxmail.com, \textsuperscript{b}guangsun2013@163.com, \textsuperscript{c}jiayuxi2006@126.com,

*Corresponding author
**Co-Corresponding author

Keywords: Mammotome system, Undecylenamidopropyl betaine, Polyhexamidine, Prontosan, Breast abscess, Incision and drainage.

Abstract. Objective: To investigate the application value of elemene amidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution) in the treatment of breast abscess with Mammotome system and abscess incision and drainage. Methods: Totally 80 breast abscess patients treated in our hospital were randomly divided into 2 groups, which were divided into two groups: the control group and the control group. The two groups were treated with undecylenamide propyl betaine Polygonum biguanide (Prontosan wound irrigation solution) repeated washing, and give the conventional dressing, t test was used to compare the two groups of wound healing time, dressing change, dressing pain situation, the use of 2 test to compare the two groups of patients relapse rate . Results: Compared with incision and drainage group, the wound healing time was shorter, the number of dressings was less, the degree of dressing change was lighter, the relapse rate between two groups was higher than that of the control group low.

Introduction

Breast abscess is a common disease in lactating women, mostly mastitis treatment is not timely and incomplete treatment [1], mainly associated with milk deposition and bacterial invasion. Abscess once diagnosed, the traditional treatment for abscess incision and drainage [2], wound healing for a long time, changing the frequency of more patients with a huge psychological and physical fear. In order to bring better treatment to patients, this study was to explore the combination of Mammotome and undecylenamide propyl betaine and polyhexamidine Prontosan wound irrigation solution) in the treatment of breast abscess patients, combined with incision and drainage Comparison of protocols for the treatment of undecylenamide propyl betaine and polyhexamidine (Prontosan wound irrigation solution). The results are reported as below.
Data and Methods

General Information

Patients with breast abscess who visited our hospital from July 2013 to July 2015 were grouped by treatment. Randomly selected 40 cases of combination of Mammotome combined with undecylenamidopropyl betaine and poly biguanide (Prontosan wound irrigation solution) as the control group, randomized 40 cases of breast abscess incision and drainage combined with eleven Cocamidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution) as a cut-away drainage group. All patients voluntarily chose to enter the Mammotome group and incision and drainage groups, all of whom were female.

Treatment

Two groups of patients were given routine preoperative examination, diagnosis of no underlying diseases and no blood system conditions,

Mammotome treatment: preoperative ultrasound positioning, given conventional disinfection shop towels, under local anesthesia Mammotome operation, positioning the site under ultrasound to cut the skin 3-5mm, the Mammotome screw cutter stab Into the breast and into the internal, followed by suction and peeling, suction and destruction of pus pus separation, removal of necrotic tissue, and then given undecylenamide propyl betaine and poly biguanide (Prontosan wound irrigation solution) repeated Rinse until clear liquid is drawn. Finally, under ultrasound guidance Meridian Needle Road into the drainage tube, fixed and then connected negative pressure bottle. After giving the patient sterile gauze, elastic bandage pressure fixation. Patients were then given regular dressing changes (once per day), with undecylenamidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution). After the injection of @ protease dilution (which has the inflammation of the decomposition site of fibrin coagulation, promote blood clots purulent secretions and necrotic tissue dissolution and decomposition still lipolytic enzyme role, you can pus within the pus, Hemorrhage, necrosis of tissue digestion, degeneration of the organization, the protein is broken down into peptides or amino acids, to depolymerization, so that organizations reduce the density, permeability, improve microcirculation, can inhibit the inflammatory response, exudation and necrosis of the material And eliminate edema. Chymotrypsin can also promote the growth of nascent granulation tissue) [3], until the flush drainage fluid is turbid so far. Regular review of breast ultrasound, observed abscess healing. Open the drainage group: conventional disinfection, shop towel, under local anesthesia, for the areola part of the abscess, choose to do along the areolar edge incision, abscess deep breasts, along the mammy folds do curved incision in the abscess than Large, poor drainage of the case, then choose the opposite drainage catheter; breast within the radial incision given to avoid damage to the milk tube, the occurrence of milk fistula. Cut the skin and subcutaneous tissue, with hemostatic forceps for blunt dissection, into the abscess after proptosis, so that pus outflow, and then into the abscess with your fingers exploration, and separation of fiber spacing, if necessary, to expand the incision to prevent the lower Pus residue, when needed for oral drainage. Finally, with undecylenamide propyl betaine and poly biguanide biguanide (Prontosan wound irrigation solution) repeatedly wash the abscess, drainage in the low position of the drainage tube and fixed, then negative pressure drainage bottle. Finally given sterile gauze, elastic bandage bandaged. After giving the patient sterile gauze, elastic bandage pressure fixation. The patient is then given a regular dressing change (once every 1 day) and the protease dilution is infused with undecylenamidopropyl betaine and
polyhexamidine (Prontosan wound irrigation solution) until the irrigating drainage is turbid. Regular review of breast ultrasound, observed abscess healing.

**Observation Indicators and Evaluation Criteria**

Wound healing: The wound healing time, dressing change, dressing pain and recurrence rate in the two groups was observed. Wound healing: the wound was completely closed; drainage tube has been pulled out, no swelling, no exudation, no subcutaneous effusion, color Doppler ultrasound examination of the abscess healing well, no residual fluid, recording the healing time of each patient and the dressing frequency. Dressing pain degree: recurrence rate: patients discharged from hospital, asked the patient to check regularly, followed up for 2 years and recorded. Internationally accepted numerical rating scale (NRS) score method to record the degree of pain [4], with 0 to 10 represent varying degrees of pain. Pain grading standards were: 0, painless; 1 ~ 3, mild pain; 4 ~ 6: moderate pain; 7 ~ 10 severe pain, record the degree of pain in each patient.

**Statistical processing**

The wound data was expressed as (x ± s). The wound healing time, the number of dressing changes and the degree of dressing change were compared by t test. The counting data was expressed in %, and the recurrence rate was compared with χ² Test, P <0.05 for the difference was highly significant.

**Results**

Two groups of patients with wound healing time, the number of dressing changes, the pain of dressing change statistics in Table 1, the recurrence rate statistics in Table 2.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Healing time (t)</th>
<th>Dressing frequency</th>
<th>Dressing pain level (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammotome group</td>
<td>40</td>
<td>7.5(±1.21)</td>
<td>7</td>
<td>3.8(±1.78)</td>
</tr>
<tr>
<td>The drainage group</td>
<td>40</td>
<td>15.2(±1.85)</td>
<td>15</td>
<td>2.3(±1.21)</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>P&lt;0.05</td>
<td>P&lt;0.05</td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>

In the two groups, the wound healing time, the frequency of dressing change and the pain degree of dressing change were all less than 0.05, the difference was statistically significant.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>The number of recurrence cases</th>
<th>recurrence rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammotome group</td>
<td>40</td>
<td>1</td>
<td>2.5%</td>
</tr>
<tr>
<td>The drainage group</td>
<td>40</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>χ² points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>
Discussion

Breast abscess due to the early treatment of acute mastitis is not lead to early, lactating women, especially early maternal women often suffer from acute mastitis, acute mastitis is acute suppurative infection of the breast, early in the infection, patients with breast pain, breast self-local red, swollen, hot, pain and other acute symptoms, inflammation is not controlled in time, patients appear shivering, fever, white blood cell count and other performance, a few days later will have a breast abscess. Abscess is not treated in time, will lead to abscess burst outside, the formation of sinus. Abscesses can also be worn to the tissue between the pectoral muscles and the breasts, producing post-breast abscesses that can easily cause sepsis.

Traditional breast abscess incision, drainage, and abscess dressing method long course of treatment, severe pain, scar significantly after healing of abscess, seriously affecting the appearance. Although Merton’s surgery can not directly separate the abscess and flush it directly, as conventional abscess incision and drainage, Mahmuton’s surgery can accurately detect all the abscess and septum under the guidance of ultrasound and can cut the full separation of the abscess, So that the complete drainage of pus, surgery can also be repeatedly washed under ultrasound guidance, therefore, is not likely to cause pus residue and abscess recurrence. The results of this study Mamnotome catheter drainage combined with undecylenamidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution) is the ultrasound-guided breast abscess accurate positioning treatment, with short course of treatment, pain and light. Abscess scar was not obvious after healing and so on. Undecylenamidopropyl betaine and polyhexamethylene biguanide (Prontosan wound irrigation solution) can make bacteria cover layer to dissolve denatured proteins, to prevent and remove bacterial biofilm, which can effectively reduce the risk of wound infection and improve the wound Healing rate and reduce the rate of wound infection [5]; polyhexanide spectrum bactericidal effect, strong tissue compatibility, and no drug resistance; undecyl amido propyl betaine is a highly effective surfactant, Can quickly and effectively remove wound tissue fragments and biofilm, promote the separation of wound contaminants, stimulate the tissue is small, so as to effectively prevent reinfection. The patients in the Mamnotome group recovered significantly faster than the incision and drainage group. This is because ultrasound-guided Maison Tong tube drainage on the destruction of normal breast tissue abscess incision drainage is small, regular draining Prontosan wound irrigation solution repeatedly washed significantly reduce the surgical trauma and accelerate wound healing, Reducing the degree of pain when the patient dressing; and incision and drainage group due to incision larger and is infected with wounds, healing time is relatively long, the dressing liquid to patients with some pain.

The results of this study show that the method of ultrasound-guided mesotherapy with catheter ablation combined with undecylenamidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution) for the treatment of breast abscess is rapid and simple and has good curative effect. Undecyl amido propyl betaine and poly biguanide (Prontosan wound irrigation solution) rinse thoroughly abscess application, so that the abscess healing faster, lessen the injury, shorten the course of the disease. In the course of treatment, patients with light pain, fast healing, and no significant complications, high safety. Ultrasound-guided Mamnotome catheter drainage combined with undecylenamidopropyl betaine and polyhexamidine (Prontosan wound irrigation solution) repeated washing abscess treatment of breast abscess provides a new treatment for breast abscess patients. In clinical practice has a certain value.
References


