Application of New Dressing to Post-operation Skin Flap Necrosis in Breast Cancer Patients Damllms Scot and Vibas Cross

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Abstract. Purpose: to discuss the application and effects of new dressing to post-operation skin flap necrosis in breast cancer patients. Method: 20 breast cancer patients with post-operation skin flap necrosis were selected and assigned to the test group and controlled group. Silver ion dressing and moist healing theory were applied in the test group, while a traditional dressing change method was applied to the controlled group. Two groups were compared to each other in terms of incision healing time, number of dressing changes and treatment expense. Results: the test group is better than the controlled group in terms of incision healing time, number of dressing changes and treatment expense. Conclusions: compared to traditional dressing change methods, good effects can be achieved by treating the post-operation skin flap necrosis in breast cancer patients with silver ion dressing and moist healing theory. Skin flap necrosis causes the healing of the incision to be delayed. Necrotic tissues are plenty, number of dressing changes and duration are increased, repeated removal of gauze causes the wound to bleed and relatively large scars remaining after the healing of the wound surface are sometimes accompanied with dysfunction and this causes extremely physical and psychological pains and great economic burden to patients.

1. Materials and Methods

1.1. Materials  
20 female breast cancer patients who suffered from skin flap necrosis after radical mastectomy at our department from March 2016 to June 2017 were selected, 36 to 75 years old and averagely 60 years old. All patients had no chronic diseases such as diabetes.

1.2. Methods  
20 breast cancer patients who suffered from skin flap necrosis after radical mastectomy were randomly assigned to two groups. Dressings in the test group were changed with hydrogel, foam silver ion dressing, hydrophilic fiber, mesalt, cohesionless foam dressing and hydrocolloid and the moist healing theory was applied to the test group, while the traditional dressing change method was applied to the controlled group. Both groups were compared to each other in terms of the incision healing time, number of dressing changes and all expenses during dressing change. Comparison between both groups in terms of general condition is not statistically significant and is feasible.
The patient can be diagnosed as healed if the skin flap is completely fitted with the chest wall at the sneaking of the wound, blood supply to the skin flap is good and no incision cracking occurs.

1.2.1. Statistical methods:
Data were represented by mean ± standard deviation (x ± s). Statistical analysis was conducted by using the SPSS 13.0 software, comparison was made by using the chi-square test and P <0.05 indicates that the difference is statistically significant.

2. Results
Compared to the controlled group, P <0.05 is compared to the controlled group and P <0.01.

| Group         | Mean healing time (d) | Number of dressing changes | Treatment expense (yuan) |
|---------------|-----------------------|----------------------------|--------------------------|
| Test group    | 18.62 ±4.53           | 6.83 ±2.23                 | 2 312 ±456.3             |
| Controlled    | 27.20 ±5.66           | 18.31 ±2.89                | 3326 ±693.1              |

3. Conclusions
The test group is better than the controlled group in terms of mean healing time, number of dressing changes and treatment expense in this study and the difference is statistically significant.

In the traditional dressing change method, only the surface of black crust was washed and covered with drugs, but these drugs could not prevent black crust from acting on tissues and promoting growth. Moreover, when there was plenty seepage below the crust or infections occurred, the black crust would hamper the drainage of effusion and in turn worsen the infection of the wound surface. If new dressings were used, further treatment was done by using appropriate moist healing dressings in different healing phases including the following 3 phases[3] (1) debridement: necrotic tissues or crusta were dissolved and removed by using moist dressing hydrogel and covered with cohesionless foam dressing to absorb seepage for the purpose of performing safe and effective autolysis and debridement. When necrotic tissues or crusta in the wound surface were soft, a combination of surgical debridement and autolysis debridement can be applied to accelerate the removal of necrotic tissues and dressings can be changed once every other day. (2) infection control: when there was plenty seepage in the wound, to prevent infection and control smell, alginate silver, hydrophilic fiber silver dressing or foam silver dressing were used to absorb seepage[4]; when there was little seepage, metallic silver dressing or nano crystal silver dressing was used to rapidly decrease or remove smell of the wound. (3) granulation growth phase: when the infection of the wound surface was controlled, seepage was reduced and the incision was in the granulation growth phase, mesalt and oily yarn were used to maintain the moist environment and accelerate transition of epithelial cells and dressings were changed once every 2 to 3 days. The wound healing time was averagely shortened by 4 days and the number of dressing changes was decreased by 8 compared to the traditional dressing change method in the controlled group. Additionally, the granulation tissue avulsion injury was caused to the patient when dressings in the patient were changed and this caused the wound surface to bleed repeatedly and healing to be delayed, promoted the formation of scar and affected the activity of the shoulder joint in the patient after operation.

4. Discussion
Skin flap necrosis is the common complication after radical mastectomy. The performance of radical mastectomy, large-area dissection of cancer tissues and lymph glands and use of endotherm knife caused excessive skin flaps to be transplanted and blood capillary within the dermis to be damaged and this affected blood supply causing partial or whole necrosis of skin flaps[5]. In the traditional dressing change method, crusta needed to be mechanically removed, dressings needed to be frequently changed, the wound had to be kept dry, during dressing change the wound easily adhered to the
dressings and this easily damaged and destructed the wound surface and granulation tissues, thereby causing the wound healing speed to be low while increasing the pain in the patient and scars. The loss of a breast on one side caused psychological burden to the patient and the delay of healing of the wound also affected the plastic surgery. Frequent depression, panic and dysphoria in the patient affected prognosis. The use of new dressings shortens the wound healing time, relieved the pain during the dressing change in the patient, saves the expense for dressing change and enables the patient to be confident about the subsequent life. Animal tests done by George et al. in 1962 indicate that the moist environment of the wound surface can decrease necrosis of tissues and accelerate the formation of new epitheliums[6]. The hydrogel used in the patient dissolves necrosis tissues by means of collagen breakdown enzyme in the seepage in the wound to decrease bleeding in the wound surface which is caused by mechanical debridement and pain in the patient[7]. The main component of silver ion foam dressing which resists infection is sodium zirconium phosphate silver. Silver ions are released by means of water activation when liquid permeates from the wound and can persist for 7 days. It is mainly used for controlling the development of the wound infection after radical mastectomy[8]. The mesalt and oily yarn during the granulation growth phase plays the main role of promoting rapid proliferation of granulation tissues, flattening the wound surface, benefiting epithelial crawling and promoting the healing of the wound. The cohesionless foam dressing does not adhere to the wound surface when removed and this effectively protects new tissues. The sealed environment prevents bacteria from intruding and restricts them from reproducing on the wound surface. Thanks to the autolysis of moist wound surface, debridement can be simplified and the healing of the wound can be accelerated.

Therefore, compared to the traditional dressing change method, good effects can be achieved by treating skin flap necrosis after radical mastectomy with silver ion dressing and moist healing theory.

5. References

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