

The Impact of Nipple Repair in the Treatment of Lactating Nipple Injury

HAIFENG GAO (✉ gaohaifengghf@sina.com)

Haidian Maternal and Child Health Hospital <https://orcid.org/0000-0002-4245-2430>

jie Wang

Haidian Maternal and Child Health Hospital

Songtao Ding

Haidian Maternal and Child Health Hospital

Yan Li

Haidian Maternal and Child Health Hospital

Yi Zhang

Haidian Maternal and Child Health Hospital

Yajun Gao

Haidian Maternal and Child Health Hospital

Xiangping He

Haidian Maternal and Child Health Hospital

Si Chen

Haidian Maternal and Child Health Hospital

Xingxing Liu

Haidian Maternal and Child Health Hospital

Hongwei Zhang

Haidian Maternal and Child Health Hospital

Hongyan Liu

Haidian Maternal and Child Health Hospital

Ying Chen

Haidian Maternal and Child Health Hospital

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Abstract

Objective To explore the effect of nipple repair in the treatment of lactating nipple injury.

Methods Patients with nipple lesions admitted to the Maternal and Child Health Hospital of Haidian District from December 2015 to January 2020 were retrospective control study. The patients received nipple repair was the study group, the patients did not treated with medicine or surgery was the control group. Patients in both groups continued to be exclusively breastfeed with good sucking, The method of chi-square test was adopted by using SPSS24.0 statistical software to compare the difference of healing effect of nipple injury, pain relief rate, and recurrence rate of nipple injury.

Results A total of 167 patients were enrolled, including in the 81 study group and 86 in the control group. The cure rates of the nipple injury in the study group and in the control group were 54.3% (44/81) and 26.7% (23/86) ($\chi^2 = 13.451$, $P = 0.001$). The complete pain relief rate was 48.1% (39/81) and 23.3% (20/86) ($\chi^2 = 14.170$, $P = 0.001$). The recurrence rate was 36.4% (16/44) and 34.8% (8/23) ($\chi^2 = 0.016$, $P = 0.898$).

Conclusion For patients with no improvement in nipple damage after correction of etiology, nipple repair can improve the healing environment of nipple breakage, relieve nipple pain.

Introduction

The incidence of nipple injury is 58–62.9% [1], which is the most common problem for nursing mothers [2,3]. The nipple pain caused by nipple injury not only brings the bad feeling of pain but also subjectively shortens the breastfeeding time [2]. Moreover, it may increase the mother's mental stress by affecting the mother's mood, sleep, and general daily activities, thus influencing the milk secretion and shortening the time of breastfeeding [4–5]. It is one of the main reasons for the mother to stop breastfeeding [1]. Improper or untimely treatment may induce milk deposition and mastitis [6].

Most studies suggest that the causes of nipple injury include inappropriate posture and poor connection, short tongue ligament, infection, insufficient milk, mastitis, flat or depressed nipple, vasospasm, and infantile oral structure abnormality. among them, the inappropriate position or poor connection of the baby is the most common cause [2]. Currently, the clinical problem is that some nipple damage is unresolved or improved after removal of the cause. In this study, prospective selected the patients with unimproved nipple injury after correction of the cause were treated with nipple repair and was not treated with medicine or surgery, patients in both groups continued to be exclusively breastfeed with good sucking, to evaluate the therapeutic effect of nipple repair on nipple damage, we report as follows:

Materials And Methods

Design

A prospective study was conducted. The study was approved by the Ethics Committee. All participants provided informed consent.

Setting

The study took place at the breast disease prevention and treatment center in the hospital which are almost 15000 mastitis patients, 1000 breast abscess patients and 2500 nipple injury patients every year. All the team members are trained in the core curriculum of internationally certified lactation consultants.

Sample

This study included patients with nipple injuries from December 2015 to January 2020 in the Haidian District Maternal and Child Health Hospital in Beijing. Inclusion criteria: (1) Patients with nipple injury within 4 months after delivery, presented as white matter keratinization and necrotic tissue in the nipple; (2) repeated nipple pain, or milk deposit or mastitis in the corresponding area; (3) The nipple injury remained no relief for more than two weeks after the etiology was corrected; (4) no acute mastitis such as fever. Exclusion criteria: (1) The baby showed a short lingual ligament or abnormal structure of the palatal; (2) the mother was infected with the nipple; (3) the mother showed a flat or concave nipple; (4) the mother presented nipple vasospasm; (5) uncorrected poor breastfeeding connection.

All enrolled patients were randomly divided into the study group control group.

Measurement

In the control group, the patients continued to be exclusively breastfeed with good sucking, was not treated with medicine or surgery. In the study group the patients were treated with nipple repair, the operation is as follows: the nipple was disinfected by iodophor and anesthetized by 1% lidocaine. The nipple lesion was completely debrided with ophthalmic scissors to remove the keratinized necrosis tissue until fresh nipple tissue is visible, including all about direction and depth, continued to be exclusively breastfeed with good sucking after compression and hemostasis. (Image. 1–3).

Data Collection

All patients were followed up on the seventh day after treatment to assess healing effect of nipple injury, and the degree of pain. After 1 month, the local recurrence was followed up by telephone.

The evaluation of healing effect of nipple injury was expressed according to the change of the long diameter the damaged area after treatment, the evaluation criteria were as follows: cure, complete healing

of the injury; improvement, reduction of the long diameter; ineffective, no reduction the long diameter or increased.

The evaluation of pain relief degree was based on the patient's pre-treatment pain status. The evaluation criteria were as follows: complete remission, pain disappeared; partial remission, pain was relieved; no remission, no change in pain or pain enhanced.

Recurrence: In patients who were cured, a recurrent nipple lesion in the same site of the same breast within 1 month was considered a relapse.

Data analysis

The statistical software package SPSS 24.0 (SPSS Inc.,Chicago, IL) was used for all data analyses. Chi-square test method was used to compare the difference in healing effect of nipple injury, pain relief rate and recurrence rate between the two groups. $P < 0.05$ was considered statistically significant.

Results

Patient demographics and clinical features are summarized in Table 1. Table 2 lists the healing effect of nipple injury between the two groups, the cure rates of the study group was better than that of the control group. Table 3 lists the nipple pain relief rate between the two groups, the complete pain remission rate of the study group was better than that of the control group. Table 4 lists the recurrence rate of nipple injury between the two groups, there was no significant difference.

Table 1
General information and clinical characteristics of the patients

General information and clinical characteristics	Study group	Control group	p
Age (years; min-max)	31.14±3.58	31.28±3.31	0.789
Day at first diagnosis post-pruduction (days; min-max)	31.74±25.72	31.49±27.00	0.951
Total days after the etiology was corrected (days; min-max)	23.44±5.71	23.19±5.13	0.759
The long diameter of the damaged lesion (cm;min-max)	0.55±0.17	0.54±0.14	0.542
Left side (n, %)	35	36	0.601
Right side (n, %)	46	40	
Values are given as mean±SD unless otherwise specified.			

Table 2
Comparison of healing effect of nipple injury

Group	Cases	Cure	Improvement	Ineffective
Study group	81	44(54.3%)	19(23.5%)	18(22.2%)
Control group	86	23(26.7%)	29(33.7%)	34(39.5%)
c ² value	13.451			
P value	0.001			

Table 3
Comparison of nipple pain relief rate

Group	Cases	Complete remission	Partial remission	No remission
Study group	81	39(48.1%)	25(30.9%)	17(21.0%)
Control group	86	20(23.3%)	28(32.6%)	38(44.2%)
χ ² value	14.170			
P value	0.001			

Table 4
Comparison of the recurrence rate

Group	Cases	No recurrence	Recurrence	χ ²	P
Study group	44	28 (63.6%)	16 (36.4%)	0.016	0.898
Control group	23	15 (65.2%)	8 (34.8%)		

Discussion

The type and severity of nipple injury are affected by subjective factors. There is no uniform consensus on the definition, classification, and evaluation methods of nipple injury [8]. There is currently no high-quality research on the treatment of nipple injury [9]. Therefore, the evidence-based basis for the treatment of nipple injuries is not sufficient. The principle of nipple injury treatment is etiological and symptomatic treatment.

Ineffectively correction of the cause of nipple injury may lead to continued and repeated damage. In the symptomatic treatment of nipple injury, Flaviana [10] analyzed 496 studies on the promotion of nipple injury healing, including the use of lanolin, combination of lanolin and nipple shields, breast milk, hydrogels, polyethylene film dressings, as well as sprays and distilled water containing chlorhexidine and alcohol. However, it was pointed out that these results are uncertain due to the sample size.

After the nipple was damaged, the movement of the nipple during lactation was not conducive to the creation of the surface, that is, the chronic wound healing process increased the risk of local infection [11],

and the necrotic tissue in the wound had the functions of preventing angiogenesis, granulation tissue formation, epidermal regeneration, and normal extracellular matrix formation, thus forming a physical barrier for re-epithelialization, preventing local drugs from directly contacting the wound, and affecting the curative effect^[13-15]. Anghel EL considered that adequate debridement of necrotic tissue is the core of wound healing^[16], and also the basic step to promote chronic wound healing^[11]. In this study, for patients with no improvement after etiological treatment, nipple repair was used to remove necrotic tissue, it revealed significantly better therapeutic effect than that was not treated with medicine or surgery, suggesting that nipple repair plays an important role in promoting the healing of chronic nipple injury. It not only clears the wound but also promotes the growth of fresh epithelial cells in the wound, thus speeding up the healing process.

In this study, the nipple pain relief in the study group was obviously better than in the control group, it is suggested that nipple repair can also create favorable conditions for nerve repair, to reduce the injured nipple contact pain, this allows the mother to assess the effect of modifying the etiology of breastfeeding, to reduce the chance of further injury to the nipple, and to promote breastfeeding in order to achieve and maintain exclusive breastfeeding.

Limitations

The sample size was relatively low, the pain grading and the evaluation of the effectiveness of etiological adjustment is subjective, It is worth discussing whether it is reasonable to take the duration of nipple injury for two weeks as the limit of surgical intervention for lactation women.

Conclusion

Nipple injury is the result of multiple factors. Debridement and repair for the long-lasting damage can create good conditions for wound healing, which is conducive to wound healing. It should be noted that the operation of the nipple repair is minimally invasive. It is necessary to minimize the damage to the normal tissue while completely removing the necrotic tissue, so as to avoid the wound area increasing and the damage deepening, thus affecting the function of the breast duct.

Declarations

Ethics approval and consent to participate

This study was approved by the Medical Ethics Committee of the Haidian District Maternal and Child Health Hospital. All patients had signed informed consent.

Consent for publication

All authors consent for publication.

Availability of data and material

Data and material are available.

Competing interests

There is no competing interests

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Authors' contributions

Dr. Jie Wang provided the clinical support and her assistance is gratefully acknowledged. Dr. Li yan Plays an important role on the study design, in the collection, analysis and interpretation of data. All authors revised and approved the final version of the manuscript.

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Medical experts team from the Center for Prevention and Treatment of Breast Diseases corrected the etiology of the nipple injury.

Trial registration

Haidian Maternal and Child Health Hospital protocol No. 2015-02. Registered 02 February 2015

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Figures



Image 1

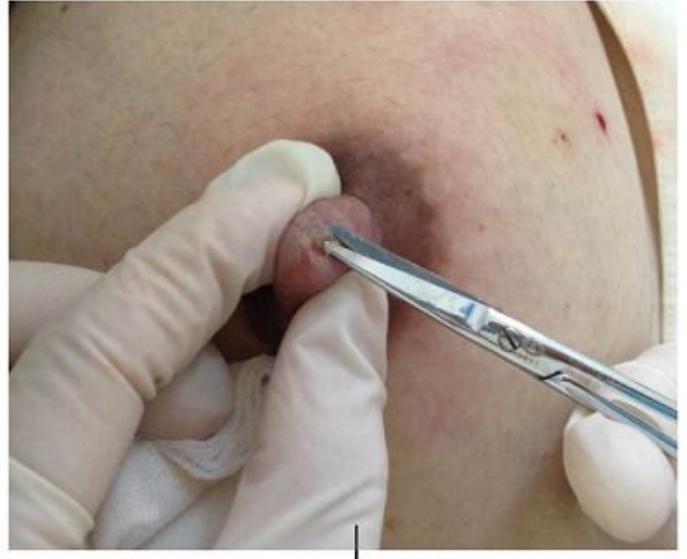


Image 2



Image 3



Image 4

Figure 1

Figure 1

Supplementary Files

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