Application of Histoacryl Tissue Glue in Breast Surgery

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Abstract. Objective to explore the effect of Histoacryl tissue glue (hereinafter referred to as tissue glue) on incision healing in breast surgery. Method review during October 2017 to October 2018, 500 cases of breast surgery to surgical treatment of cases, including 200 cases of tissue glue closed incision, 200 cases of absorbable suture material, 100 cases by traditional suture, comparing three sets of closing time of incision, postoperative hospital stay, complications, patients on art mouth closed satisfaction. Results: the three groups were superior to the absorbable suture material, group and the traditional suture group in the closing-length glue group with statistically significant differences (P<0.05). Postoperative hospitalization time in the glue group and the absorbable suture group was significantly better than that in the traditional suture group. Conclusion tissue glue is more ideal in reducing local inflammatory reaction, rejection reaction and higher patient satisfaction than the traditional non-absorbable suture of micro-sagebrush and traditional non-absorbable silk thread. The results of this clinical trial show the advantages of tissue glue in the incision suture of breast surgery.

1. Introduction
In recent years, with the improvement of surgical techniques and concepts of breast surgery, on the premise that patients' diseases can be cured, good healing and aesthetic incision has become a new focus for breast surgeons and patients [1]. Patients' expectations of non-infection and scar healing increased. The breast surgery also changed from the traditional discontinuous suture incision to the continuous suture under the skin of the absorbable suture. Although the suture reaction was reduced to some extent and the aesthetic situation was improved, it was not perfect. There are still some patients with rejection and inflammatory response to subcutaneous suture, forming scars and delayed healing, and even forming local folds [2]. At present, tissue glue has been widely used. In this paper, the effect of tissue glue in the surgical treatment of breast surgery is studied.

2. Subjects and Methods for Inclusion

2.1. Objects and Data
From October 2017 to October 2018, a total of 500 patients with no systemic diseases or other special factors affecting wound healing were selected among the patients who received surgical treatment in the breast surgery department of our hospital from 30 to 45 years old and whose incision length was 2 to 6cm. After obtaining the consent of the patients, 200 cases were closed with tissue glue, 200 cases were closed with continuous subcutaneous suture of 5-0 absorbable suture and 100 cases were closed with traditional non-absorbable silk thread [3]. The operation was performed by the same department, and the operation time was 30min–60min. Histoacryl The tissue glue is manufactured by baylon
company of Germany, specification: 0.5ml/0.5g; Main ingredients: N-butyl cyanoacrylate (embate), 1-hydroxy-4[(toluene) amino]-9, 10-anthraquinone, hydroquinone, sulfur dioxide, phosphoric acid.

Table 1. Included objects and inclusion criteria

|                          | 30~35 years old | 35~40 years old | 40~45 years old |
|--------------------------|-----------------|-----------------|-----------------|
| tissue glue (2~4cm)      | 63              | 23              | 12              |
| tissue glue (4~6cm)      | 38              | 34              | 30              |
| absorbable suture (2~4cm)| 32              | 41              | 17              |
| absorbable suture (4~6cm)| 66              | 22              | 22              |
| traditional suture (2~4cm)| 19            | 13              | 19              |
| traditional suture (4~6cm)| 9              | 17              | 23              |

2.2. Methods
Each breast surgery patient received curvilinear incisions at the edge of the areola, about 2~6cm in length. After the corresponding lumpectomy and suture layer by layer, different skin closure methods were adopted at the skin incision. 1) tissue glue: use the skin hook tweezers to smooth the skin piece by piece, avoid the wound eversion or internal turnover, and use sterile gauze to wipe away blood stains and tissue fluid, etc. Keep the surface of the joint dry, apply a thin layer of tissue glue along one end of the incision to the other end, covering an area of at least 0.5cm on both sides of the incision for 30 seconds. The thickness of the tissue glue shall be subject to the color visible to the naked eye. 2) absorbable suture group: continuous intradermal suture was performed from one end of the incision to the other end. The suture at both ends of the incision went through the skin and knotted outside the skin. The absorbable suture was not pulled out. 3) traditional suture group: needle was inserted at both ends of the incision, with line spacing 1~1.2cm, and the needle was 0.5cm away from the incision, with the tail of the line remaining 0.6~0.8cm, and the suture was pulled out intermittently 5 days after surgery, and completely pulled out at 7 days. Observe the wound healing, and arrange the disconnecting time according to the physician's evaluation and the actual situation of wound healing. The local inflammatory response was judged by whether the skin was smooth, whether the skin turned red, whether there was pain and exudation in the area [4]. The final healing effect was evaluated by the degree of scar, patient evaluation and aesthetic procedure of incision [5]. The patient's incision was completely healed without dressing change as the discharge standard.

2.3. Statistical Analysis
SPSS19.0 was used, and chi-square test was used for data comparison. P<0.05 was considered statistically significant.

3. Result
Comparison of incision closure time: the mean closing time of tissue glue group was (1±0.5) min, the mean closing time of absorbable suture group was (5±2) min, and the mean closing time of traditional suture group was (3±1.5) min, and the difference was statistically significant (P<0.05).

Comparison of postoperative hospital stay: postoperative hospital stay in the tissue glue group was 3±1 days, 3±1 days in the absorbable suture group and 6±2 days in the traditional suture group. Local skin reaction, no skin rejection and inflammatory reaction occurred in the glue group. The tissue glue fell off by itself about 10 days after surgery, and the skin healed well. In the absorbable suture group, 12 cases presented rejection or local inflammatory reaction to suture, which was manifested as skin redness at the incision site, and rejection in severe cases, local incision dehiscence, visible exudation, local disinfection and reinforcement suture, and removal of the reinforcement suture after complete recovery. In traditional suture group, there were 9 cases of local skin reaction, which showed pinhole skin redness, local edema, poor wound healing, and improved after treatment with increased disinfection times. Comparison of patients' satisfaction with intraoperative closure [6]: There were 198 people in the glue group who were very satisfied and 2 people who were satisfied. In the absorbable suture group, 160 people were very satisfied, 28 said it was ok, and 12 were not satisfied (local skin
inflammatory reaction, need to wait for line removal, skin wrinkles and incision dehiscence). In traditional suture group, there were scars and needle eye marks beside the incision, so they did not meet the standard of satisfaction. 76 people showed that they were satisfactory, and 34 people were not satisfied (obvious scars, needing to be removed, skin wrinkles, 2 cases of obvious scar hyperplasia).

Table 2. Closure time of incision

|                | tissue glue | absorbable suture | traditional suture |
|----------------|-------------|-------------------|--------------------|
| notch closing time | (1±0.5)min | (5±2)min          | (3±1.5)min         |

Table 3. Comparison of patients' satisfaction with intraoperative closure

|                | tissue glue | absorbable suture | traditional suture |
|----------------|-------------|-------------------|--------------------|
| not satisfied | 0           | 12                | 34                 |
| satisfied     | 2           | 28                | 76                 |
| very satisfied| 198         | 160               | 0                  |
| satisfaction   | 100%        | 96%               | 76%                |

4. Discussion
The main component of tissue glue is embuster. The product is blue. The thickness of tissue glue coating can be estimated by color. The presence of tissue fluid enables the tissue glue to quickly aggregate into solid substances that adhere to human tissues, and the wound surface is glued together to completely cover the incision, thus achieving the anti-bacterial and anti-infection effect. The aim is to achieve perfect healing without damaging the skin and subcutaneous tissue. At present the use of clinical tissue glue is becoming more and more in thyroid surgery, pediatric circumcision, arthroscopic surgery through small incision, cut vulva, pacemaker wound is part of the application, such as alternatives to traditional suture and part of the absorption line suture, in a quick advantages for closing the wound, has the characteristics of antibiotic, waterproof, healing and beautiful, patient satisfaction is high. The application of breast surgery is expected to become more and more popular, replacing most of the absorbable suture and completely replacing traditional suture.

There are some things to be noted during the use of tissue glue. Before applying tissue glue, make sure the edges of the wound are completely clean and tightly closed. During the polymerization, Histoacryl tissue glue generates a small amount of heat. Make sure the edges of the skin fit together easily before applying tissue glue. For a wound at risk of tension and tension, suture the wound to the edge of the wound before applying tissue glue on the epidermis to reduce tension along the incision line. The bonding area should be kept as dry as possible. After applying tissue glue, keep the skin still for 30 seconds. Once the adhesive has solidified it cannot be corrected. Tissue glue should not be applied to the wound. Using tissue glue that is too large or thick can hinder wound healing.

Tissue glue was superior to micro sagebrush and mousse in the time of wound closure because of its easy operation. Although the absorbable suture group was superior to the mousse group in aesthetic appearance, the wound was closed for a little longer. Although the closure of the wound by tissue glue may take a little longer on longer incisions (because the glue needs to be done piecemeal, until the glue is dry enough to stick to the next section), this is virtually nonexistent for surgical incisions of the breast.

There was no skin rejection or inflammatory reaction in the glue group, 12 cases in the absorbable suture group showed suture rejection or local inflammatory reaction, and 9 cases in the traditional suture group showed local skin reaction. This fully proves the antibacterial and waterproof characteristics of tissue glue, which is safer than absorbable suture and traditional suture in the healing process of the incision. As long as the use according to the instructions, do not let the adhesive water infiltrate into the wound to affect tissue alignment, can achieve the goal of perfect healing.

Almost all of the glue groups were beautiful after healing. The joint of the inner and outer plates was smooth and traceless, close to the natural appearance. Only 2 cases were found with slight scars
when they were reviewed 3 months after operation. Most people in the absorbable suture group had flat skin after healing, without obvious scars. A few patients had less smooth healing surface, with linear swelling skin, and a few had skin wrinkles or wound dehiscence due to rejection. In traditional suture group, scars and peripheral needle-eye marks were all left, so they did not reach the satisfactory standard. A few patients had inflammatory response in pinhole, and even had multiple secretions in wound dehiscence. See hairdressing effect respect, glue group holds apparent advantage.

In conclusion, Histoacryl tissue glue is used as a method to close the incision of breast surgery, which is simple, time-saving, has good cosmetic effect, and the incision is well healed. The patient does not need to change medicine and remove the thread, and has a good effect of antibacterial and waterproof. The author suggests that it can be widely used in clinic.

5. References

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