

The Reversed Glove Sleeve: A Readily Available and Cost-effective Way to Achieve “No Touch” Breast Implant Insertion

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Summary: The reversed glove sleeve technique is a simple, available, reproducible, and cost-effective method of achieving “no touch” breast implant insertion. It allows a new glove to be used for each side, thus reducing the risk of contamination by reusing a sleeve/funnel for the subsequent implant insertion. The link between bacterial contamination of breast implants and capsular contracture is established. Further prospective evaluation of this technique is underway to show if there is benefit in reducing the risk of capsular contracture. (*Plast Reconstr Surg Glob Open* 2020;8:e2650; doi: [10.1097/GOX.0000000000002650](https://doi.org/10.1097/GOX.0000000000002650); Published online 27 April 2020.)

INTRODUCTION

Bacterial contamination of breast implants by biofilm has been shown to significantly potentiate capsular contracture.¹ Surgical strategies to minimize handling of prostheses and reduce potential bacterial contamination have been shown to reduce the incidence of capsular contracture.^{2,3} Minimizing implant contact through “no touch” is one of the strategies that has been investigated.⁴ First described in both orthopedic and urological literature, the “no touch” technique was adapted for breast augmentation in 1993 by Mladick using a submuscular technique with a saline prosthesis implant.⁵ The rationale behind this was to reduce bacterial contamination of the implant as it is passed through the skin and subcutaneous tissues. Both skin and breast tissues have been shown to harbor significant numbers of pathogenic bacteria, especially coagulase-negative Gram-positive cocci, which have been shown to be contributory to progressive capsular contracture in both in vivo and in vitro studies.^{6–8}

The concept of the sleeve was first described by Dolsky⁹ due to the difficulty introducing polyurethane implants. The sleeve technique for implantation of polyurethane prostheses was highly effective; therefore, the distributed polyurethane prosthesis included a sleeve for implantation.¹⁰ Commercially available products such as the “Keller Funnel”

provide a sleeve for introduction of prostheses to minimize skin contact. The product is most suited for introduction of smooth-textured, round prostheses. The effectiveness of the product is shown by Moyer et al¹¹ in a cadaveric model which showed significant reduction in skin contact using the funnel. Clinical studies have also supported its utility in potentially reducing the risk of capsular contracture.^{12,13}

The reversed glove sleeve presented in this article creates a “no touch” funnel with the ability to use the technique at any time on any prosthesis if the commercially available product is not available. Other simple readily available techniques are described for saline prostheses,¹⁴ but to our knowledge this is the first description for a silicone textured and shaped breast prosthesis.

SURGICAL TECHNIQUE

The reversed glove sleeve technique requires the use of a single large sterile latex-free glove. We trialed varying types/brands of surgical gloves and found that the latex-free glove (size 8 or 8.5) was best at minimizing friction and allowing the implant to slide. The IMF incision required to accommodate the sleeve and prosthesis averaged 6cm. After preparation of the product and appropriate lavage of the pocket/implant with betadine and/or antibiotic solution (that also serves as a lubricant between prosthesis and glove), the technique is performed as demonstrated in video (**see Video [online]**, which demonstrates the author’s technique) and in **Figs. 1–4** as follows:

1. The surgeon puts on an extra sterile glove (which is to act as the sleeve) and picks up the implant with this additionally gloved hand.

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Fig. 1. Placement of prosthesis (textured in this depiction) into sterile glove.



Fig. 2. Adjustment of glove so that it overhangs the prosthesis, creating a funnel.



Fig. 3. Implantation using the funnel and the proximal tail of the glove to squeeze the prosthesis out.



Fig. 4. Successful implantation with minimal skin and parenchymal contact.

2. While the surgeon holds firmly onto the implant, the surgeon uses his/her other hand to roll the glove inside-out and over the top of the implant so that the implant is completely enveloped by the glove. The glove cuff should overhang the end of the implant to ensure that it does not come into contact with skin or breast parenchyma until it is fully inserted.
3. Meanwhile, the assistant retracts the skin to open the breast pocket to accommodate the cuff of the glove and then the prosthesis.
4. The overhang of the glove acts as the funnel and it is placed into the incision made at the inframammary fold.
5. The surgeon then squeezes the implant into the breast pocket while avoiding unnecessary contact with skin or parenchyma.
6. The glove is inspected by the surgeon and theater team to ensure it is intact.

UTILIZATION

To date, this technique has been used by the senior author in 83 cases without failure. Breakdown of cases is 73 anatomic textured (size ranges 225–445 cm³) and 10 smooth (size range 225–300 cm³). We used a 8.0 glove in about 50% and a 8.5 glove in 50% with a recent preference to using the large glove size. The largest inserted prosthesis is 445 cc. There have been no reported incidences of postoperative breast infection. The long-term benefits of the technique with respect to capsular contracture can not be evaluated by this technique alone and further prospective study is required.

CONCLUSIONS

The reversed glove sleeve technique is a simple, available, reproducible, and cost-effective method of achieving “no touch” breast implant insertion. It allows a new glove to be used for each side, thus reducing the risk of contamination by reusing a sleeve/funnel for the subsequent implant insertion. Further prospective evaluation of this technique is underway to show if there is benefit in reducing the risk of capsular contracture.

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