

• 临床研究 •

Vertical intra-areolar incision in dual-plane breast augmentation mammoplasty

LONG Xiao, ZENG Ang, ZHANG Hai-lin, QIAO Qun

【Abstract】 Objective To investigate the use of vertical intra-areolar incision in dual plane breast augmentation. **Methods** Fifteen cases received dual plane breast augmentation with vertical intra-areola incision in our hospital from January 2008 to December 2008. Breast gland was cut vertically in the upper part and pectoralis major muscle was separated according to the direction of the muscle fiber. Then the pectoralis major muscle was partially amputated at the starting point. Finally the implant was placed partially under the breast gland and partially under the pectoralis major muscle. **Results** The follow-up of more than one year showed all cases healed well and the incisions were concealed except one case who suffered delayed healing of the wound and depigmentation of the incision. **Conclusion** Vertical intra-areolar incision in dual plane breast augmentation is an easily-performed and feasible method and leaves less scar post operation.

【Key words】 augmentation mammoplasty; vertical intra-areolar incision

Dual plane augmentation mammoplasty is one of the most common methods in prosthesis-related breast augmentation. Tebbetts and Tofield^[1-2] firstly reported the dual plane method in breast augmentation and good results were obtained. We began to use the method in our department in 2003 and have used the vertical intra-areolar approach instead of the traditional peri-areolar incision since 2008. A total of 15 cases (30 breasts) were treated with this method and good results were obtained.

1 METHODS

1.1 Clinical Data

From January 2008 to December 2008, 15 cases with 30 breasts, aged 24–36 years, (average, 28.9 years) in our hospital were included. Two cases had received breast augmentation with silicone prosthesis under the pectoralis major muscle and were not satisfied with the shape. One case underwent breast polyacrylamide hydrogel removal one and a half years ago. Other cases did not receive any operations. None of the cases suffered any systemic diseases.

Authors' address: Division of Plastic Surgery, Peking Union Medical College Hospital, Beijing 100032, China.

Corresponding author: Qiao Qun, E-mail: qiaoqun925@hotmail.com

1.2 Surgical Methods

1.2.1 Preoperative designs: Patients were in standing position and the anatomy location of clavicle, infra-mammary fold, diameter of the breast and midline were marked. The size of the nipple and areola were also measured. According to the marking and measuring results and patient's request, appropriate round-shaped silicone implants were selected. The prosthesis ranged from 230 g to 260 g. During operation, patients were in supine position, the central line of the areola was marked and a semicircular incision line around the inner side of the base of the nipple was drawn (Fig 1).

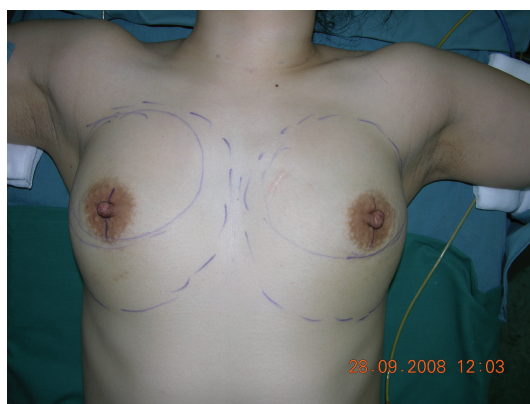


Fig 1 Preoperation design

1.2.2 Surgical procedures: All procedures or operations were performed under general anesthesia. Dissecting the soft tissue beyond the upper part of the gland and splitting the gland vertically, entering the space between mammary gland and pectoralis major muscle, dissecting the muscle along the muscle fibers, separating the space under the muscle from the second rib to inframammary fold, amputating part of the pectoralis major muscle at about 1 cm above the inframammary fold and releasing the muscle from the starting point, and implanting the round silicone prosthesis in the spacing and place drainage bilaterally were conducted. The implant was placed partially under the gland and partially under the pectoralis major muscle. Finally the gland incision was closed and sutured with 3-0 Dexon.

2 RESULTS

The average follow-up period was nine months. One case suffered delayed healing of the wound and depigmentation of the incision. All other patients healed well and the incisions were concealed. None cases had prosthesis displacement or capsular. Fig 2 shows the views of pre- and post-operation.



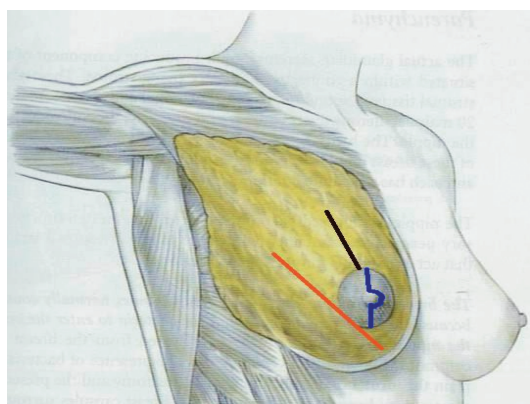
a: pre-operation(left); b: 7 days post-operation(right); c: pre-operation(left);
d: 7 days post-operation(right); e: the recovery of the incision six months after operation

Fig 2 Front and side views of pre- and post-augmentation mammoplasty and incision recovery

3 DISCUSSIONS

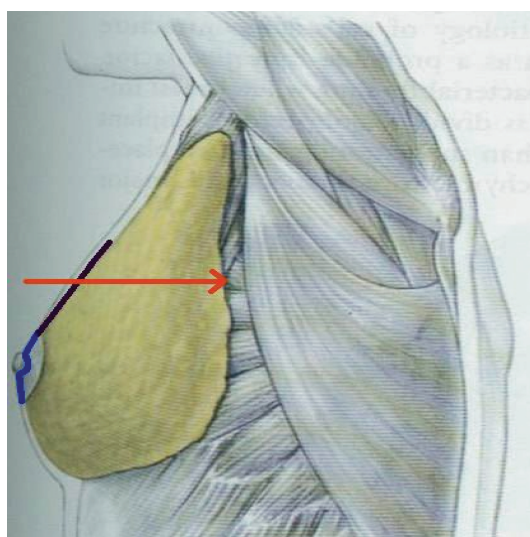
Tebbetts^[3] summarized 438 cases (936 breasts) who received dual plane breast augmentation with breast inframammary fold incision or peri-areolar incision, and concluded that dual plane augmentation mammoplasty could adjust the implant and the tissue relationships to ensure adequate soft-tissue coverage with optimizing implant-soft-tissue dynamics compared with a single pocket location in a wide range of breast types. Also there are articles reporting the endoscope-assisted axillary incision for breast augmentation using the technique that the pectoralis major muscle was split from the costal margin with the help of a 10 mm, 30 degree endoscope and endoscopic diathermy scissors^[4-5]. Based on their experiences, we improved the approach of dual plane breast augmentation. We used a vertical midline incision instead of the areolar incision. The advantages of the incision include: (1) The incision is concealed. By using two short straight lines with a C-shaped incision, which is different from the 4 cm-long linear incision around the areola, the scar would be the least visible in a non-linear way (Fig 3). What's more, the midline incision is located entirely within the areola so that there is a less possibility of hypertrophic scar formation. (2) All the surgical procedures can be performed under direct vision by this approach, so the possibility of hematoma is reduced, leading to lower occurrence of capsular contracture. (3) For the traditional approach of augmentation mammoplasty with peri-areolar incision, it is

often necessary that the dissection from the lower part of the breast gland to the inframammary fold is performed and then reversed upward into the post-gland-space. In this way the natural inframammary fold will be destroyed during the operation. While by vertical incision a straight dissection can be done between the gland and the pectoralis major muscle through the upper part of the breast gland and the integrity and original shape of the inframammary fold can be reserved (Figs 4 and 5). (4) Endoscope is not necessary in this approach. (5) The lower pole of the breast can be fully separated during the operation and the gland is sutured with the fascia of serratus anterior muscle, which ensures adequate soft-tissue coverage on the surface of the prosthesis.



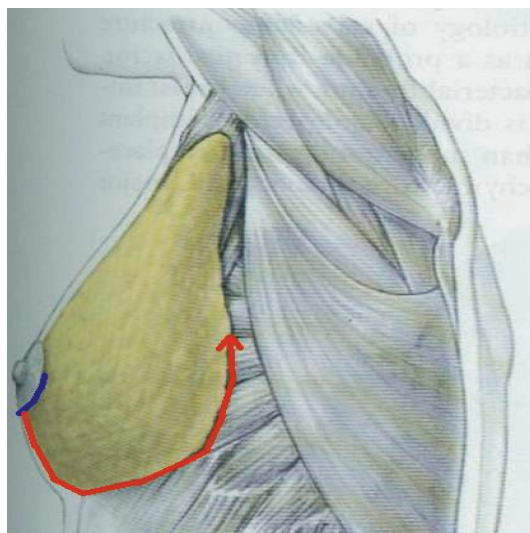
The blue line indicates the incision, the black line shows the split direction of the mammary gland, and the red line shows the split direction of the pectoralis major muscle.

Fig 3 Surgical method



The blue line indicates the incision, the black line shows the split direction of mammary gland, and the red line shows the surgical approach.

Fig 4 Surgical approach with vertical areola incision



The blue line indicates the incision, and the red line shows the surgical approach.

Fig 5 Surgical approach with semiring incision around areola

It is important to well protect the nipple during the operation. The inner layer of the areola incision can be sutured on the skin outside the nipple, that is in order to avoid nipple disfiguring the nipple is inverted when suturing the inner layer of the areola incision. While closing the incision, the suture should be performed under tension-free condition to ensure correct and symmetrical positions of the nipple and areola. One patient in this group suffered secondary healing of the incision, which led to local depigmentation of the areola. The main reason of the complication is insufficient closure of the dermal layer, especially the area around the drain tube.

Domestic applications of dual plane breast augmentation are not as usual as in western countries so far, because of difficult entire dissection from the transaxillary approach^[6]. Usually an endoscope is used to help surgeons dissect the pectoralis major muscle through the transaxillary incision. In recent years, the dual plane approach has been widely used in the revision of breast augmentation^[7-8], and also in polyacrylamide hydrogel removal and augmentation mammoplasty for secondary deformity after polyacrylamide hydrogel removal^[9]. By using this approach, the upper part of the breast prosthesis is placed behind the pectoralis major and the lower part of the prosthesis behind the breast gland. Spear et al^[10] used the dual plane method and AlloDerm to create a dual plane level for breast reconstruction. By amputating the starting point of the pectoralis major muscle, the pectoralis major muscle on the prosthesis is protected from being pressed and a natural or an optimising appearance of inframammary fold can be obtained. At the same time,

the amputated muscle retracted and fulfilled the upper part of the breast and the subclavian fossa. Another benefit is that the breast glands are cut along the mammary duct, thus avoiding injuring the duct. In conclusion, vertical intra-areolar incision in dual plane breast augmentation can be easily performed with a concealed scar. It is worth to be further explored and developed.

References

- [1] Tebbetts JB. Dual plane breast augmentation; optimizing implant-soft-tissue relationships in a wide range of breast types [J]. *Plast Reconstr Surg*, 2001, 107(5):1255-1272.
- [2] Tofield JJ. Dual plane breast augmentation [J]. *Plast Reconstr Surg*, 2001, 108(7): 2162-2164.
- [3] Tebbetts JB. Axillary endoscopic breast augmentation; processes derived from a 28-year experience to optimize outcomes [J]. *Plast Reconstr Surg*, 2006, 118(7 Suppl):53S-80S.
- [4] Spear SL, Schwartz J, Dayan JH. Outcome assessment of breast distortion following submuscular breast augmentation [J]. *Aesthetic Plast Surg*, 2009, 33(1): 44-48.
- [5] Luan J, Mu D, Mu L, et al. Transaxillary dual-plane augmentation mammoplasty: experience with 98 breasts [J]. *J Plast Reconstr Aesthet Surg*, 2009, 62(11):1459-1463.
- [6] 栾杰,穆大力,穆兰,等. 经腋窝入路内镜辅助双平面法解剖型假体隆乳术[J]. *中华整形外科杂志*, 2009, 25(3): 175-177.
- [7] Castello MF, Lazzeri D, Silvestri A, et al. Maximizing the use of precapsular space and the choice of implant type in breast augmentation mammoplasty revisions: review of 49 consecutive procedures and patient satisfaction assessment [J]. *Aesthetic Plast Surg*, 2011(Epub ahead of print).
- [8] Khan UD. Muscle-splitting breast augmentation: a new pocket in a different plane [J]. *Aesthetic Plast Surg*, 2007, 31(5):553-558.
- [9] Long X, Zhao R. Augmentation mammoplasty for the secondary deformity after polyacrylamide hydrogel removal: delayed or immediate? [J]. *J Plast Reconstr Aesthet Surg*, 2011, 64(7):974-975.
- [10] Spear SL, Parikh PM, Reisin E, et al. Acellular dermis-assisted breast reconstruction [J]. *Aesthetic Plast Surg*, 2008, 32(3): 418-225.

(Received May 25, 2011)

(Edited by ZHAO Bin)

LONG Xiao, ZENG Ang, ZHANG Hai-lin, et al. Vertical intra-areolar incision in dual-plane breast augmentation mammoplasty[J/CD]. *中华乳腺病杂志:电子版*, 2011, 5(6):681-686.