

Highly Cosmetic and Safe Breast Conserving Surgery: Peri-areolar Incision with Subnipple and Extensive Subcutaneous Dissection

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I. Introduction

1. Breast Conserving Surgery (BCS) and oncoplastic aspects of BCS

➤ In BCS, tumor-surface incision is often performed to allow easy access to tumor and ensure adequate margin. However, this approach results in a noticeable skin incision line, often leading to skin pull and nipple displacement.

➤ Currently, oncoplastic BCS has not been standardized, as the methods differ according to tumor location and breast shape, and sometimes involves additional invasive procedures, such as adipofascial or myocutaneous flap construction.

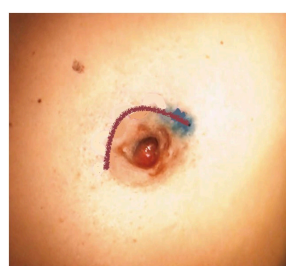
2. Our new method for BCS: Peri-areolar Incision with Subnipple and Extensive Subcutaneous Dissection

➤ We developed a new method to achieve superior aesthetic quality regardless of tumor position and breast shape, without additional highly invasive procedures.

➤ The followings are 3 important points of this technique.

① Peri-areolar incision

This incision is performed to make the wound less noticeable.



Straight line

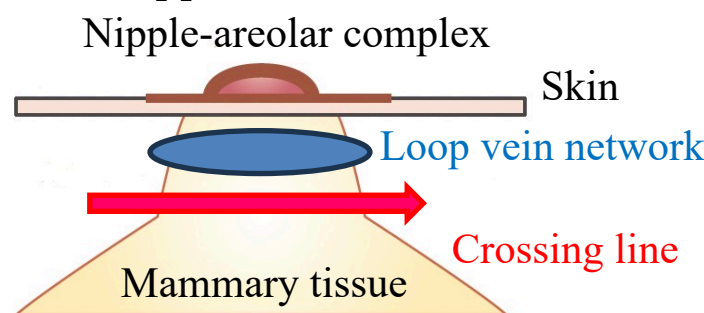


Wave-like line

② Subnipple dissection

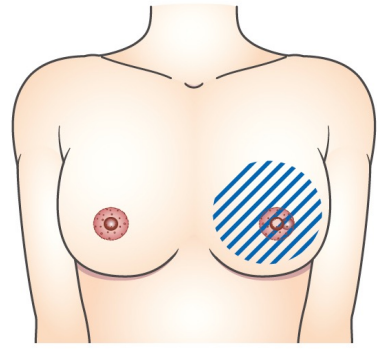
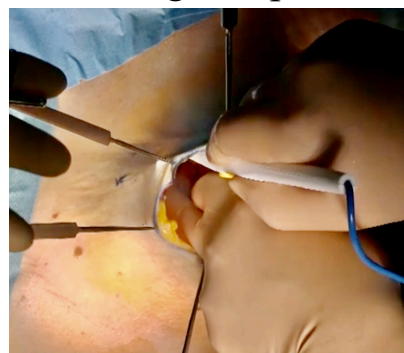
This technique is performed to prevent the nipple displacement.

※ It is crucial to cross the mammary tissue to avoid damaging the loop vein network under the nipple.



③ Extensive Subcutaneous dissection

By following this procedure, it becomes easier to fill the defect area.



3. The purpose of this study

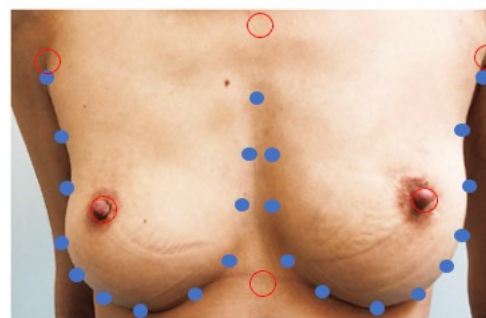
➤ The aim of the present study is to retrospectively compare the cosmetic outcome and safety between our new method and conventional tumor-surface incision.

II. Method

➤ Patients who underwent BCS at Keio hospital from January 2021 to December 2023

➤ Our method (n=116) vs. tumor-surface incision (n=63)

➤ Cosmetic outcome: BCCT.core software¹ marks anatomical structures on frontal photographs of the breast and performs 4-tier aesthetic evaluation (excellent, good, fair and poor).



BCCT.core marking
● Inframammary line
○ Nipples, top/bottom of sternum, and lateral top of breast

Subgroup analysis: the rate of excellent evaluation

➤ Safety outcome:

① postoperative complication rate (seroma, haematoma, infection or skin necrosis)

② positive/close margin rate (less than 2mm)

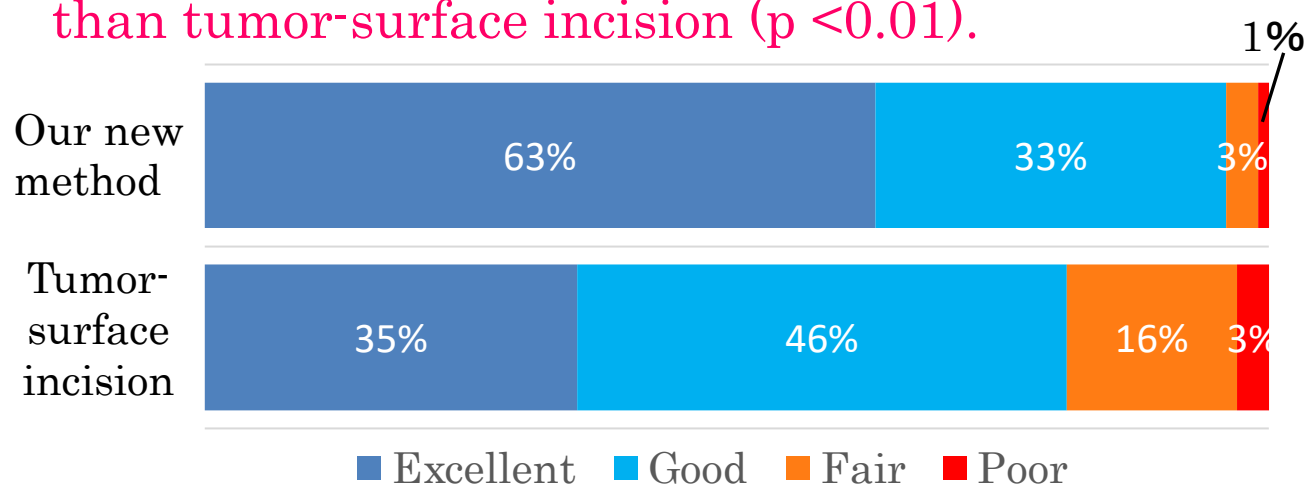
III. Result

➤ Table 1. Patient and tumor characteristics

| | | Our method (n=116) | Tumor-surface incision (n=63) | p score |
|--------------------------|------|--------------------|-------------------------------|---------|
| Age (Mean) | | 54.1 | 59.8 | 0.01 |
| BMI (Mean) | | 21.7±3.64 | 22.8±3.97 | 0.04 |
| cTumor size (cm, Mean) | | 1.46±0.685 | 1.62±0.550 | 0.327 |
| Specimen size (cm, Mean) | | 5.55±1.00 | 5.61±0.801 | 0.786 |
| NTD (cm, Mean) | | 4.13±1.70 | 5.38±2.51 | <0.01 |
| Area | A | 40 | 18 | 0.431 |
| | B | 14 | 4 | |
| | C | 42 | 29 | |
| | D | 20 | 12 | |
| cT | Tis | 25 | 8 | 0.598 |
| | T1a | 4 | 1 | |
| | T1b | 16 | 9 | |
| | T1c | 50 | 31 | |
| cN | T2 | 21 | 14 | 0.237 |
| | 0 | 115 | 61 | |
| Axillary Procedure | 1 | 1 | 2 | 1 |
| | SLN | 106 | 58 | |
| | Ax | 8 | 5 | |
| Neoadjuvant treatment | none | 2 | 0 | 0.63 |
| | Yes | 15 | 6 | |
| | No | 101 | 57 | |

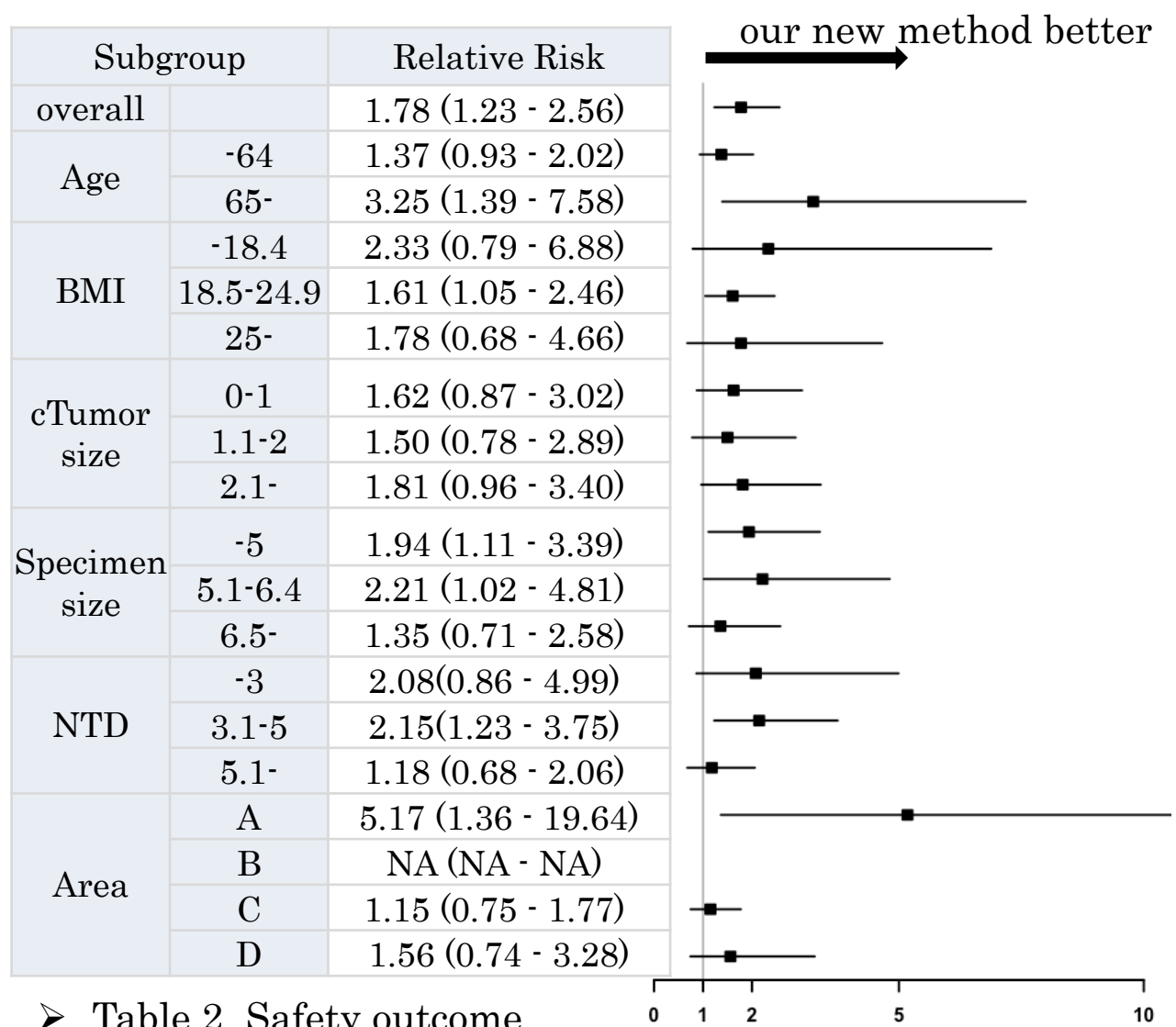
➤ Figure 1. Cosmetic outcome evaluated by BCCT.core

Our new method had superior cosmetic results than tumor-surface incision (p < 0.01).



➤ Figure 2. Subgroup analysis (the rate of excellent evaluation)

Relative Risk = $\frac{\text{the rate of excellent in our new method}}{\text{the rate of excellent in tumor-surface incision}}$



➤ Table 2. Safety outcome

| | Our new method | Tumor-surface incision | p score |
|-----------------------|----------------|------------------------|---------|
| complications | 11% | 17% | 0.22 |
| positive/close margin | 11% | 20% | 0.37 |

IV. Discussion / Conclusion

The peri-areolar incision with nipple/whole breast subcutaneous dissection demonstrated high aesthetic quality for tumors of all sizes and locations, without significant differences in complication rates and positive/close margin rates.