



天津市肿瘤医院 肿瘤研究所  
天津医科大学肿瘤医院  
TIANJIN MEDICAL UNIVERSITY CANCER INSTITUTE & HOSPITAL

德高醫粹  
尚新至善



# How To Make a Good Mastectomy for Reconstruction Based on the Anatomy

*Zhang Jin, Ph.D MD*

*Deputy Director and Professor*

Tianjin Medical University Cancer Institute and Hospital  
People's Republic of China Tianjin Breast Cancer  
Prevention, Treatment and Research Center

德高醫粹  
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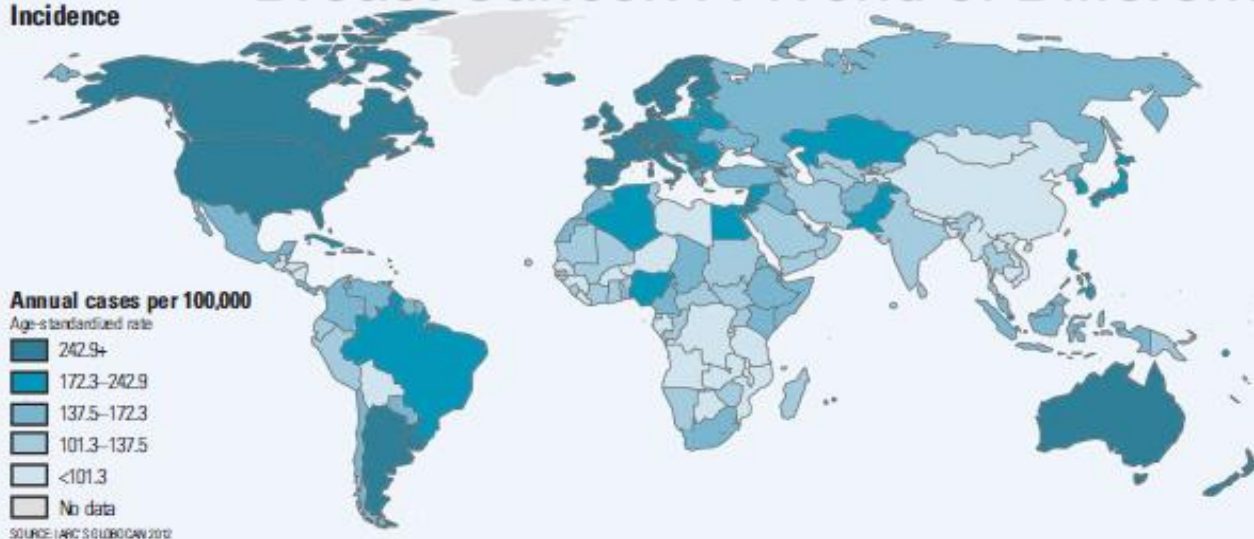
# Contents

- 1 Current status of breast reconstruction in China**
- 2 Principles for breast reconstruction in practice**
- 3 How to perform a better breast reconstruction surgery**



## Breast Cancer: A World of Differences

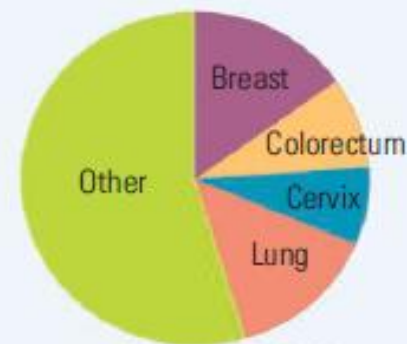
Incidence



Mortality



Deaths



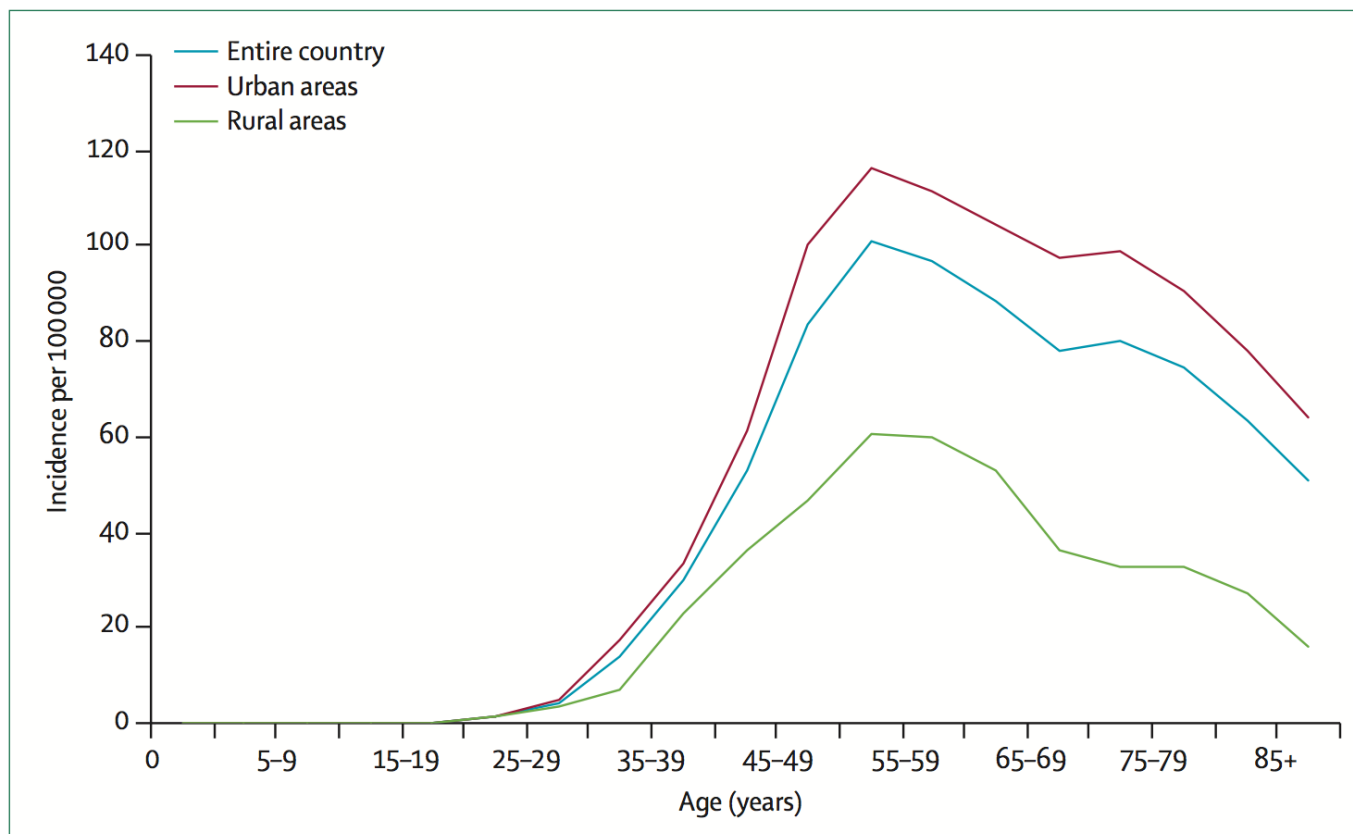
SOURCE: IARC'S GLOBOCAN 2012

**Breast cancer is one of the most common cancers in the world, and is the frequent cause of death in women.**

Kelly Servick. *Science*. 2014 Mar 28;343(6178):1452-3



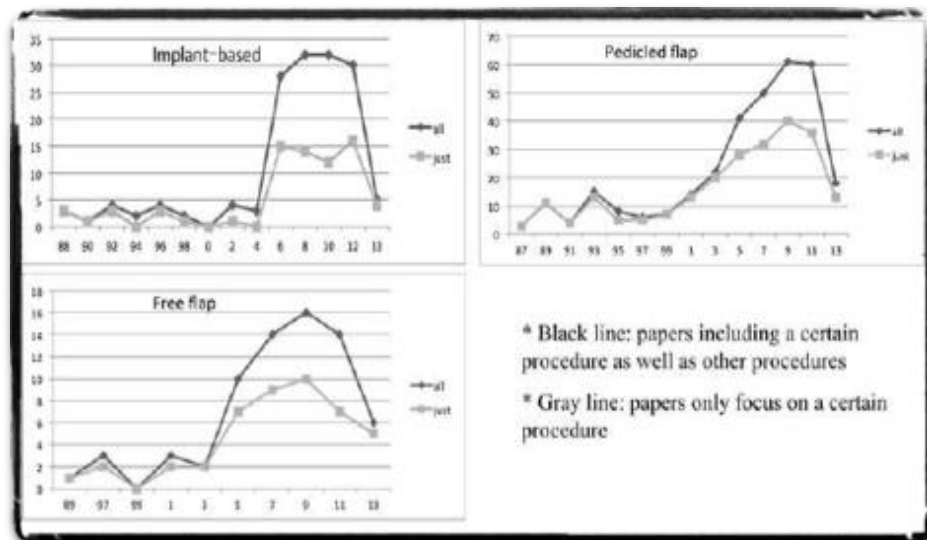
## The incidence of breast cancer in China



**Figure 3: Age-specific incidence of female breast cancer in all registry areas, 2009**  
Figure based on data from the Chinese Cancer Registry annual report.<sup>15</sup>



## The scale of breast reconstruction in China



- In the late 1980s, 400+ breast reconstruction papers were published.
- The number was increased significantly since 2005.
- Oncological Surgery / General Surgery — **Immediate-** reconstruction
- Plastic Surgery — **Delayed-**reconstruction



## Breast reconstruction in China and the U.S.

### Breast Cancer Disparities: A Multicenter Comparison of Tumor Diagnosis, Characteristics, and Surgical Treatment in China and the U.S.

PRIYA G. SIVASUBRAMANIAM,<sup>a,b,\*</sup> BAI-LIN ZHANG,<sup>c,\*</sup> QIAN ZHANG,<sup>b</sup> JENNIFER S. SMITH,<sup>d</sup> BIN ZHANG,<sup>e</sup> ZHONG-HUA TANG,<sup>f</sup> GUO-JI CHEN,<sup>c</sup> XIAO-MING XIE,<sup>g</sup> XIAO-ZHOU XU,<sup>c</sup> HONG-JIAN YANG,<sup>h</sup> JIAN-JUN HE,<sup>i</sup> HUI LI,<sup>j</sup> JIA-YUAN LI,<sup>k</sup> JIN-HU FAN,<sup>b</sup> YOU-LIN QIAO<sup>b</sup>

Table 4. Surgery methods in the U.S. and China

Surgical methods	Stage			
	I	II	III	IV
No reconstruction				
U.S.	24,399 (91.7)	17,121 (88.7)	7,190 (89.2)	2,738 (97.6)
China	661 (99.8)	1,890 (100.0)	786 (100.0)	113 (100.0)
Reconstruction				
U.S.	2,200 (8.3)	2,183 (11.3)	869 (10.8)	67 (2.4)
China	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)
Chi-square test	57.381	238.274	93.988	1.800
p value	<.001	<.001	<.001	.180 <sup>a</sup>

<sup>a</sup>Corrected chi-square test.

Data are shown as number (percentage) except as noted otherwise.

Sivasubramaniam P G et al. *Oncologist*, 2015,20(9):1044-1050.



# Breast Reconstruction Options

## Immediate vs. Delayed Reconstruction

### ✧ Immediate offers:

- Patients with early stage breast cancer
- Reduced costs
- Less surgery for patients
- Psychological advantage of waking up with a breast



# Breast Reconstruction Options

## Immediate vs. Delayed Reconstruction

### ✧ **Delayed offers:**

- **Reconstruction always an option for patients even after treatment**
- **Patients with advanced cancer may choose to wait**
- **Delayed reconstruction typically requires that a two stage procedure be performed**





## Breast Reconstruction Options

### Basis of Options for the timing of breast reconstruction:

- Tumor stage
- Adjuvant therapy regimen and different disease subtype
- Patients health conditions
- Patient's wishes



## Implant Reconstruction + Nipple Reconstruction + Nipple-Areola Tattoos



Pre-operation



Expander implanting



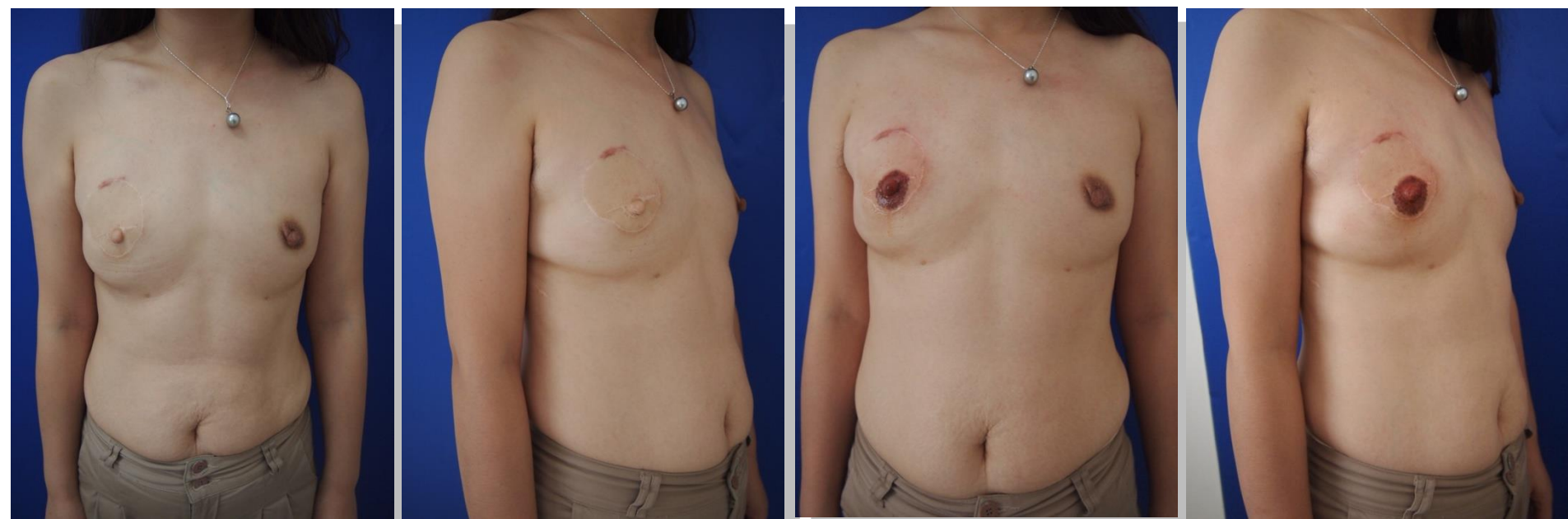
Prosthetic replacement



Nipple reconstruction  
and tattoo



## Breast Reconstruction With Extended Latissimus Dorsal Myocutaneous Flap (LDMF) +Nipple Reconstruction+Tattoo





## Breast reconstruction development and changing trend

- Reconstruction of the breast was significantly increased, accounting for about 5% of operable patients ;
- Immediate reconstruction was the majority of the surgeries ;
- Conducted all kinds of reconstruction : the proportion of implant reconstruction increased significantly, abdominal free flap was basically replaced with pedicled flap ;
- With a relative high success rate and less complications ;
- The proportion of bilateral breast symmetry operation, modified operation and nipple reconstruction was low ;
- Autogenous fat transplantation and implant-based reconstruction with acellular dermal matrices (ADMs) carried out less.



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# Breast Reconstruction Principle

□ SAFETY

□ AESTHETIC



1. *Lancet Oncol.* 2009 Jun;10(6):606-14.
2. *J Cancer Res Clin Oncol.* 2017 Mar;143(3):467-474.
3. *Nature.* 2009 Jun 18;459(7249):1005-9.



## **Safety of Breast Reconstruction**

**All breast surgery is oncoplastic surgery**

- **Any surgeon who operates on the breast must be an oncoplastic surgeon**
- **Working within inter-specialty oncoplastic multidiscipline team**
- **Participated in inter-specialty breast oncology/plastic training**



## **Safety of Breast Reconstruction**

**The safety of immediate breast reconstruction:**

- **Whether it affects breast cancer adjuvant therapy ?**
- **Whether it affects the evolution of the tumor?**
- **Whether it affects the examination of recurrence?**
- **Whether it is only applicable to early patients?**





# Safety of Breast Reconstruction

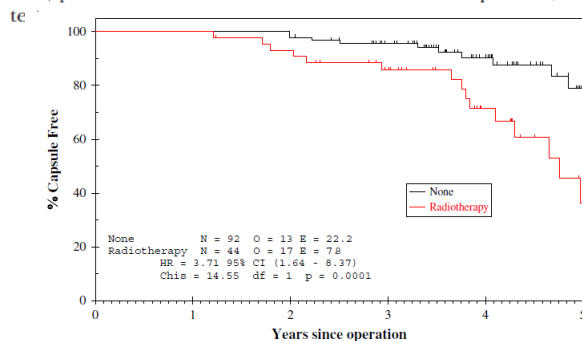
## Effects of radiation therapy implant-based immediate breast reconstruction

TABLE II  
Capsular Contracture

Contracture*	No. of Cases†	
	Irradiated (n = 68)	Nonirradiated (n = 75)
Grade 1 (no contracture)	22 (32.4%)	45 (60.0%)
Grade 2	19 (27.9%)	22 (29.3%)
Grade 3	23 (33.8%)	7 (9.3%)
Grade 4	4 (5.9%)	1 (1.3%)

\* Modified Baker classification scale.

†  $p = 0.006$  for irradiated versus nonirradiated patients, Mann-Whitney  $U$



-Meier plot showing the effect of radiotherapy on capsule formation. HR = hazard ratio

Severe capsular contracture rate

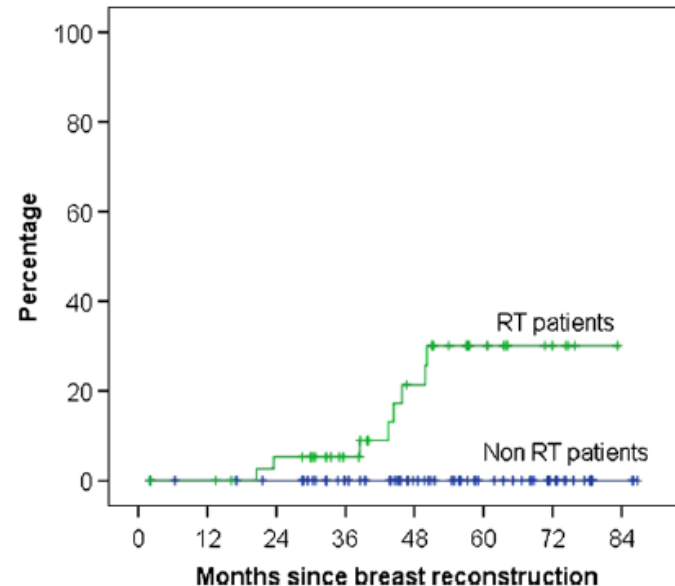


Fig. 2. Comparison of severe capsular contracture rate in the postoperative radiotherapy (RT) and non-RT groups (Kaplan-Meier method, tick marks denote censored observations). The difference between the two curves is statistically significant ( $p < 0.001$ , see text).

**A significantly higher rate of severe capsular contracture occurred with postoperative RT**

*Plast Reconstr Surg.* 2004;113:877-81.

*Radiother Oncol.* 2009;90:141-7.

*J Plast Reconstr Aesthet Surg.* 2006;59:1043-51.



# Breast Reconstruction Principle

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# **Aesthetic of Breast Reconstruction**

## **Oncoplastic breast surgery**

**Best oncology surgery with  
maintenance of the breast / breast aesthetic**

**BUT**

**Never compromise oncology outcomes  
by aesthetics goals**

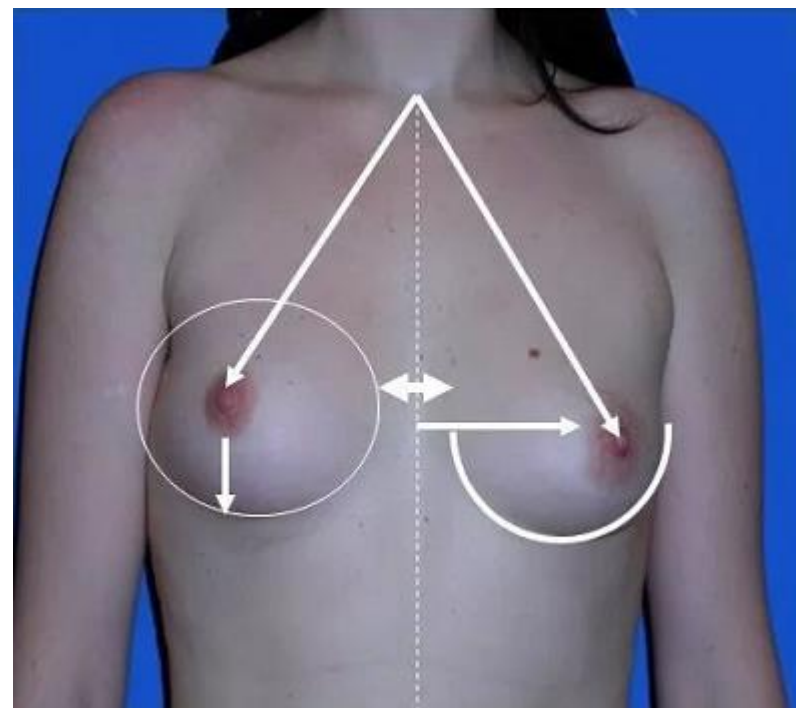
**(if mastectomy is required perform a mastectomy)**

*Oncoplastic breast surgery. Rainsbury RM. Nat Clin Pract Oncol 2007; 4:657-64*



## Oncology surgery....

Understanding breast aesthetics is fundamental for ANY surgeon who operates on the breast

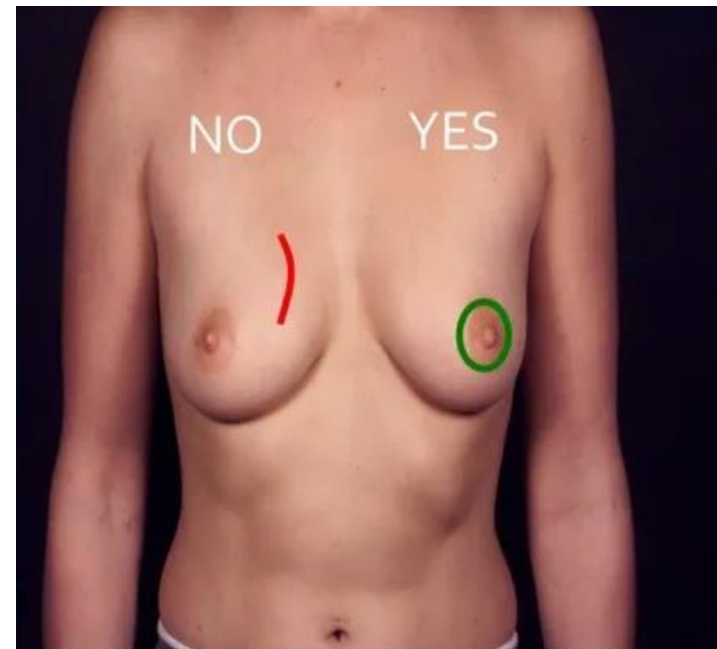




# Aesthetic of Breast Reconstruction

## Careful scar placement

- Periareolar
- Inframammary
- Lateral
- Consider future surgery





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## Incision selection

- **Preference: Body surface maker line**——Areola Margin, Inframammary Fold
- **Radial incision for a supplement**
- **Tumor surface incision**——If there is no clear cutaneous involvement, avoiding incision to affect mammary aesthetics.
- **Mammatone pinholes and needles**——Included in the resection
- **Puncture needle-path**——If the result of frozen pathology for pinhole under the needle-path of blue dye is negative, there is no need to complete resection.

**Our experience:** Most of the mastectomy could be completed with a 5cm incision, try not to choose a upper and a lateral cambered incision



## Skin flap thickness

- The thicker the skin flap, the better the mammary aesthetics is after reconstructure.
- Be sure to stick to the baseline of the oncology safety.
- **Our experience:** For invasive cancer , the adipose tissue around the glands should be removed. Only when the frozen pathology carcinoma in situ for subcutaneous fat is negative , subcutaneous fat could be retained properly for the mammary aesthetics.







## Structure retention

- Nipple-areolar complex
- Inframammary fold
- Breast medial border
- Pectoralis major muscle





## Structure retention

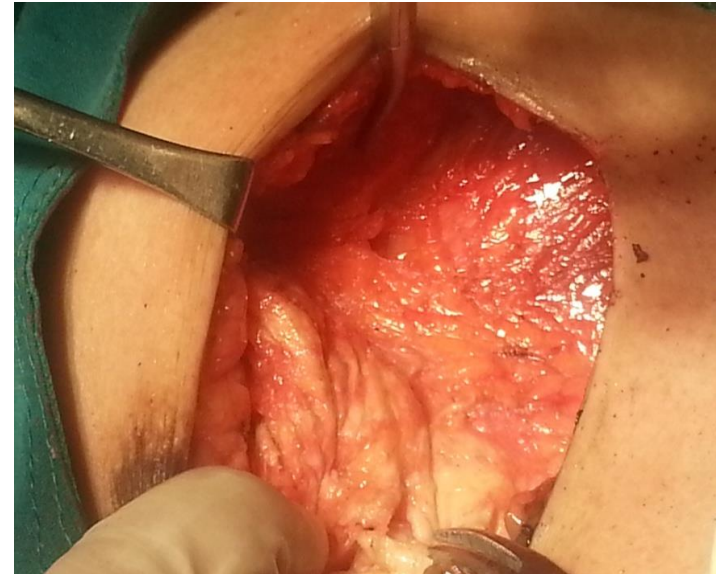
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## Structure retention

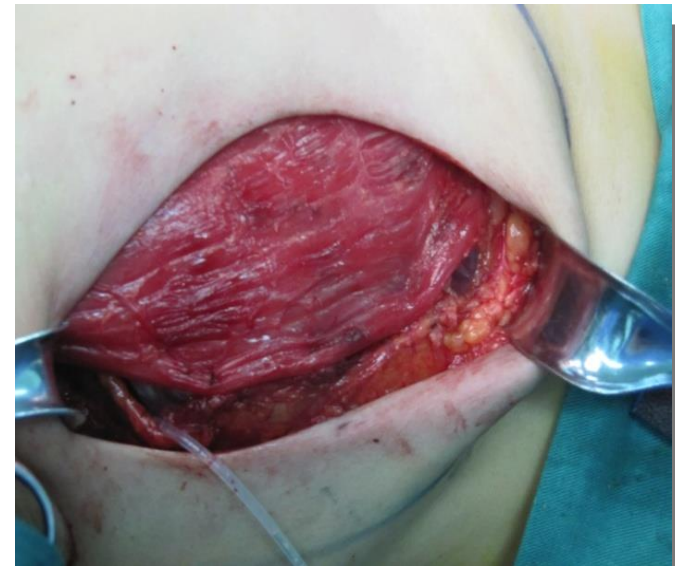
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## Structure retention

- Nipple-areolar complex
- Inframammary fold
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## Structure retention—Our experience

- The preservation of the natural breast structure is the precondition and guarantee of the mammary aesthetics after immediate reconstruction.
- According to the different reconstructive surgery, the reserved structures also need to be “added and subtracted”.
  - Delayed—Immediate Reconstruction: Inframammary fold (IMF) needs to be properly dissected as needed to achieve optimal expansion effect.
  - Transverse Rectus Abdominis Myocutaneous (TRAM) Flap Reconstruction :  
The retention of the pectoralis major is not required, IMF was partly destroyed.
  - Free Flap Breast Reconstruction: Keep the lateral thoracic vessels, intercostal vessels in the thoracic cavity and the fourth intercostal nerve.



## Collaboration = Excellence of care

**Oncoplastic  
Breast  
surgeon**



**Oncoplastic  
Plastic  
surgeon**

**Oncoplastic multidisciplinary team = the dream team!  
Sharing of knowledge, expertise and experience for the benefit of the patient**



# Summary

- Most patients greatly improved their mental and physical health through breast reconstruction. For early breast cancer patients who received a mastectomy surgery, it's necessary to let them know the advantage of immediate breast reconstruction.
- From an oncology perspective, breast reconstruction surgery is safe, but never compromise oncology outcomes by aesthetics goals.
- Evaluation strategy of therapeutic effect, complications, cosmetic result and patient satisfaction after reconstruction should be systematic and comprehensive, therefore skills can be improved and optimized from patients feedback.
- To perform a better reconstruction surgery need to sufficiently evaluated the team's own oncoplastic skills, breast reconstruction levels after mastectomy and treatment levels of radiotherapy team.

Tianjin Medical University Cancer Institute & Hospital

**Thank you!**

