

Friday January 26, 2024

BREAST CANCER DEBATE OF THE YEAR 2023

IMMEDIATE BREAST RECONSTRUCTION - PRO

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Universitair
Ziekenhuis
Brussel



●●● DISCLOSURES

No financial disclosures

No conflicts of interest EXCEPT...

●●● DISCLOSURES

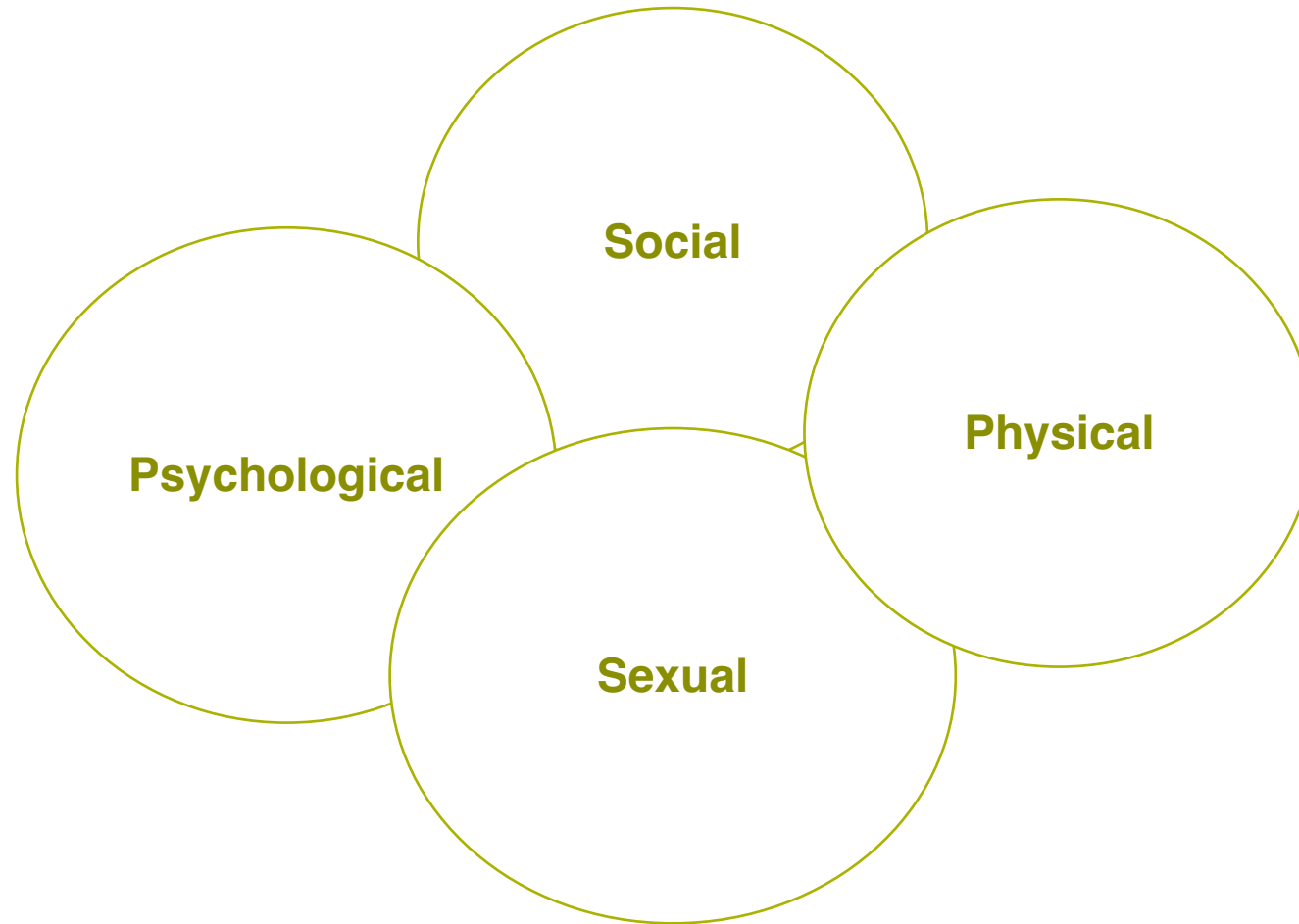
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I believe we need to avoid mastectomies as often as possible

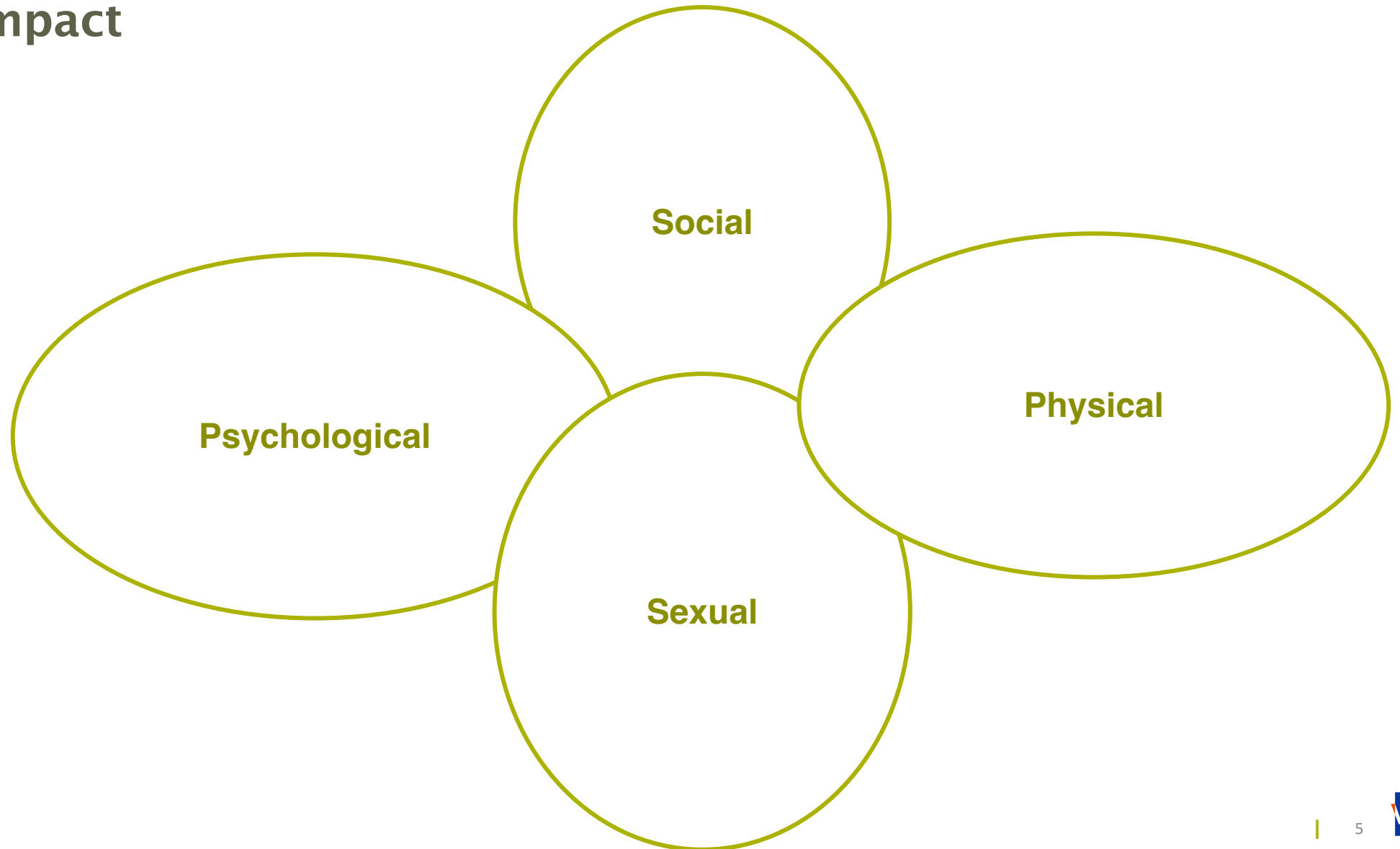
●●● BREAST CANCER DIAGNOSIS

Impact



●●● BREAST CANCER DIAGNOSIS + MASTECTOMY

Greater Impact



●●● BREAST RECONSTRUCTION BENEFITS

Compared to simple mastectomy

Improved body image

Less psychological distress

Less anxiety

Less depression

Less impact on sexual attractiveness

Better overall quality of life

Comparison of psychological aspects and patient satisfaction following breast conserving surgery, simple mastectomy and breast reconstruction

S.K. Al-Ghazal ^{a,*}, L. Fallowfield ^b, R.W. Blamey ^a

European Journal of Cancer (2000)

The percentage of patients that underwent reconstruction after breast cancer surgery increased from 26.94% in 2005 to 43.30% in 2014
Ilonzo N et al, Breast. 2017

BREAST RECONSTRUCTION

Choices

◉ Yes/No

◉ Type

- Implant-based
- Autologous
- Hybrid
- Fat-grafting

◉ Timing

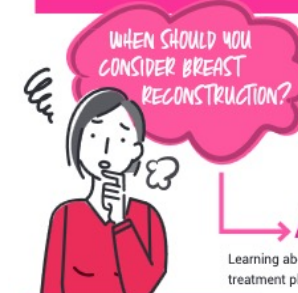
- Immediate
- Delayed

BREAST RECONSTRUCTION SURGERY Info Sheet

BREAST RECONSTRUCTION DOES NOT INCREASE the chance of breast cancer coming back or make it harder to check for recurrence.

Most women have **2 to 4 SURGERIES** to achieve the desired result.

Patients often have surgery on the opposite breast — to enlarge, reduce, or lift — to match the shape of the reconstructed breast.



WHAT YOU SHOULD KNOW

The goal of **breast reconstruction surgery** is to replace the skin, breast tissue and nipple that's removed during breast cancer surgery such as mastectomy, partial mastectomy or lumpectomy. The decision to undergo breast reconstruction after cancer surgery is a deeply personal choice. Many women choose to have the surgery because it can:

- 1** Improve emotional and social well-being
- 2** Restore feelings of wholeness and attractiveness
- 3** Eliminate the need for external prosthesis

TYPES OF BREAST RECONSTRUCTION

Surgeons typically use one of these approaches to reconstruct a breast:

- **Implants.** This procedure usually requires placement of a skin expander before the silicone or saline implant is inserted.
- **Your own tissue** (known as flaps). These procedures use skin, fat and muscle tissue from other body areas such as the abdomen, back, thighs or buttocks.
- **Combination of implants and own tissue**

ANYTIME (AS EARLY AS YOUR DIAGNOSIS OR YEARS LATER).

Learning about your reconstruction options, and the outcome you can expect, should be part of your cancer treatment planning — even if you delay reconstruction or defer your decision until a later time.

Your breast reconstruction options will depend on your disease status and overall health, your treatment plan (such as whether you have radiation therapy) and your preference.

IMMEDIATE reconstruction

performed at the time of mastectomy or other breast cancer surgery.

DELAYED reconstruction

performed months or even years after cancer treatment.

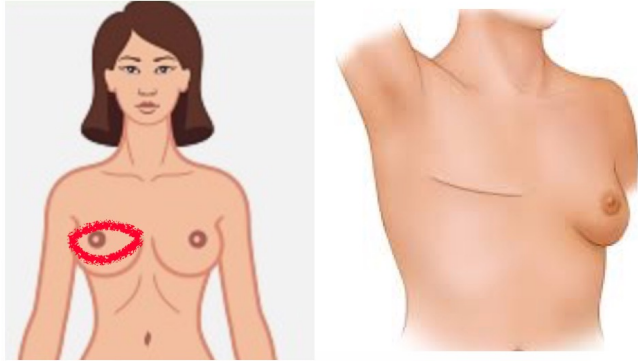
REVISIONS of prior reconstructions

to address issues with implants, asymmetry or other problems.

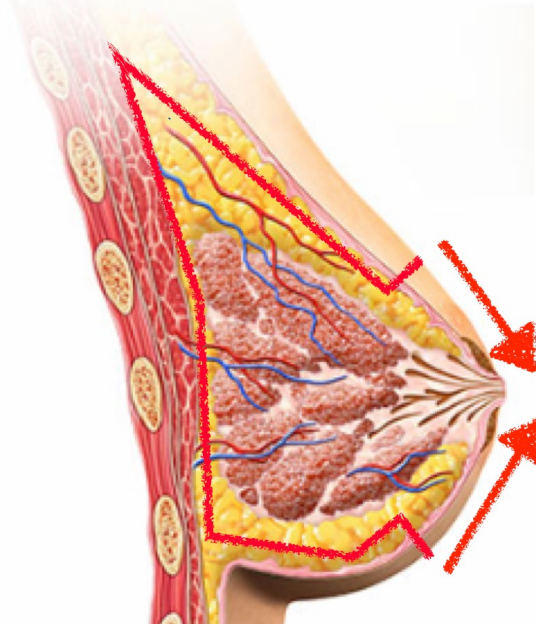
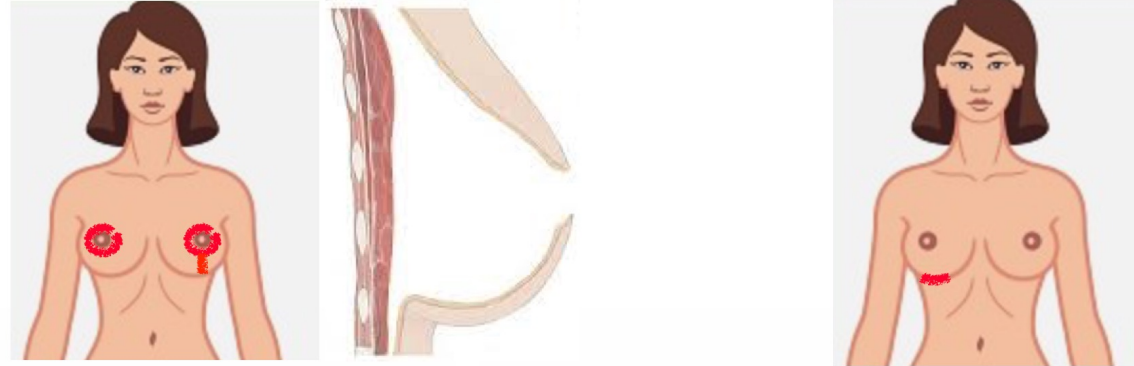
If you have radiation therapy, you may need to wait several months after completing treatment to allow chest skin to heal. Some women decide years later that they desire a reconstruction.



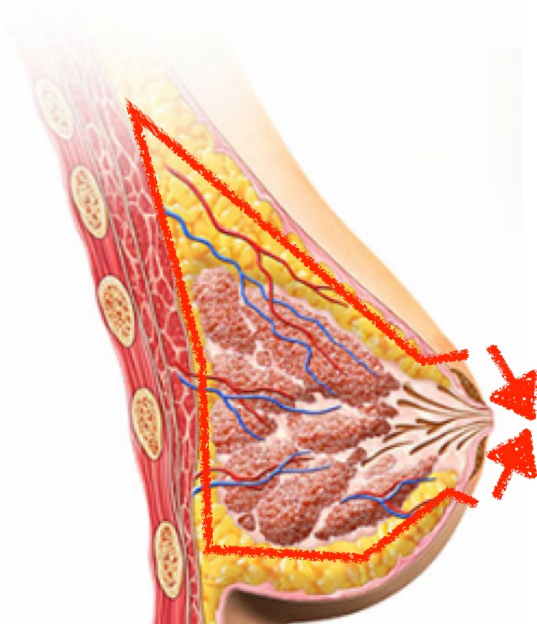
RECONSTRUCTION



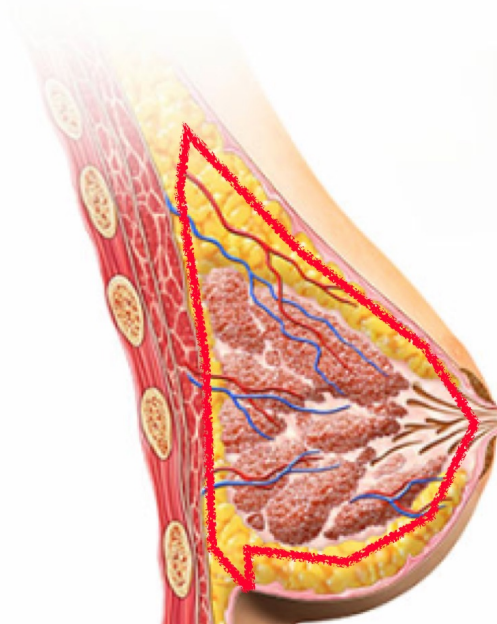
MASTECTOMY CHOICE



Simple Mastectomy



Skinsparing Mastectomy



Nipple(+skin)sparing Mastectomy

●●● MASTECTOMY CHOICE

Galimberti et al. The Breast 2017

Outcomes of (N)SSM: **SAME** as simple mastectomy
Recurrence rates (NAC) after NSM: **acceptably low** (0–3.7%)
(N)SSM: **high patient satisfaction**

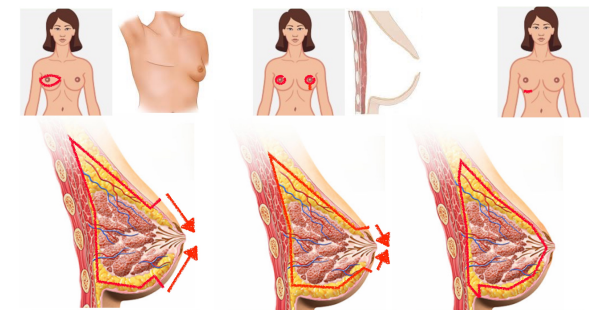
Contra-indications:

- a positive intraoperative nipple margin
- microcalcifications close to the subareolar region
- a positive nipple discharge.

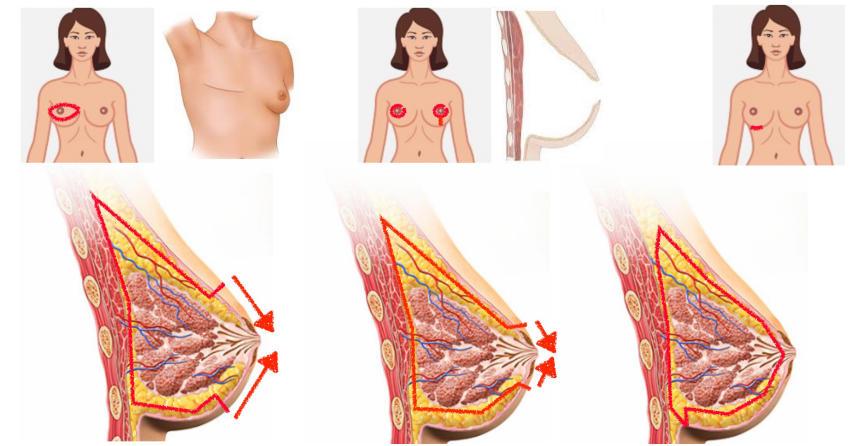
Complication rates: similar to other types of post-mastectomy reconstructions

Risk factors for complications:

- voluminous breast, ptosis, smoking, obesity, and radiotherapy
- less experienced surgical team



●●● MASTECTOMY CHOICE





Cho JH et al. Ann Surg Oncol. 2023

“Oncologic Outcomes in Nipple-sparing Mastectomy with Immediate Reconstruction and Total Mastectomy with Immediate Reconstruction in Women with Breast Cancer: A Machine-Learning Analysis”

Conclusions: NSM with IBR is a safe and feasible procedure in terms of oncologic outcomes

RECONSTRUCTION TYPE

Shumway DA et al. JCO. 2020

	Implant Based Breast Reconstruction (IBBR)	Autologous Breast Reconstruction (ABR)
 PROS	<ul style="list-style-type: none"> • Shorter operative time • Shorter hospital stay • Shorter postoperative recovery • No separate donor site • Greater flexibility with reconstructed breast size 	<ul style="list-style-type: none"> • Soft and warm as native breast • Weight changes/age affect symmetry less • Easier to achieve symmetry • Durable for life • Highest rate of patient satisfaction
 CONS	<ul style="list-style-type: none"> • Unnegligible rate of infection and implant loss • Possibility of capsular contracture • Possibility of implant rupture • Future surgeries: implant exchange • Lower patient satisfaction if PMRT is needed 	<ul style="list-style-type: none"> • Limited by available donor tissue • Longer operative time • Longer hospital stay • Longer postoperative recovery • Donor site scar and morbidity • Possibility of fibrosis and fatnecrosis with PMRT • Risk of flap failure

●●● BREAST RECONSTRUCTION TIMING

Immediate versus Delayed:

A Immediate reconstruction

Mastectomy and reconstruction

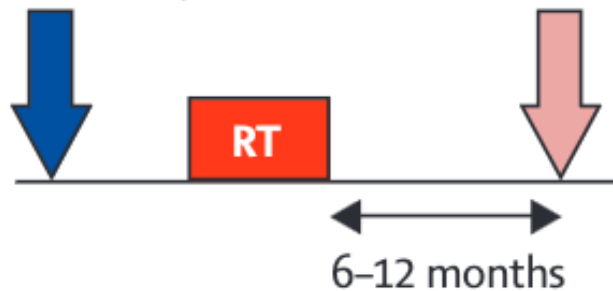


Immediate: breast reconstruction done at the same surgery as the mastectomy

B Delayed reconstruction

Mastectomy

Reconstruction

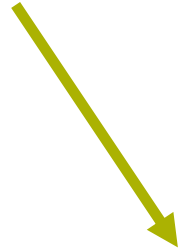


Delayed: months or years after the mastectomy.

Ho AY et al, Lancet Oncology 2017

●●● RECONSTRUCTION TIMING Cho JH et al. Ann Surg Oncol. 2023

Immediate versus Delayed





No difference in rate of development of local cancer recurrence
No difference in the ability to detect local cancer recurrence
No significant delays in getting other cancer treatments



RECONSTRUCTION TIMING



Shumway DA et al. JCO. 2020

	Immediate BR	Delayed BR
 PROS	<ul style="list-style-type: none"> • Less distress • Better psychological well-being • Avoidance of external prosthesis • Preservation of native breast skin envelope • Smaller/limited scars in autologous reconstruction • Fewer procedures • Choice either IBBR or ABRT in case of PMRT 	<ul style="list-style-type: none"> • Simplify RT planning • Gives patients more time to decide • Additional cancer therapy after mastectomy (such as radiation) does not cause problems at the reconstruction site • Minimize ABR fibrosis • Minimize ABR necrosis
 CONS	<ul style="list-style-type: none"> • Final pathology not available • Technical challenges with RT planning • Complications could delay start of RT or other adjuvant treatment • Flap shrinkage due to PMRT (mean 65ml) (Chatterjee et al, Br J Surg 2009) 	<ul style="list-style-type: none"> • Temporary loss of breast with lower patient satisfaction, psychosocial and sexual well-being • Autologous tissue needed • Less patients eligible • Less optimal cosmetic results • Additional surgery/additional recovery time • Technical difficulty operating on radiated tissue/vessels • No reliable cutoffs for timing of delayed reconstruction after radiotherapy



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Shumway DA et al. JCO. 2020

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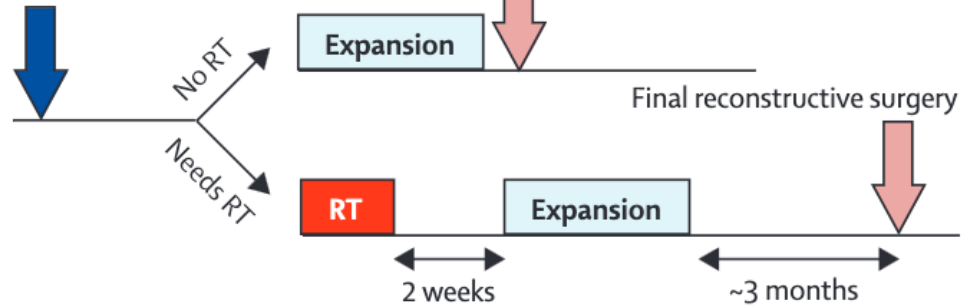


000 BREAST RECONSTRUCTION

Option 3

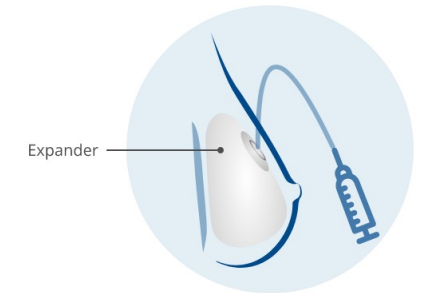
C Delayed-immediate reconstruction

Mastectomy and
TE placement with
partial inflation



Skin (+/- nipple) sparing mastectomy
with tissue expander placement

Delayed Immediate
Or 2-stage immediate



Ho AY et al, Lancet Oncology 2017

●●● DELAYED-IMMEDIATE RECONSTRUCTION

- Final pathology not available
 - Technical challenges with RT planning
 - Complications could delay start of RT
 - **Flap shrinkage due to PMRT (mean 65ml) (Chatterjee et al, Br J Surg 2009)**
- Temporary loss of breast with lower patient satisfaction, psychosocial and sexual well-being
 - Autologous tissue needed
 - Less patients eligible
 - Less optimal cosmetic results
 - Additional surgery/additional recovery time
 - Technical difficulty operating on radiated tissue/vessels
 - No reliable cutoffs for timing of delayed reconstruction after radiotherapy

BENEFITS of both immediate and delayed reconstruction

Gives patients more time to consider all available breast reconstruction options

Disadvantage: Two surgeries, increased cost (healthcare and personal), compared to simple mastectomy higher complication risk and more discomfort



IBR: DELAY OF ADJUVANT THERAPY?

Harmeling et al. [Breast Cancer Res Treat. 2015](#)

The effect of immediate breast reconstruction on the timing of adjuvant chemotherapy: a systematic review

IBR does not necessarily delay the start of adjuvant chemotherapy to a clinically relevant extent, suggesting that in general IBR is a valid option for non-metastatic breast cancer patients.

O'Connell RL et al. Br J Cancer 2019

The impact of immediate breast reconstruction on the time to delivery of adjuvant therapy: the iBRA-2 study

IBR does not result in clinically significant delays to adjuvant therapy, but post-operative complications are associated with treatment delays.

Strategies to minimize complications, including careful patient selection!

000 COMPLICATIONS

Tran NV et al. Plast Reconstr Surg 2001



Early series evaluating immediate autologous reconstruction: concerning outcomes

Immediate autologous flap reconstruction followed by PMRT: significantly higher incidence of late complications compared with a delayed approach after PMRT

- fat necrosis (44% vs 9%),
- contracture (75% vs 0%)
- volume loss (88% vs 0%)

Comparison of immediate and delayed free **TRAM flap** breast reconstruction in patients receiving postmastectomy radiation therapy.

In a retrospective comparison of all types of reconstruction (implant and autologous, both immediate and delayed) from the Cleveland Clinic, the **lowest rate of complications** requiring reoperation and reconstruction failure was actually observed in **immediate autologous reconstruction**.

Berry T et al. Complication rates of radiation on tissue expander and autologous tissue breast reconstruction. Ann Surg Oncol 2010

●●● RISK FACTORS FOR COMPLICATIONS

Post Mastectomy Radiotherapy = PMRT

Velikova et al. Lancet Oncol 2018

Adjuvant chest wall irradiation: reduces locoregional recurrence and breast cancer mortality (EBCTCG meta-analysis 2014)

- Robust evidence in high risk pN2 patients
- Intermediate risk patients with pN1 disease
 - controversial
 - practice and guidelines vary

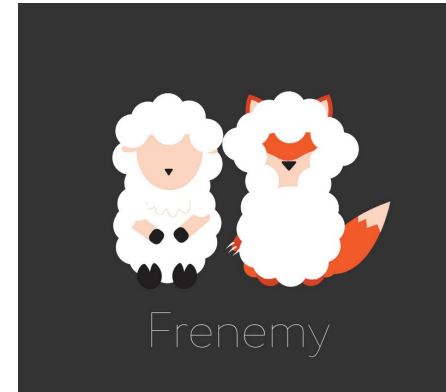
? SUPREMO trial ?

●●● RISK FACTORS FOR COMPLICATIONS

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 - Robust evidence in high risk N2 patients
 - Intermediate risk patients with N1 disease
 - controversial
 - practice and guidelines vary
- ? SUPREMO trial ?**



- **BUT negative impact on tissue vascularity/cellularity**
- **Ionizing radiation : inflammatory cascade leading to fibrosis, vascular thrombosis, atrophy of skin and sc tissue**

ADDITIONAL RISK FACTORS

Berry et al. Ann Surg Oncol (2010)

Complication Rates of Radiation on Tissue Expander and Autologous Tissue Breast Reconstruction

Study: impact of clinical risk factors including radiation on complication rates for autologous reconstruction and tissue expander/implant reconstruction

Goal: identify a subset of patients who are best suited to undergo each type of reconstruction.

TABLE 1 Total complication rates for tissue expander/implant reconstructions

Complication	Overall complication rate	Complication rate in radiated patients
Total (major and minor)	31.8% (24.4% and 7.4%)	58.8% (45.4% and 13.4%)
Hematoma	2.4%	0%
Wound dehiscence	2%	8.2%
Infection	10.1%	10.3%
Mastectomy flap necrosis	2%	1%
Implant leak	1.5%	0%
Implant extrusion	4%	16.5%
Capsular contracture	9.6%	23%

TABLE 2 Univariate analysis of risk factors for total complications in tissue expander reconstruction

Factor and level	Total	No complications		Complication(s)		Odds ratio	P value
		N	Percentage	N	Percentage		
Age at time of surgery						1.48 (1.08, 2.05)	.016L
<50	416	298	71.6	118	28.4		
>50	289	182	63	107	37		
BMI						1.93 (1.48, 2.52)	<.001L
<30	539	391	72.5	148	27.5		
>30	149	76	51.0	73	49		
Diabetes						2.94 (1.41, 6.29)	.004L
No	676	468	69.2	208	30.8		
Yes	30	13	43.3	17	56.7		
Radiation treatment							
None	595	436	73.3	159	26.7		
Preoperative XRT	33	12	36.4	21	63.6	4.80 (2.34,10.27)	<.001L
Postoperative XRT	72	30	41.7	42	58.3	3.84 (2.33, 6.39)	<.001L

L logistic regression



ADDITIONAL RISK FACTORS

Berry et al. Ann Surg Oncol (2010)

BMI > 30 was the only significant predictor of major complications in autologous reconstruction on multivariate analysis. 4 - fold increase in the major complication rate for autologous reconstruction (P < .001) over patients with BMI< 30

TABLE 3 Total complication rates for autologous reconstruction

Complication	Complication rate
Total	31.5% (19.7% and 29.5%)
Hematoma	3.7%
Wound dehiscence	6.7%
Infection	10.5%
Mastectomy flap necrosis	15.9%
Autologous flap necrosis	7.3%
Implant leak	0%
Implant extrusion	1.5%
Capsular contracture	5.4%

TABLE 5 Multivariate model for major complications in autologous reconstruction

Factor and level	Odds ratio	95% confidence interval	P value
Age			
>50 vs <50	0.65	(0.38, 1.10)	.11
BMI			
>30 vs <30	4.11	(2.43, 7.04)	<.001
Smoker			
Yes vs No	1.55	(0.89, 2.67)	.11
Hypertension			
Yes vs No	0.71	(0.37, 1.34)	.31
Diabetes			
Yes vs No	1.96	(0.59, 6.09)	.25
Radiation therapy			
Preoperative vs None	0.93	(0.48, 1.78)	.84
Postoperative vs None	1.22	(0.57, 2.52)	.61
Chemotherapy			
Preoperative vs None	0.93	(0.43, 1.95)	.86
Postoperative vs None	0.70	(0.38, 1.25)	.23

●●● ADDITIONAL RISK FACTORS

Mrad et al Plast Reconstr Surg Glob Open. 2022

Predictors of Complications after Breast Reconstruction Surgery: A Systematic Review and Meta-analysis

Age, obesity, and smoking are significant predictors of major or reoperative complications.

Informed consent process:

To counsel patients correctly and guide the joint decision-making process with reliable information

●●● BREAST RECONSTRUCTION AND PMRT

Mastectomy Reconstruction Outcomes Consortium (MROC)

Jagsi R, Momoh AO, Qi J, et al: Impact of radiotherapy on complications and patient-reported outcomes after breast reconstruction. J Natl Cancer Inst 2018

No significant difference in complication rates after 1 year between groups
25·9% in patients receiving immediate autologous reconstruction
26·9% in patients receiving delayed autologous reconstruction; $p=0\cdot54$

1–2 years after reconstruction both groups reported similar levels of satisfaction

Immediate abdominal-based reconstructions tolerate radiotherapy better than previously anticipated with a minimal level of morbidity.

●●● IMMEDIATE BREAST RECONSTRUCTION

Immediate reconstruction = not for everyone

Immediate + immediate-delayed reconstruction: for many!

The risk for complications should be carefully balanced with the psychosocial and technical benefits of immediate reconstruction.

Patient selection to avoid complications:

> Oncoplastic MDT: breast surgeon, plastic/reconstructive surgeon, radiation oncologist!

●●● REDUCE DELAYED RECONSTRUCTION

Perform BCS as often as possible

- Multifocality
- Multicentricity
- Previous ipsilateral BCS

●●● REDUCE DELAYED RECONSTRUCTION

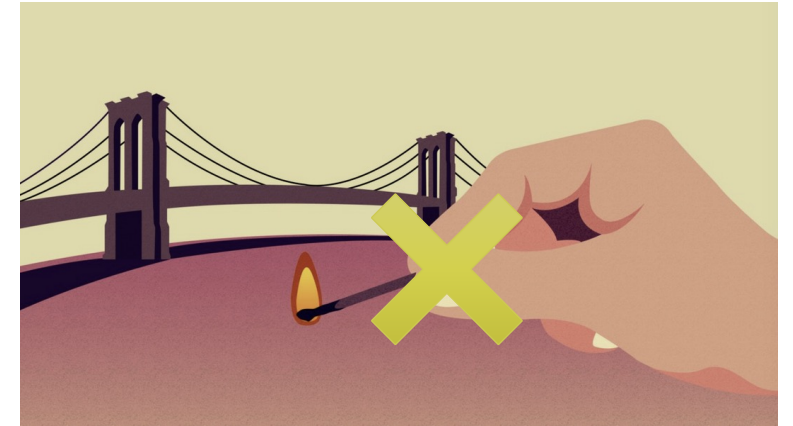
Perform BCS as often as possible



- Multifocality
- Multicentricity
- Previous ipsilateral BCS

Invest in oncoplastic surgery and an oncoplastic multidisciplinary team

●●● REDUCE DELAYED RECONSTRUCTION



Mastectomy needed or preferred:

Try to avoid simple mastectomies unless patient's preference OR absolute indication

SSM or NSM


Clear choice for autologous reconstruction and no other risk factors: **immediate reconstruction**

Clear choice for autologous reconstruction and other risk factors: sentinel biopsy first? To exclude pN+ status and PMRT

Undecided for type of reconstruction: delayed-immediate reconstruction with TE, buying time w/o burning bridges

Clear choice for implant: delayed-immediate reconstruction with TE with IBBR at a later date

Thank you for your attention!



IMMEDIATE BREAST RECONSTRUCTION NOT IN FAVOUR

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TYPES OF RECONSTRUCTION

Expander/prosthesis (+/- Latissimus dorsi flap)

Autologous reconstruction :

- Latissimus dorsi flap
- DIEP-flap
- SGAP-flap
- TMG-flap/PAP flap



ADVANTAGES OF IMMEDIATE RECONSTRUCTION

- * Psychological impact
(fear, depression, body image, self confidence)

- * Aesthetic impact on result
 - skin/nipple sparing – scars
 - preservation of the breast mound

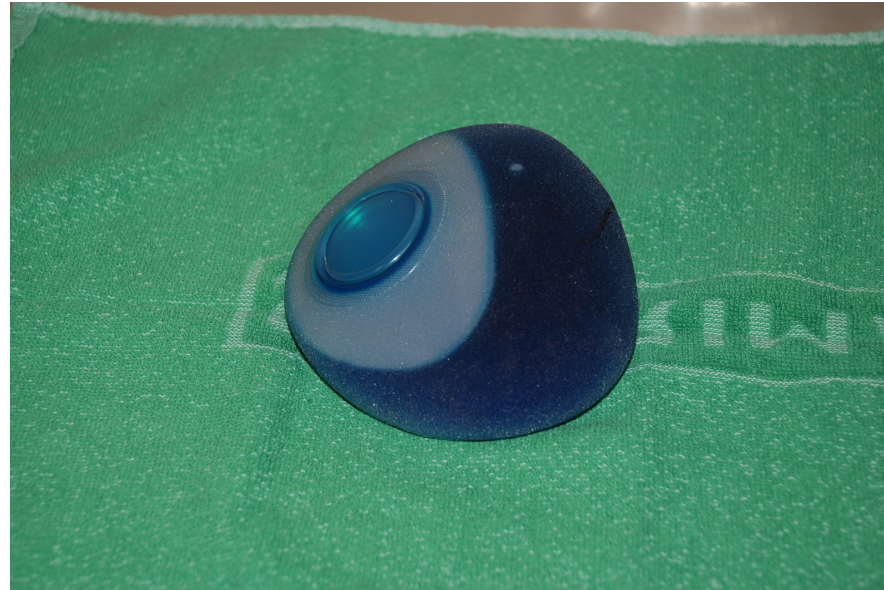
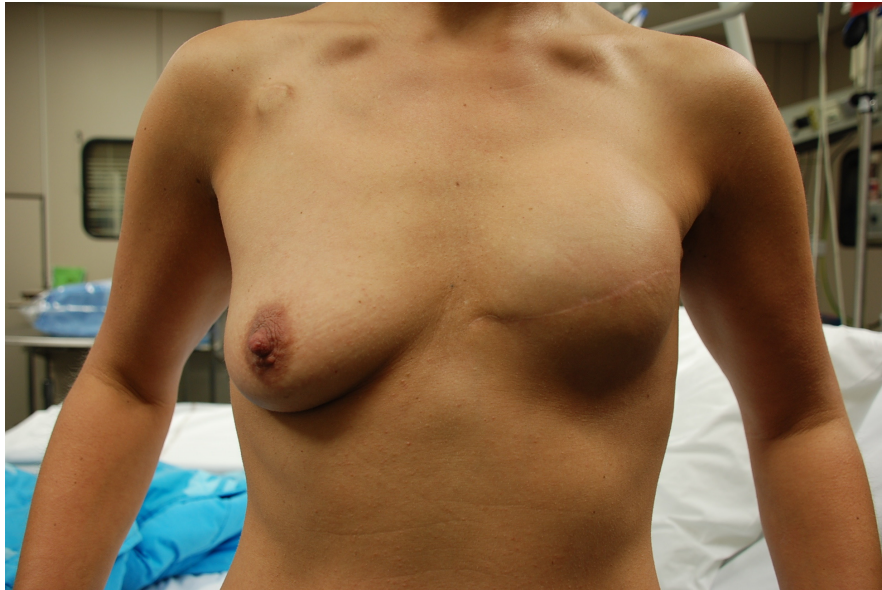


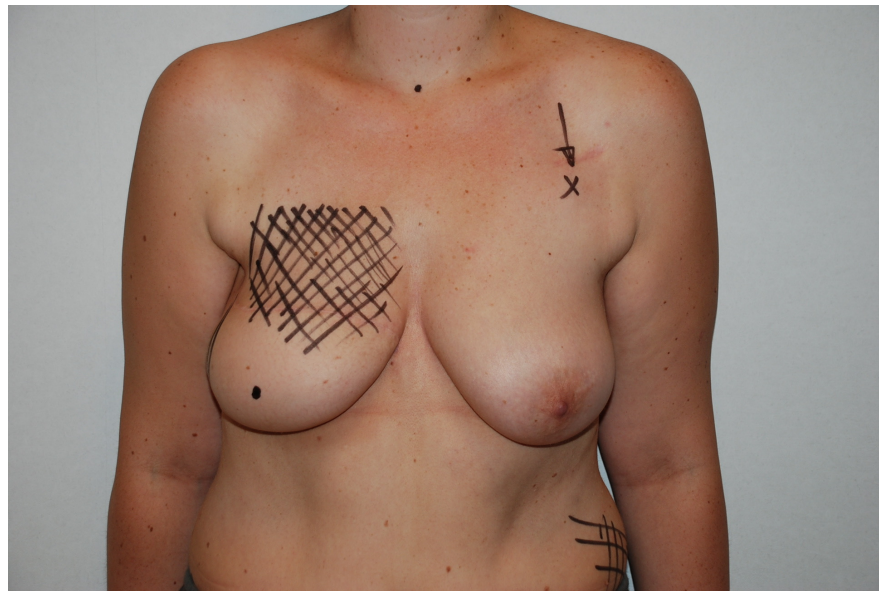


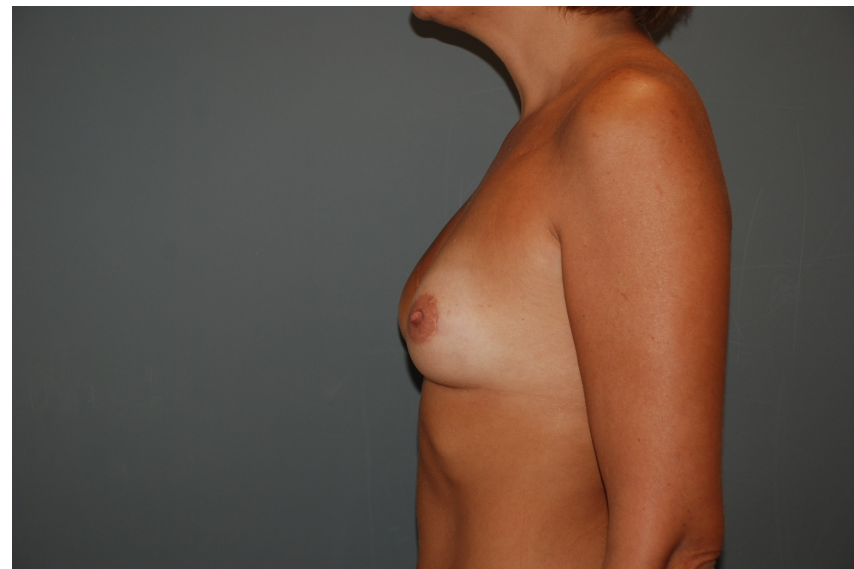
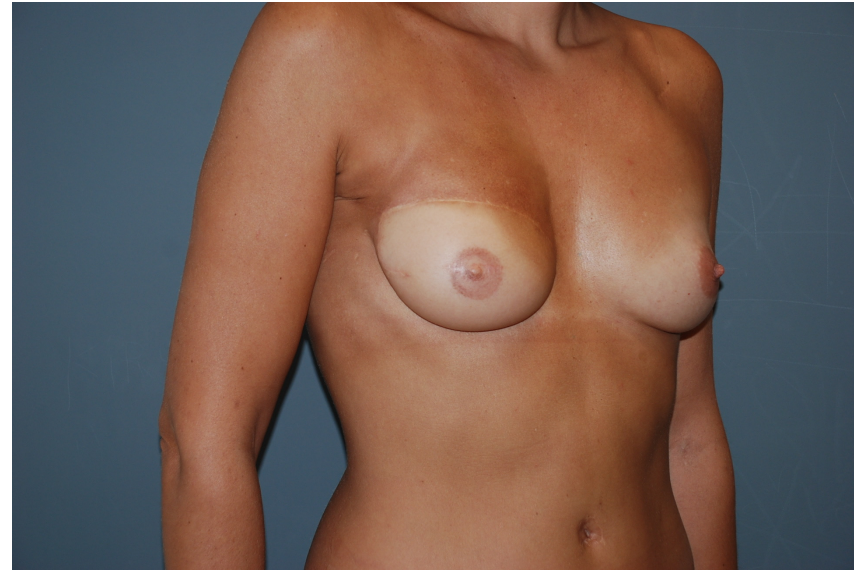


DISADVANTAGES OF DELAYED RECONSTRUCTION

- * Non skin sparing
- * Implant only reconstruction difficult
- * More scarring
- * Psychological impact









POTENTIAL SIDE EFFECTS OF PMRT ON IMMEDIATE RECONSTRUCTION

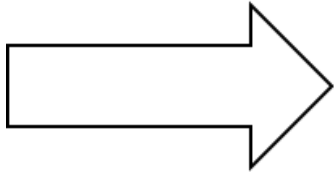
* Implant:

- Wound dehescence – implant loss
- Capsular contraction around prothesis

* Autologous reconstruction:

- Fibrosis/fat necrosis
- Skin retraction
- Volume loss

- Retraction of the complete breast



- * Subjective symptoms

- Pain

- Loss of function

- * Aesthetic inferior result

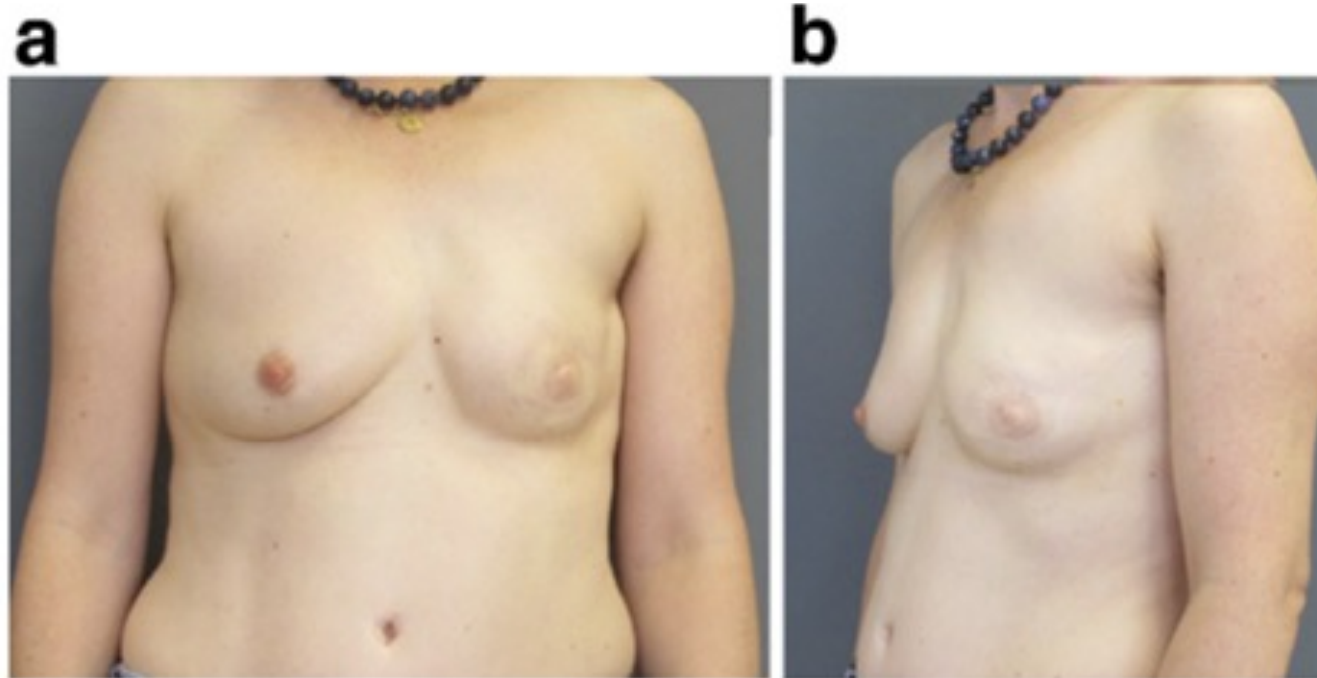


Figure 2 Patient 1, 9 years after IBR and postmastectomy radiotherapy.

Immediate versus delayed autologous breast reconstruction: A retrospective matched cohort study of irradiated patients
Vandevoort M, Fabre G et al. JPRAS 2019;72:1769-1775

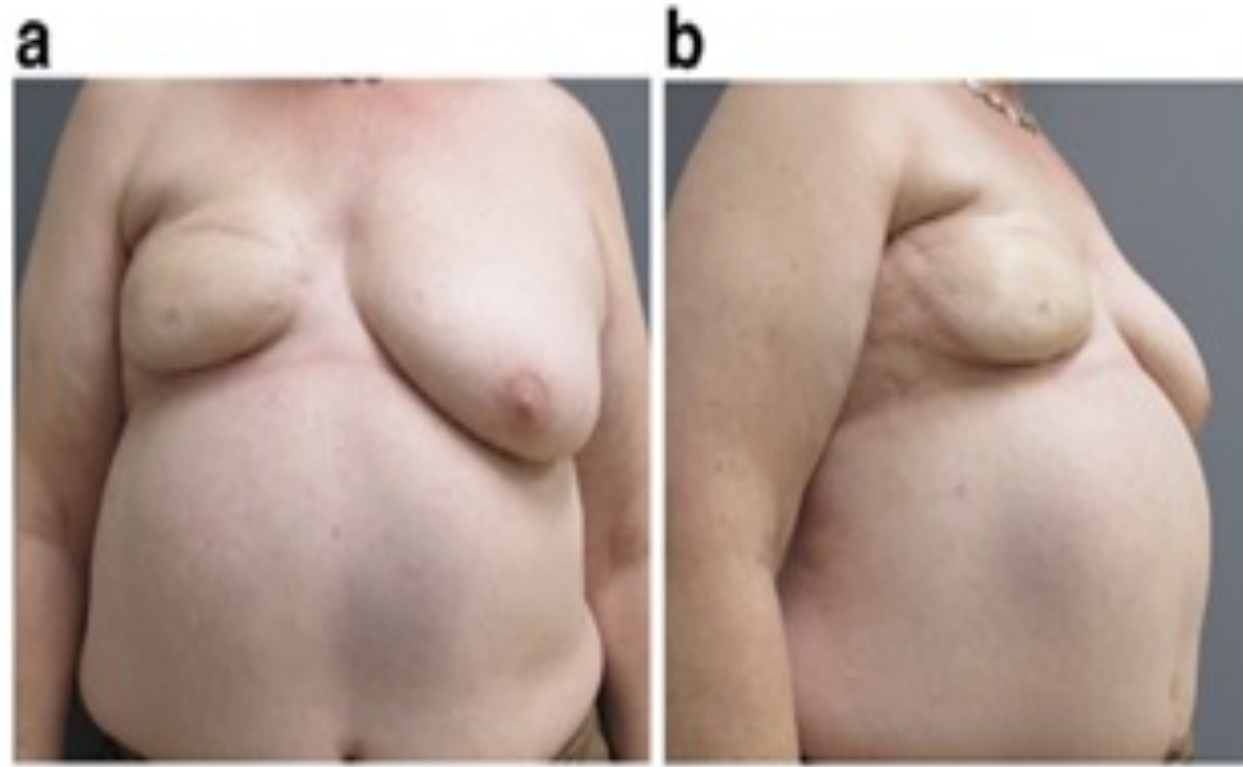


Figure 3 Patient 2, 16 years after IBR and postmastectomy radiotherapy.

Immediate versus delayed autologous breast reconstruction: A retrospective matched cohort study of irradiated patients
Vandevoort M, Fabre G et al. JPRAS 2019;72:1769-1775

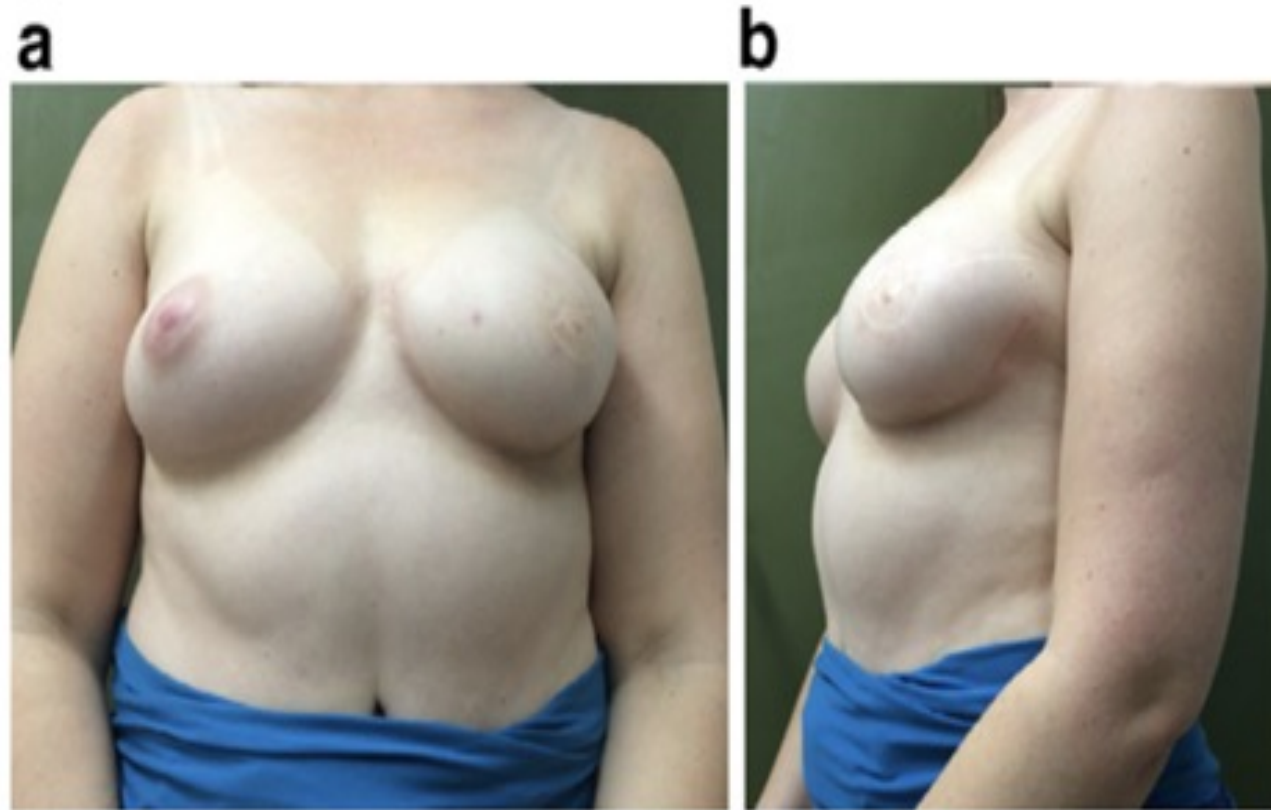


Figure 4 Patient 3, 5 years after IBR and postmastectomy radiotherapy.

Immediate versus delayed autologous breast reconstruction: A retrospective matched cohort study of irradiated patients
Vandevoort M, Fabre G et al. JPRAS 2019;72:1769-1775

STANDARDS IN UNIVERSITY HOSPITALS LEUVEN

If PMRT likely:

breast reconstruction postponed
after adjuvant RT
(secondary reconstruction)



INDICATION FOR IBR

- * Prophylactic surgery
- * Recurrence of breast cancer after tumorectomy and previous RT
- * Small tumors => no RT

●●● PRESSURE ON PROFESSIONALS TO DO IMMEDIATE RECONSTRUCTION REGARDLESS OF INDICATION RT

- * Patients/groups
- * International associations
- * Accrediting organisations
(Eg Eusoma: > 40% immediate reconstruction)



DELAYED IMMEDIATE BREAST RECONSTRUCTION OF PMRT

* Two- stage approach

1. Temporary tissue-expander/implant
2. If no PMRT => immediate BRC after stage 1
3. If PMRT => breast reconstruction after adjuvant RT



ADVANTGES DIBR

- * Breast skin & mound are saved
(psychological/aesthetic impact)
- * No RT of final reconstruction
- * Implant only reconstruction is possible
- * Time for patient for decision making definitive reconstruction



DISADVANTAGES DIBR: SHORT-TERM COMPLICATIONS

- * Problems with remote injection port: position switch – to deep
- * Wound necrosis/dehiscence
- * Infection foreign material
- * Implant extrusion



DISADVANTAGES DIBR: SHORT-TERM COMPLICATIONS

- => - Augmented re-operation/re-admission risk
- Postponing adjuvant therapy
 - Psychological impact of complications
 - Augmented cost health care

DISADVANTAGES DIBR: LONG-TERM COMPLICATIONS

Long-term effect on tissue-expander

- Capsular contraction Baker 3/4
 - › Skin not useful for reconstruction
 - › Aesthetic inferior result to secondary reconstruction
- Functional discomfort/pain due to TE



CONCLUSION

1. Immediate reconstruction **if no RT**
2. Secondary reconstruction or DIBR **if RT**



THANK YOU