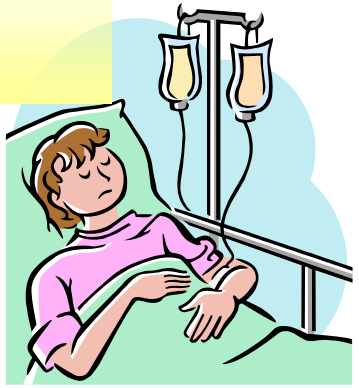
Clinical Outcome of Reconstruction With Tissue Expanders for Patients With Breast Cancer and Mastectomy

Mitsui Memorial Hospital
Department of Breast and Endocine surgery
Daisuke Ota



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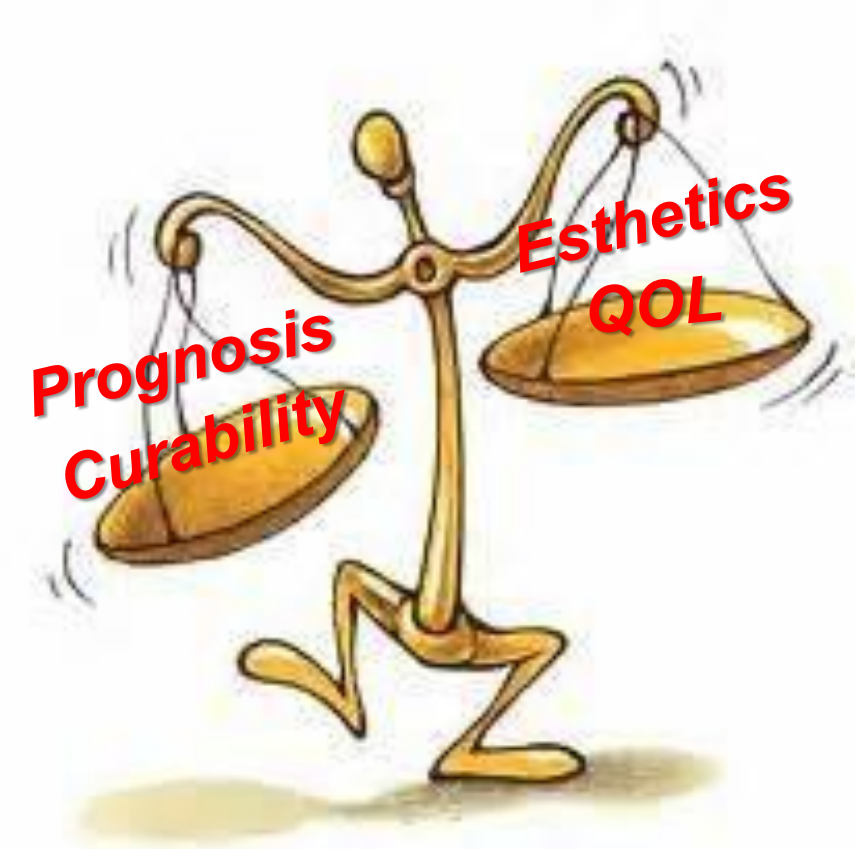
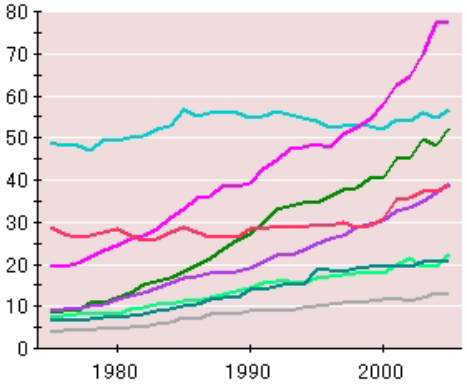
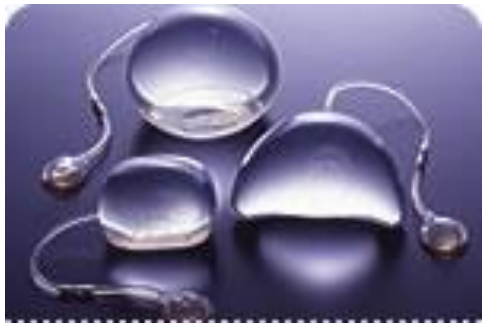
The incidence of breast cancer is increasing in Japan. Improved prognosis is expected due to advances in screening and adjuvant therapy.

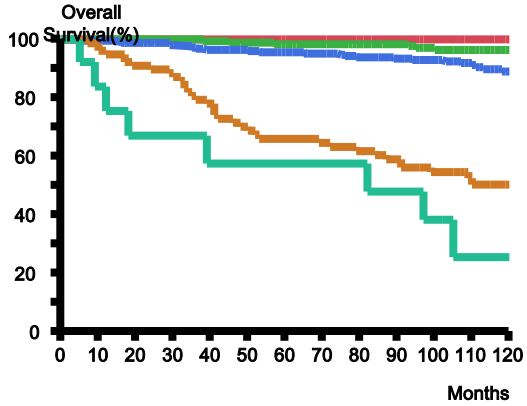


Improvement in postoperative QOL is a very important issue for breast cancer patients.

Do reconstructions with tissue expanders (TEs) and permanent implants (PIs) affect the prognosis or local recurrence rate?







Did the infection rate increase?

Patients & Methods-1

- ***Of patients who had undergone mastectomies for primary unilateral breast cancer in our hospital between 2000 and 2009, 197 patients who had immediate reconstruction with TEs (TE group) and 540 patients who had mastectomy (MT group) were included.***

- ***An antibiotic was administered pre-operatively based on guidelines for patients undergoing any surgical procedure.***

- ***A J-VAC® drain was inserted into the regional axilla. When the drainage was < 50 mL/day, the drainage tube was removed.***

Infection

Erythema, high fever, pain, or tenderness

Infection !!

Types of TEs

Koken Co., Ltd.

2000~2006

Allergan, Inc.

2006~present

Patient characteristics

	TE(197)	MT(540)	
Number of patients	197	540	
Median age (years)	46(27-79)	58(39-88)	p<0.0001
Axillary lymph node			
SLN or No treatment	*94 (47.7%)	**153 (28.3%)	p<0.0001
Dissection	103 (52.3%)	387 (71.7%)	
Median follow-up period	93.0 months	93.5 months	p=0.8066
DM and/or HD			
Yes	3 (1.5%)	25 (4.6%)	p=0.0509
No	194 (98.5%)	515 (95.4%)	

*No treatment = 6 cases
**No treatment = 3 cases

	TE(197)	MT(540)	
Chemotherapy			
Yes	86 (43.7%)	227 (42.0%)	
No	111 (56.3%)	313 (58.0%)	p=0.6942
Endocrine therapy			
Yes	131 (66.5%)	344 (63.7%)	
No	66 (33.5%)	196 (36.3%)	p=0.4832
PMRT			
Yes	3 (1.5%)	26 (4.8%)	
No	194 (98.5%)	514 (95.2%)	p=0.0419
Local & distant metastases			
Yes	32 (16.2%)	114 (21.1%)	
No	165 (83.8%)	426 (78.9%)	p=0.1423
Distant metastasis			
Yes	29 (14.7%)	104 (19.3%)	
No	128 (85.3%)	436 (80.7%)	p=0.1562

Clinicopathologic Findings

	TE(197)	MT(540)	
T factor			
Tis-T3	192 (97.5%)	500 (92.6%)	
T4	5 (2.5%)	40 (7.4%)	p=0.0146
Hormone receptor			
Positive	160 (81.2%)	400 (74.1%)	
Negative	30 (15.2%)	140 (25.9%)	
Unknown	7 (3.6%)	0	
Histologic type			
DCIS	31 (15.7%)	39 (7.2%)	
IC	166 (84.3%)	501 (92.8%)	p=0.0005
Axillary involvement			
Positive	73 (37.1%)	240 (44.4%)	
Negative	124 (62.9%)	300 (55.6%)	p=0.0725

Local Recurrence

	TE	MT	
All patients			
Yes	8 (4.1%)	22 (4.1%)	
No	189 (95.9%)	518 (95.9%)	p=0.9936
IC			
Yes	8 (4.8%)	22 (4.4%)	
No	158 (95.2%)	479 (95.6%)	p=0.8176

The LR rate in the TE group was not different from the MT group amongst all patients or patients with IC.

Local Recurrence

	TE	MT	
Axillary LN-negative			
Yes	1 (0.8%)	1 (0.3%)	
No	123 (99.2%)	299 (99.7%)	p=0.5178
Axillary LN-positive			
Yes	7 (9.6%)	21 (8.8%)	
No	66 (90.4%)	219 (91.2%)	p=0.8259

The LR rate in the TE group was not different from the MT group amongst the patients with or without LN metastases.

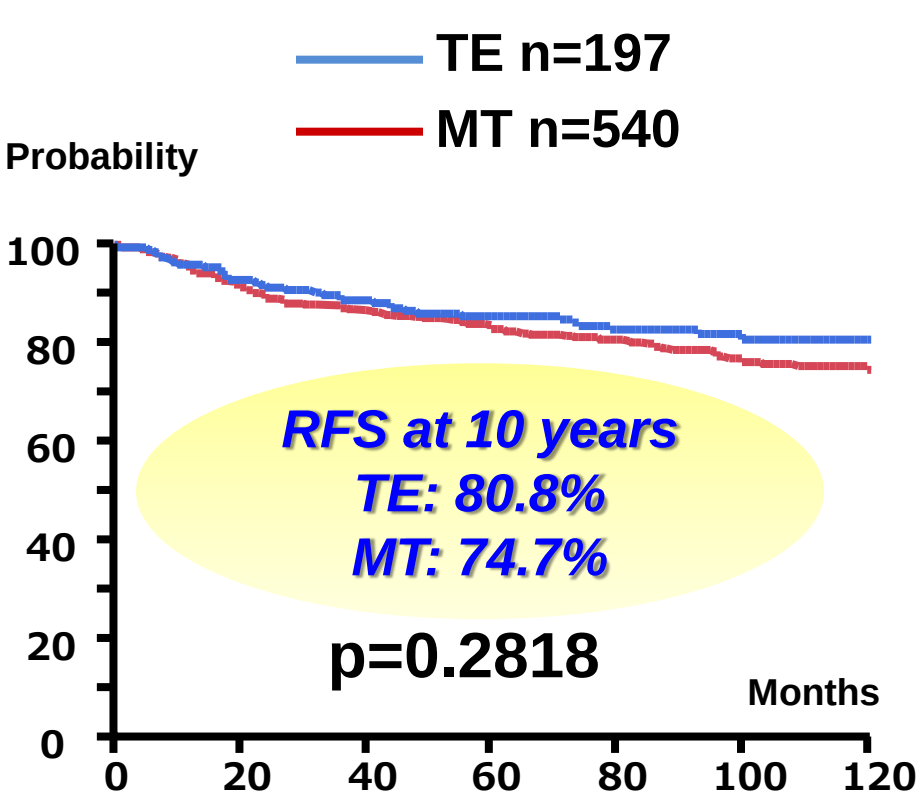
Univariate and Multivariate analyses of LR

	Univariate analysis		Multivariate analysis	
	Odds ratio	p value	Odds ratio	p value
Age < 40 years	5.02	0.0003	3.94	0.0033
T3 or T4	3.61	0.0033	1.96	0.1403
Axillary involvement	20.73	<0.0001	15.19	<0.0001
Lymphatic invasion	5.28	0.0001	1.22	0.7187
HR negative	1.43	0.5142		
Reconstruction with TE	1.00	0.9936		

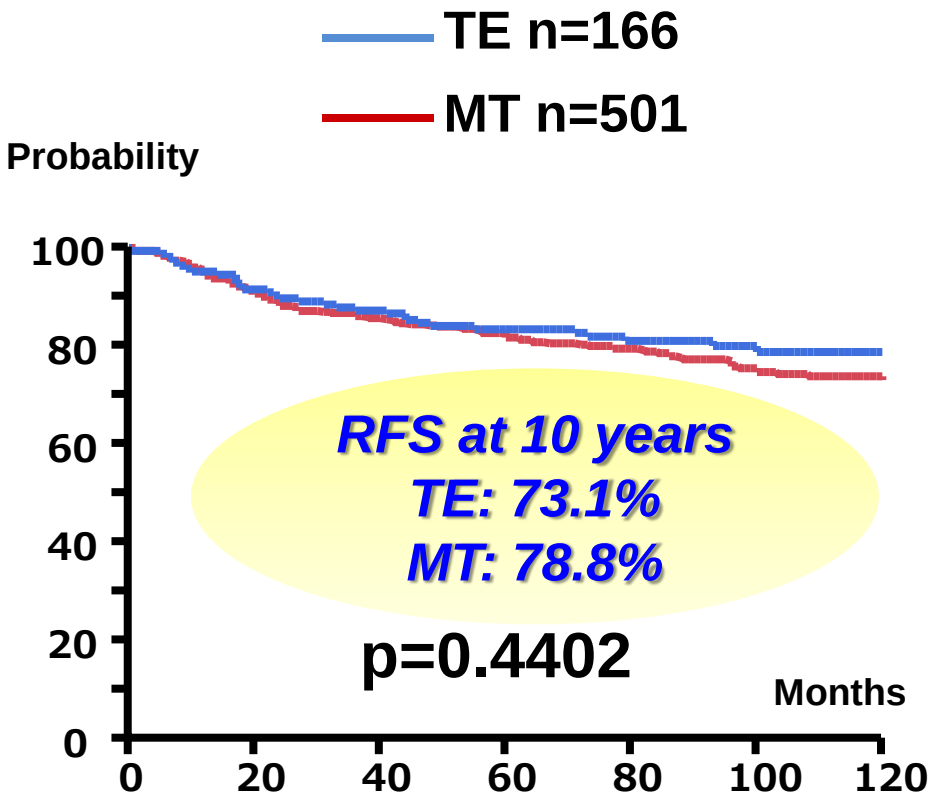
Reconstruction with TE did not affect the LR rate.

Relapse-free Survival

All patients



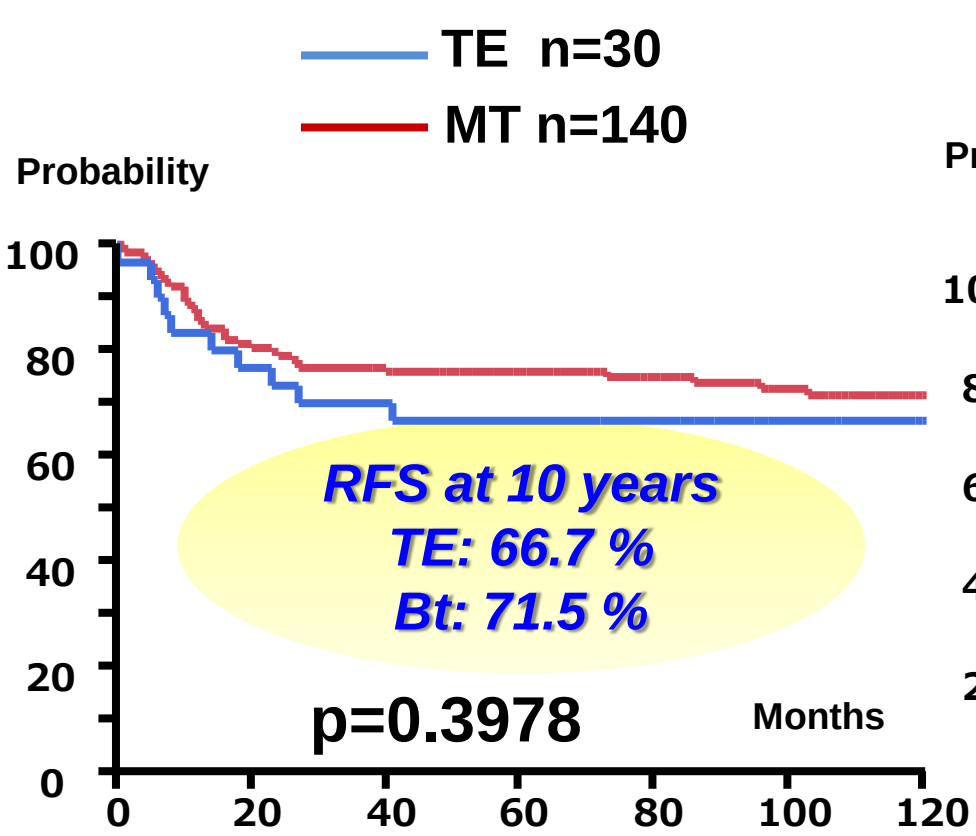
IC



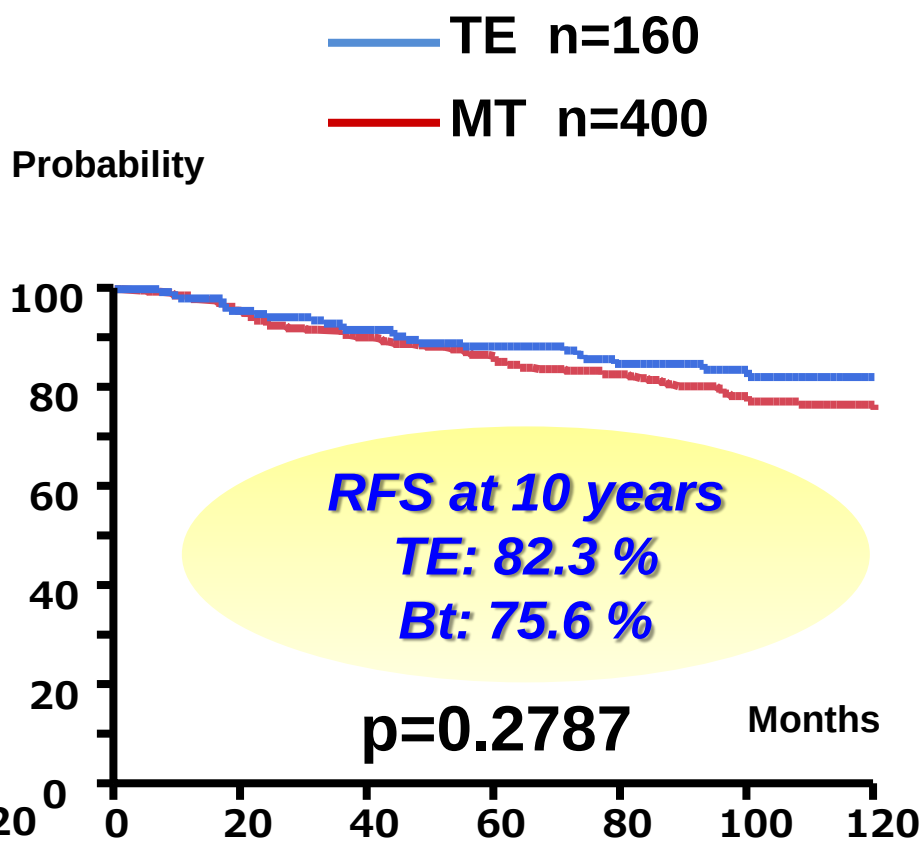
RFS in the TE group was not different from the MT group amongst all patients or patients with IC.

Relapse-free Survival

HR-negative



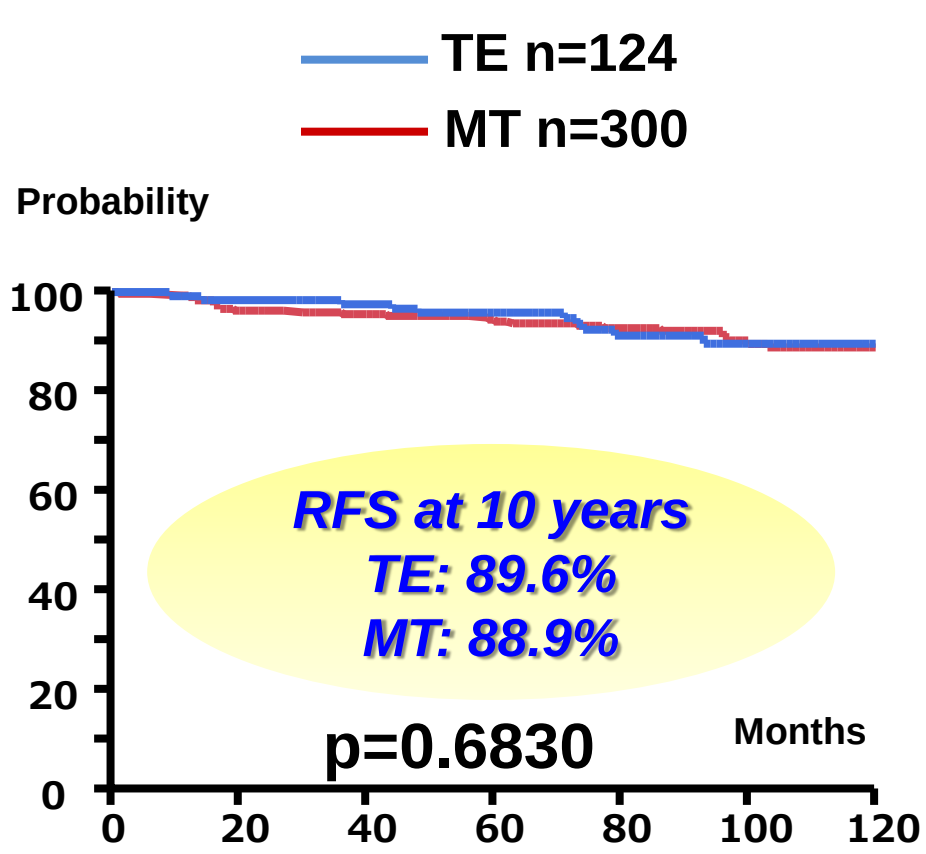
HR-positive



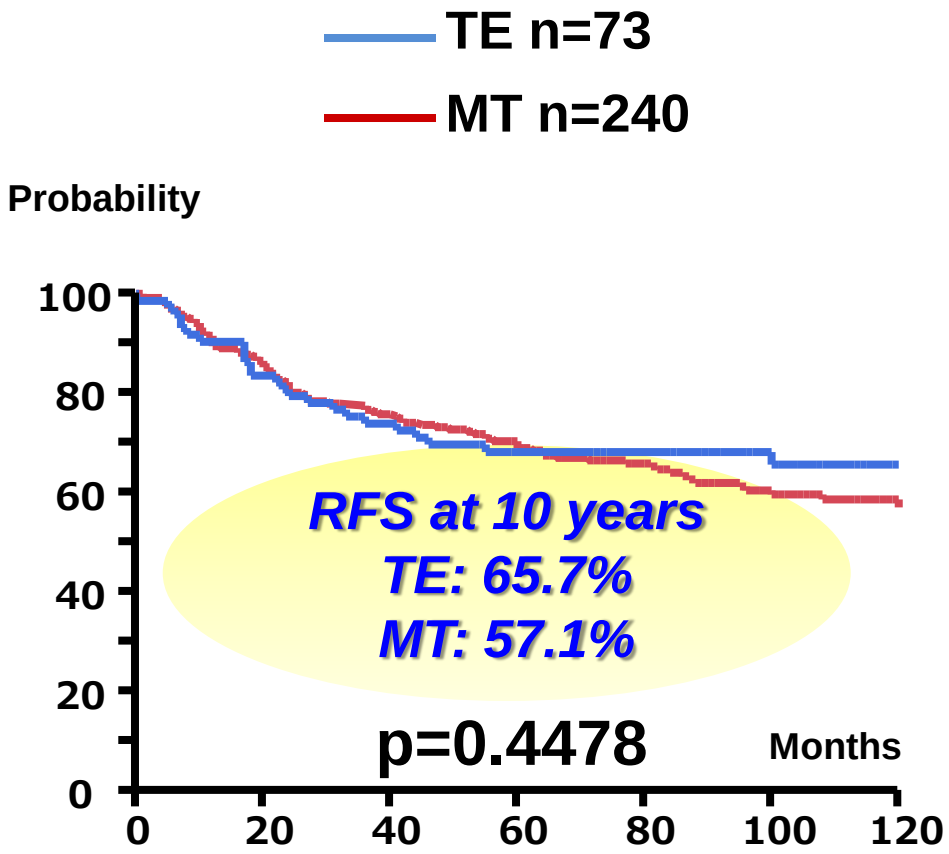
RFS in the TE group was not different from the MT group amongst the patients who were HR-negative or –positive.

Relapse-free Survival

Node-negative



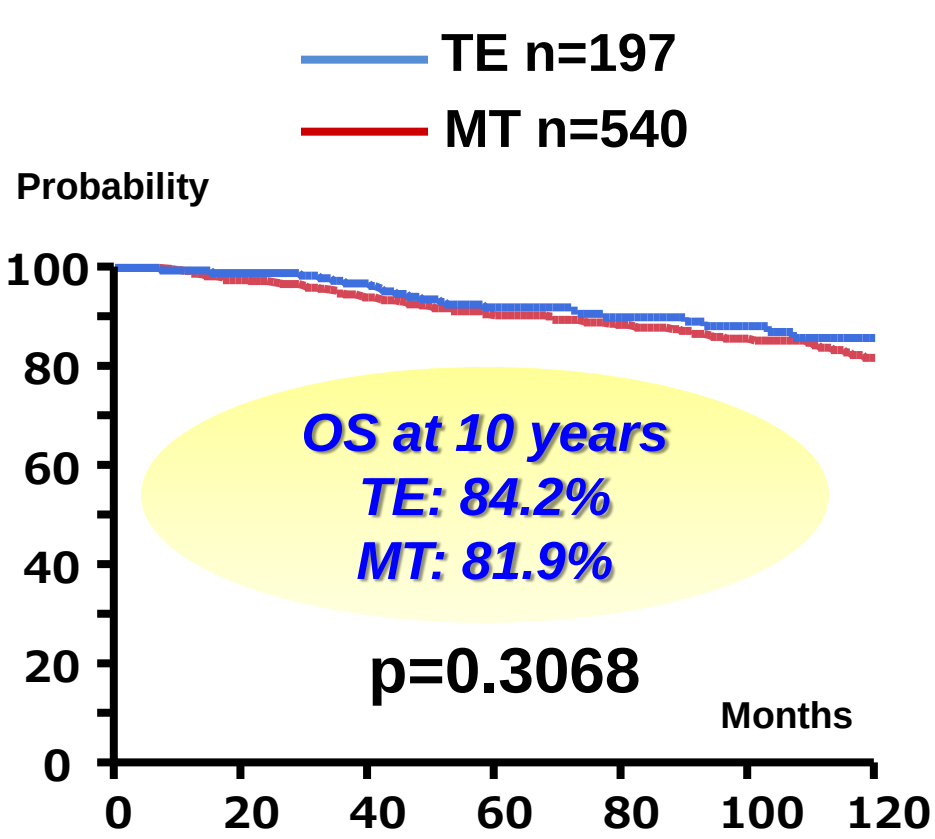
Node-positive



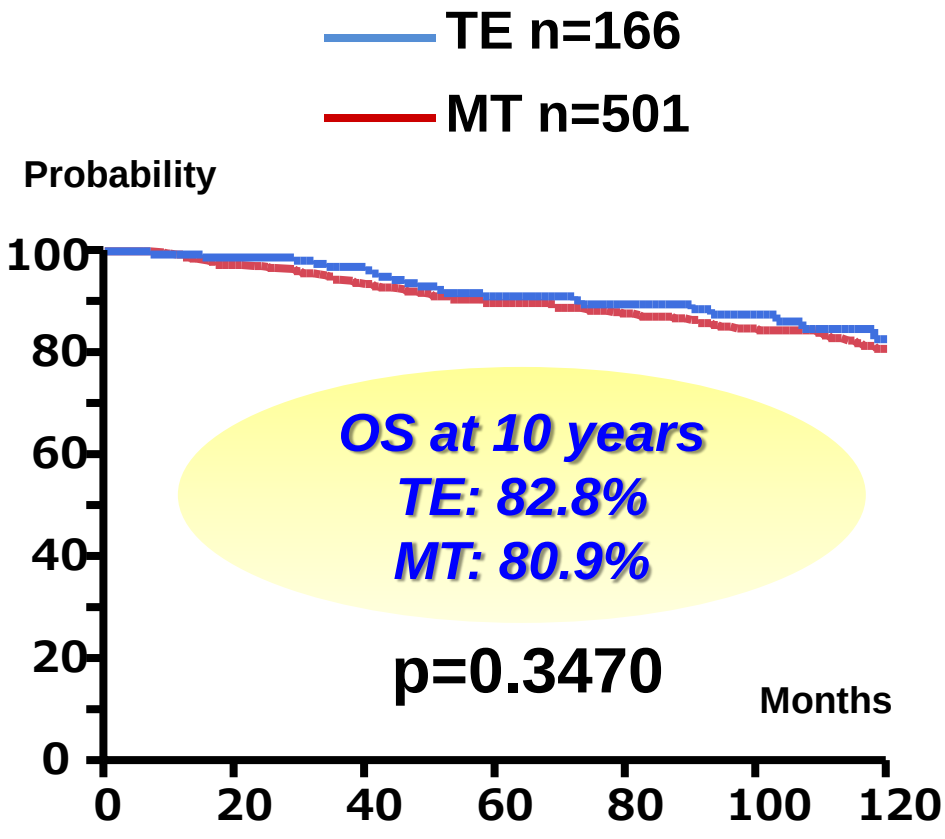
RFS in the TE group was not different from the MT group amongst the patients with or without LN metastases.

Overall Survival

All patients



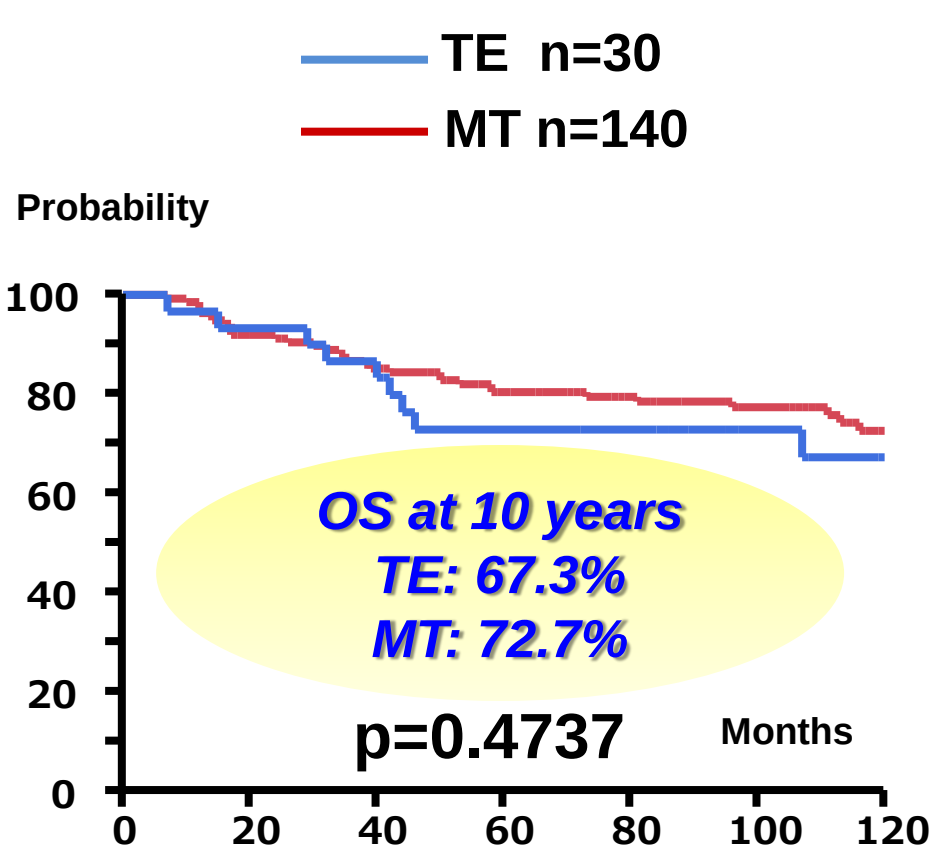
IC



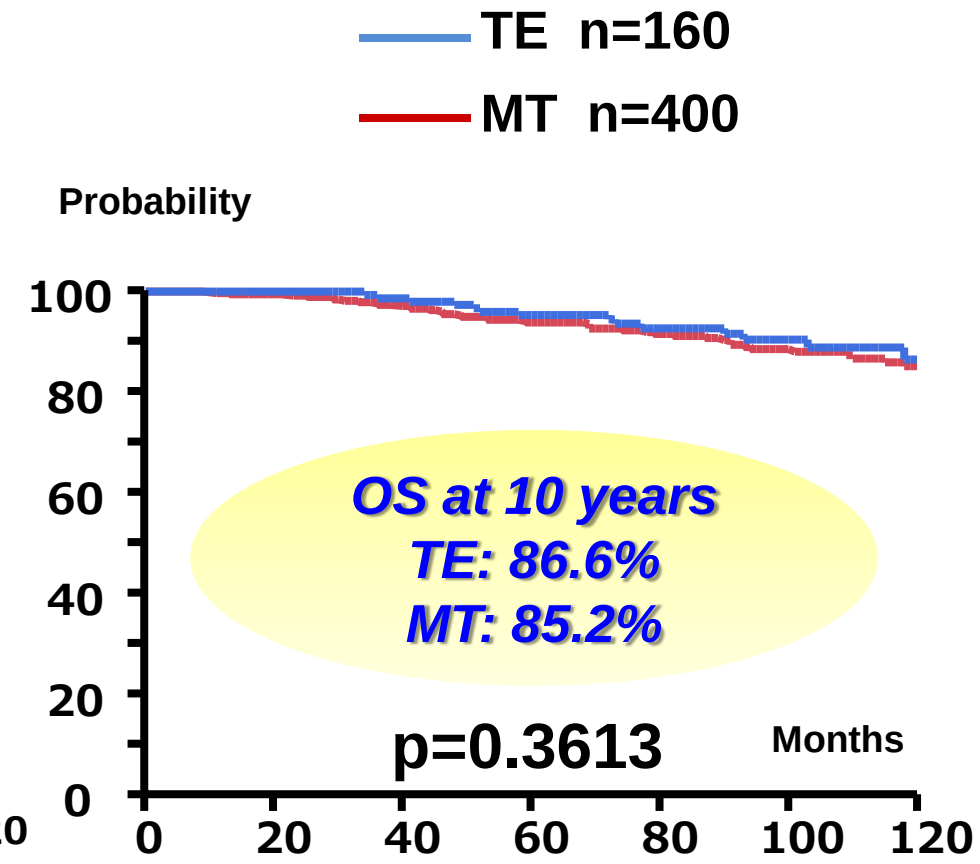
OS in the TE group was not different from the MT group amongst all patients or IC patients.

Overall Survival

HR-negative



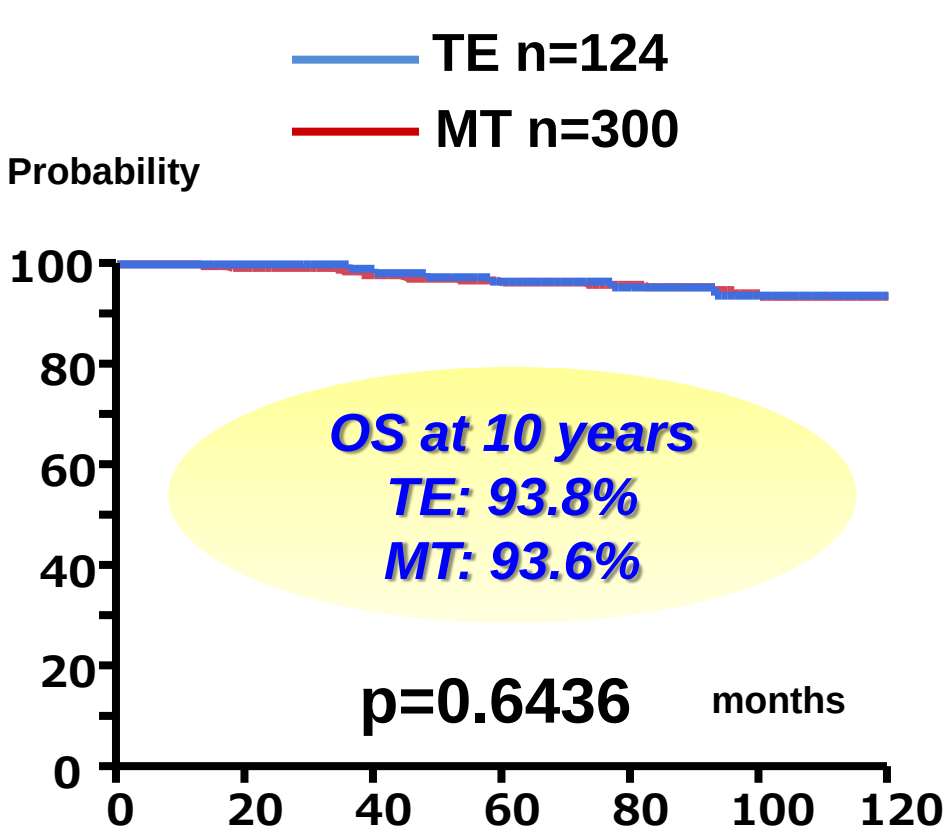
HR-positive



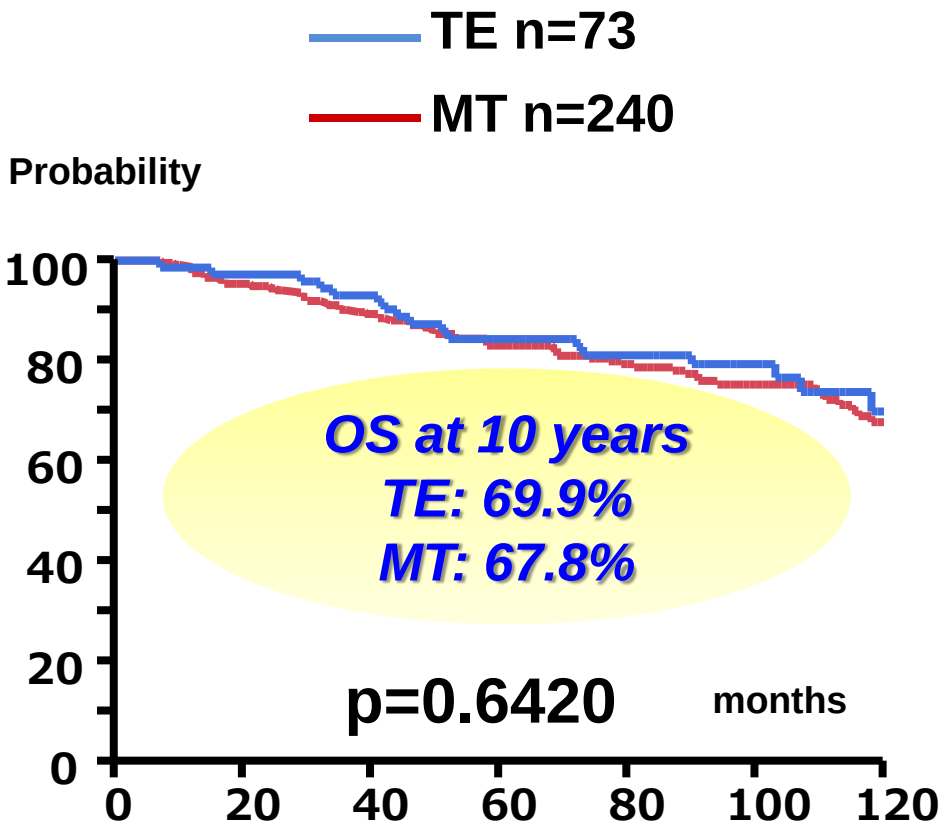
OS in the TE group was not different from the MT group amongst the patients who were HR-negative or -positive.

Overall Survival

Node-negative



Node-positive



OS in the TE group was not different from the MT group amongst the patients with or without LN metastasis.

Univariate and Multivariate Analyses of RFS

	Univariate analysis		Multivariate analysis	
	Risk ratio	p value	Risk ratio	p value
Age ＜40 years	2.26	0.0005	1.87	0.0064
T3 or T4	3.50	<0.0001	2.28	<0.0001
Axillary involvement	5.97	<0.0001	5.76	<0.0001
HR-negative	1.63	0.0046	2.58	<0.0001
Reconstruction with TE	1.35	0.1251		

Reconstruction with TE did not affect prognosis.

Incidence of Infection

Infection	TE	MT	p value
Yes	26 (13.2%)	22 (4.1%)	
No	171 (86.8%)	518 (95.9%)	*p<0.0001*

The incidence of infection was 13.2% and 4.1% in the TE and MT groups, respectively. The incidence of infection in the TE group was significantly higher than in the MT group (p< 0.0001).

Univariate and Multivariate Analyses of Infection

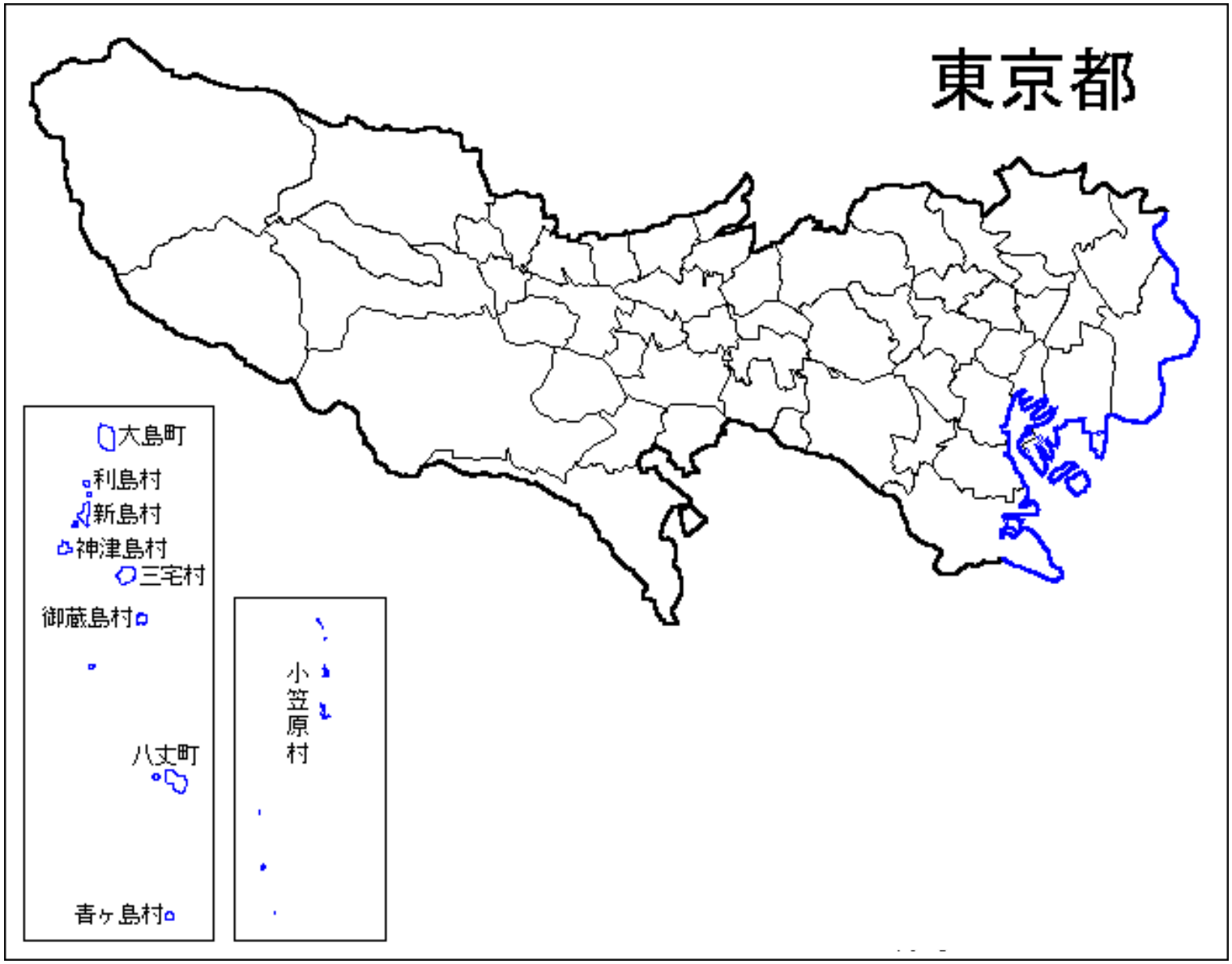
	Univariate analysis		Multivariate analysis	
	Odds ratio	p value	Odds ratio	p value
Axillary clearance	1.99	0.0455	2.61	0.0081
BMI ≥ 25 kg/m2	3.56	<0.0001	4.98	<0.0001
Chemotherapy	1.65	0.0921		
Reconstruction with TE	3.58	<0.0001	5.90	<0.0001

Multivariate analysis of infection indicated that axillary clearance, BMI ≥25 kg/m2 and reconstruction with TE were independent risk factors for infection.

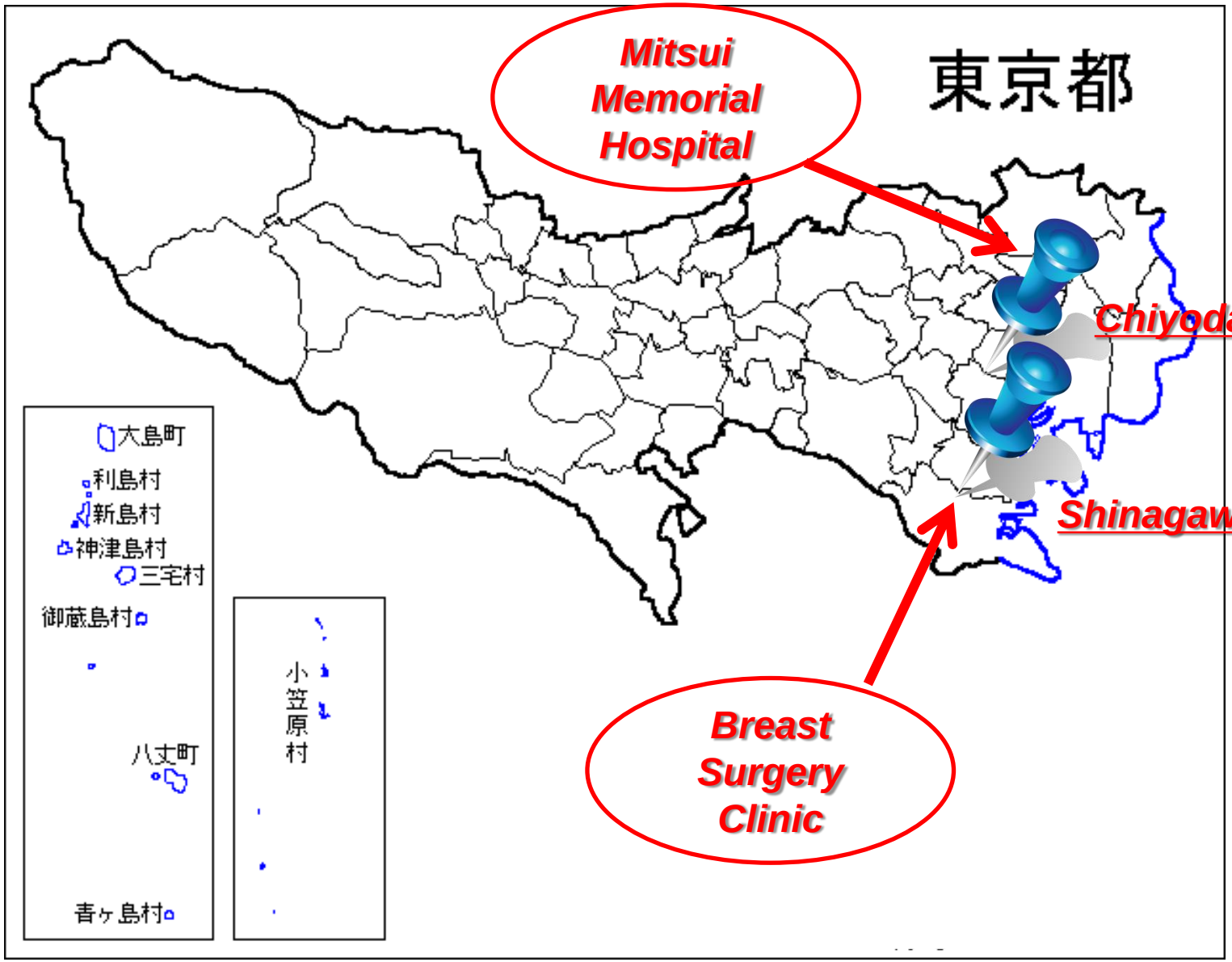
Summary-1

- ***Compared with the MT group, immediate reconstruction with TEs did not reduce the RFS and OS. Univariate analysis of LR and RFS revealed that reconstruction with TEs was not a risk factor.***
- ***The incidence of infection in the TE group was significantly higher than in the MT group (P < .0001).***
- ***Multivariate analysis indicated that axillary clearance, a BMI ≥25 kg/m2, and reconstruction with TEs were independent risk factors for infection.***

Map of Tokyo



Map of Tokyo


Mitsui Memorial Hospital
東京都
Chiyoda-ku
Shinagawa -ku
Breast Surgery Clinic
大島町
利島村
新島村
神津島村
三宅村
御蔵島村
八丈町
青ヶ島村
小笠原村

Breast Surgery Clinic

Dr. Yoshiko Iwahira

Identification of complications in mastectomy with immediate reconstruction using TEs and PIs

What complications of reconstruction developed, such as removal of TEs or PIs?

What were the causes for the complications?

Yes ! We evaluated the complications.

Patients & Methods

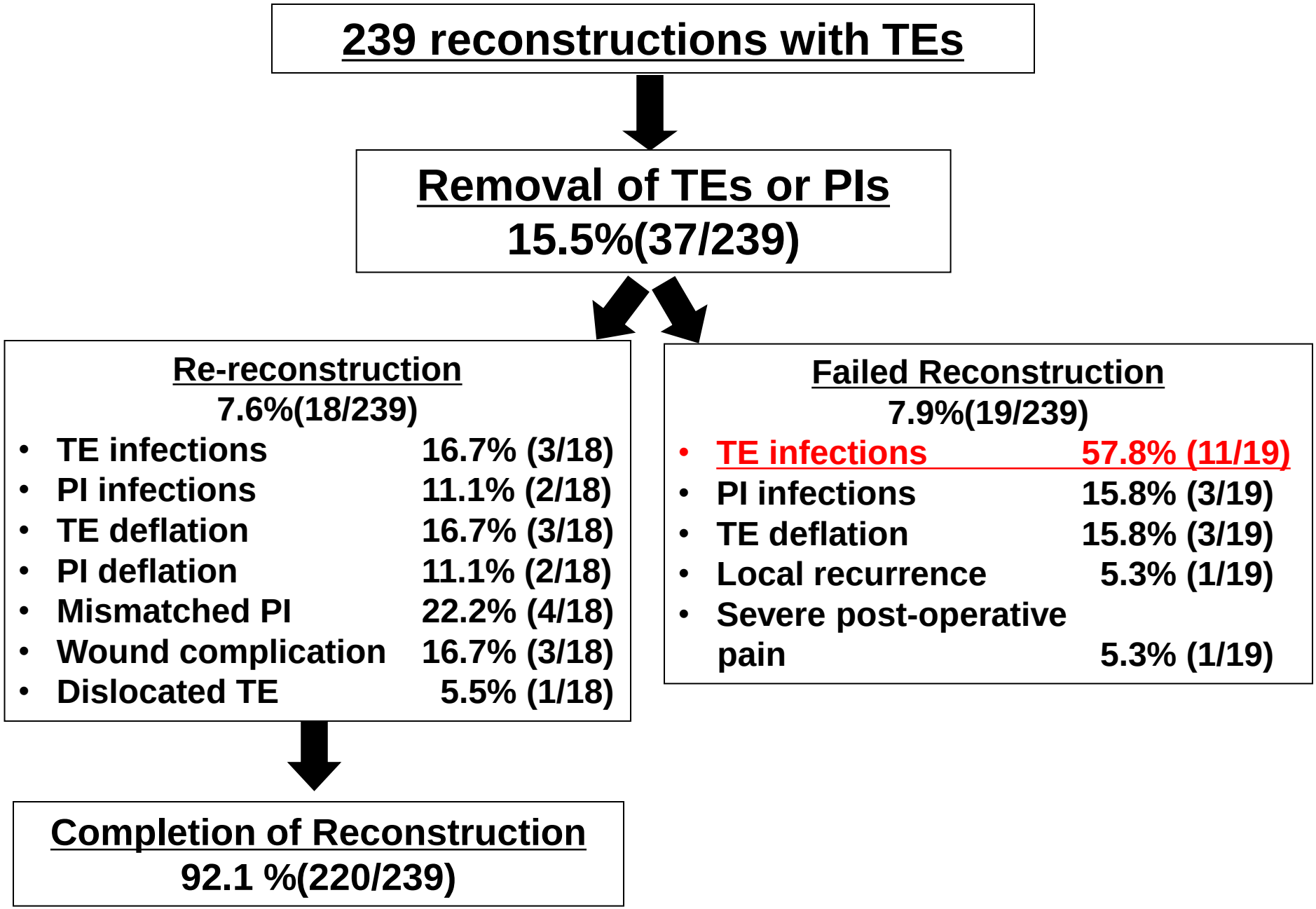
A retrospective review was performed involving 233 patients (239 reconstructions) undergoing post-mastectomy breast reconstruction between 1997 and 2009.

Patient characteristics

• Number of patients	233
• Reconstructions	239
• Simultaneous bilateral reconstructions	3% (6/233 patients)
• Median age	46 years (range, 27-79 years)
• Axillary lymph node resection	
Yes	55% (131/239 reconstructions)
No	45% (108/239 reconstructions)
• BMI	
≥25 (kg/m2)	9% (20/233 patients)
<25 (kg/m2)	91% (213/233 patients)
• Chemotherapy	
Yes	42% (97/233 patients)
No	58% (136/233 patients)
• Radiotherapy	
Yes	1% (3/239 reconstructions)
No	99% (237/239 reconstructions)

Patient characteristics

- **Invasive cancer**
  - Yes — 84% (201/239 reconstructions)
  - No — 16% (38/239 reconstructions)
- **T factor**
  - T4 — 3% (8/239 reconstructions)
  - T0-3 — 97% (231/239 reconstructions)
- **Nodal involvement**
  - Yes — 34% (81/239 reconstructions)
  - No — 66% (158/239 reconstructions)
- **Hormone-responsive**
  - Yes — 81% (195/239 reconstructions)
  - No — 14% (33/239 reconstructions)
  - Unknown — 5% (5/239 reconstructions)
- **Diabetes mellitus** — 1% (2/233 patients)
- **Recurrence**
  - Local recurrence — 3% (7/239 reconstructions)
  - Local and distant metastases — 14% (32/233 patients)


239 reconstructions with TEs
Removal of TEs or PIs
15.5%(37/239)
Re-reconstruction
7.6%(18/239)
• TE infections 16.7% (3/18)
• PI infections 11.1% (2/18)
• TE deflation 16.7% (3/18)
• PI deflation 11.1% (2/18)
• Mismatched PI 22.2% (4/18)
• Wound complication 16.7% (3/18)
• Dislocated TE 5.5% (1/18)
Failed Reconstruction
7.9%(19/239)
• TE infections 57.8% (11/19)
• PI infections 15.8% (3/19)
• TE deflation 15.8% (3/19)
• Local recurrence 5.3% (1/19)
• Severe post-operative pain 5.3% (1/19)
Completion of Reconstruction
92.1 %(220/239)

Correlation between TE Infections and Failed Reconstruction

	TE Infections		
	Yes	No	p value
Completion of reconstruction	13 (54%)	207 (96%)	
Failed reconstruction	11 (46%)	8 (4%)	*p<0.0001*

The reconstruction completion rate among patients without TE infections was significantly higher than in patients with TE infections.

Risk Factors for TE Infections

	TE with infection	TE without infection	p value
Lymph node metastasis			
Yes (n=81)	12 (50%)	69 (32%)	
No (n=158)	12 (50%)	146 (68%)	p=0.0788
Lymph node resection			
Yes (n=131)	16 (67%)	115 (54%)	
No (n=108)	8 (33%)	100 (46%)	p=0.2186
Chemotherapy			
Yes (n=94)	9 (45%)	85 (40%)	
No (n=141)	11 (55%)	130 (60%)	p=0.6332
BMI			
≧25 kg/m2 (n=20)	6 (25%)	14 (7%)	
＜25 kg/m2 (n=219)	18 (75%)	201 (93%)	*p=0.0019*
Seroma aspiration			
Yes (n=40)	16 (67%)	24 (11%)	
No (n=199)	8 (33%)	191 (89%)	*p<0.0001*

Multivariate Analysis for TE Infections

Factors	Multivariate analysis		
	OR	95% CI	p value
BMI ≥25 kg/m2	3.47	0.93-12.13	0.0625
Seroma aspiration	28.75	5.71-40.03	*<0.0001*

Seroma aspiration was a significant independent risk factor for TE infection.

Summary-2

- *15.5% of the reconstructions (37 reconstructions) required removal of TEs or PIs.*
- *7.9% of the patients (19 patients) declined re-reconstruction. The most frequent reason was infection of TEs.*
- *The reconstruction completion rate among patients without TE infections was significantly higher than in patients with TE infections.*
- *Seroma aspiration was a significant independent predictive factor for TE infections.*

Conclusion

- ***Immediate reconstruction with TEs did not affect local recurrence or prognosis.***

- ***To improve the reconstruction completion rate, it is important to prevent TE infections, and inhibition of seroma formation is needed.***

Original Study

Clinical Outcome of Reconstruction With Tissue Expanders for Patients With Breast Cancer and Mastectomy

Daisuke Ota,[1] Atsushi Fukuuchi,[1] Yoshiko Iwahira,[2] Takao Kato,[1] Masashi Takeuchi,[1] Joji Okamoto,[3] Tsunehiro Nishi[1]

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ORIGINAL ARTICLE

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Breast Cancer
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Mitsui Memorial Hospital
We are the Breast Cancer Team !!