

Outpatient Surgery for Breast Cancer: Experience and Outcome in 425 Consecutive Patients in A Private Breast Clinic

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ABSTRACT

Background/Objective: Although advances in surgical and anesthetic techniques for breast cancer surgery have made it possible to treat breast cancer patients in outpatient settings, outpatient surgery for breast cancer is not yet common in Japan. The use of local anesthesia and intravenous sedation is a less immunosuppressive anesthetic technique and may contribute to a decrease in disease recurrence following surgical treatment in terms of the relationship between anesthetic technique and cancer recurrence. Here, we aimed to evaluate the feasibility, safety, efficacy, and surgical outcomes of outpatient surgery in breast cancer patients in a private breast clinic. **Methods:** From May 2008 to September 2018, 425 consecutive patients with stage 0–III breast cancer underwent breast-conserving surgery/axillary lymph node (ALN) management using local anesthesia and intravenous sedation or a combination with pethidine or an opioid receptor (OR) partial agonist. In principle, all patients received standard adjuvant chemotherapy and/or endocrine therapy, and postoperative radiotherapy after surgery. Retrospective evaluation of the patient outcome was performed. **Results:** The clinical characteristics of the patients were as follows: stage: 19 stage 0 (4.4%), 231 stage I (54.3%), 153 stage II (36.0%), 22 stage III (5.1%); tumor subtype: 302 luminal (L) type (71.0%), 45 L-HER2 (10.5%), 9 HER2 (2.1%), 16 triple negative (TN) (3.7%); surgical procedure: partial resection (Bp)/sentinel lymph node biopsy (SNB) for 327 patients (76.9%), Bp/SNB/axillary lymph node dissection (Ax) for 28 patients (6.5%), Bp/Ax for 49 patients (11.5%), others for 21 patients (4.9%); frequently used anesthetic technique: lidocaine/propofol/midazolam and OR partial agonist or pethidine for 157 patients (36.9%), lidocaine/diazepam/midazolam and pethidine for 102 patients (24.0%), lidocaine/propofol and pethidine for 94 patients (22.1%). Sixty-five patients (15.2%) received neoadjuvant chemotherapy. All patients were able to go home after resting for 3–4 hours following surgery, and none of the patients revisited the clinic due to any complications. There were no deaths or severe intraoperative complications. In the postoperative period, 47 complications (11.0%) were observed: 11 wound infections, three cases of hematoma, and 33 axillary lymphoceles. The median follow-up period was 1,924 days (range: 28–3,775 days). Disease recurrence was observed in 21 patients (4.9%) during this time. The overall survival rate was 96.3%, and the survival rates for each stage were 97.4% for stage 0, 96.6% for stage I, 95.9% for stage II, and 85.7% for stage III. The survival rates for tumor subtype were 97.0% for L type, 96.1% for L-HER2, 80.0% for HER2, and 72.0% for TN breast cancer. **Conclusions:** Outpatient surgery was well tolerated, feasible, and safe in patients with breast cancer receiving breast-conserving surgery/ALN management, and did not increase the risk of complications. Given that disease recurrence was lower than with general anesthesia, patients receiving local anesthesia/anesthetic sedation in an outpatient setting may benefit from reduced cancer recurrence and lower cancer-related mortality by avoiding general anesthesia/opioid-induced immunosuppression in the perioperative period.

BACKGROUND/OBJECTIVES

Advances in surgical and anesthetic techniques for breast cancer surgery have made it possible to treat breast cancer patients in outpatient settings. However, outpatient surgery for breast cancer is not yet common in Japan. The use of local anesthesia (LA) and intravenous sedation is a less immunosuppressive anesthetic technique and may contribute to a decrease in disease recurrence following surgical treatment in terms of the relationship between anesthetic technique and cancer recurrence. Here, we aimed to evaluate the feasibility, safety, efficacy, and surgical outcomes of outpatient surgery in breast cancer patients in a private breast clinic.

METHODS

- Patients:** We conducted a retrospective evaluation of 425 female patients who were diagnosed with primary breast cancer (Union for International Cancer Control, TNM stage 0–III) in our outpatient clinic and underwent outpatient breast-conserving surgery (BCS) between May 2008 and September 2018. In advanced cases, patients received neoadjuvant therapy (NAT), including chemotherapy or endocrine therapy, prior to surgical treatment.
- Anesthetic technique:** Patients were administered 0.5% lidocaine in combination with intravenous sedation using diazepam, midazolam, or propofol, or a combination of these drugs. For analgesia, an opioid receptor (OR) partial agonist or a synthetic opioid, pethidine, was administered.
- Surgical procedure:** All patients received BCS consisting of Bp/SNB, Bp/SNB/Ax, or Bp/Ax performed by the same surgeon.

- Postoperative care:** After surgery, patients were transferred to the recovery area and intensively monitored until fully awake from sedation. Patients rested and walked before returning home, typically 3–4 hours after surgery.
- Systemic and local therapy:** Patients received postoperative adjuvant therapy according to the tumor subtype and pathologic characteristics of their primary tumors. Postoperative radiation therapy for the residual breast was administered at a standard dose, or with additional boost irradiation if needed, 4–6 weeks after surgery or after adjuvant chemotherapy at affiliated hospitals. In cases requiring neoadjuvant therapy, chemotherapy or endocrine therapy was administered for 6 months, followed by surgical treatment.
- Analysis of survival:** Cumulative overall survival (OS) rate and survival rate by pStage were calculated using the Kaplan-Meier method.

RESULTS

- Patient characteristics:** A total of 425 consecutive patients with breast cancer underwent BCS at our clinic during the 10.3-year period (Median: 1985 days; range: 28–3,775). The clinicopathologic characteristics of the patients are summarized in Table 1.
- Anesthetic technique:** The most frequently used anesthetic techniques were lidocaine/propofol/midazolam and/or OR partial agonist or pethidine (157/425 patients; 36.9%), lidocaine/diazepam/midazolam and/or OR partial agonist or pethidine (108/425 patients; 25.4%), and lidocaine/propofol/OR partial agonist or pethidine (96/425 patients; 22.5%).
- Neoadjuvant and adjuvant therapy:** Of 425 patients, 65 (15.2%) received NAC and 215 (50.5%) received postoperative adjuvant chemotherapy. The types of adjuvant or neoadjuvant chemotherapy administered to the patients are summarized in Table 2. Postoperative radiation therapy was administered to 374/425 patients (88.0%).
- Surgical and anesthetic complications:** Surgical and anesthetic complications are listed in Table 3. Notably, no patients revisited the clinic or were referred to affiliated hospitals due to postsurgical complications.
- Clinical outcome and overall survival:** The cumulative overall survival rate of the 425 patients was 93.7%, and the OS rate by pStage was 90.0% for stage 0, 95.6% for stage I, 93.7% for stage II, and 85.7% for stage III. The cumulative OS rate by tumor subtype was 96.2% for luminal (L), 96.2% for L-HER2, 80.0% for HER2, and 61.7% for triple negative (TN) breast cancer (Figs.1–3). Disease recurrence (locoregional and/or distant) developed in a total of 21 patients (4.9%), including 6 patients with locoregional recurrence. Metastasis sites included viscera (N = 5), bone (N = 1), and brain (N = 1). Eight patients had multiple metastases. Thirteen patients died, including 7 deaths related to breast cancer and 6 patients to other causes of death.

Characteristic	Outpatient surgery n = 425 (%)
Median age (range)	49 (27–91)
Stage at diagnosis	
0	19 (4.4)
I	231 (54.3)
II	153 (36.0)
III	22 (5.1)
Pathological tumor size (pT)	
T0	8 (1.8)
T1	61 (14.3)
T2	273 (64.2)
T3	78 (18.3)
T4	5 (1.1)
Pathological nodal status (pN)	
N0	327 (76.9)
N1	89 (20.9)
N2	7 (1.6)
N3	2 (0.4)
Unknown	2 (0.4)
Tumor histology	
IDC	312 (73.4)
ILC	10 (2.3)
Other IC	35 (8.2)
NIC	60 (14.1)
Nuclear grade	
I	46 (10.8)
II	151 (35.5)
III	217 (51.0)
Unknown	3 (0.7)
Subtype	
HR-positive/HER2-negative	302 (71.0)
HR-positive/HER2-positive	45 (10.5)
HR-negative/HER2-positive	9 (2.1)
TNBC	16 (3.7)

Characteristic	Outpatient surgery n = 425 (%)
Type of surgery	
Bp/SNB	327 (76.9)
Bp/SNB/Ax	28 (6.5)
Bp/Ax	49 (11.5)
Other	21 (4.9)
Neoadjuvant therapy	
Yes	65 (15.2)
No	360 (84.7)
Adjuvant chemotherapy	
Yes	215 (50.5)
No	210 (49.4)
Postoperative radiotherapy	
Yes	374 (88.0)
No	44 (10.3)
Unknown	7 (1.6)
Disease recurrence	
Yes	21 (4.9)
No	404 (95.0)
First site of metastasis	
Loco-regional	6 (28.5)
Bone	1 (4.7)
Visceral	5 (23.8)
Brain	1 (4.7)
Multiple	8 (38.0)

Regimen	Outpatient surgery, N	
	Adjuvant chemotherapy, N (combination with trastuzumab [Tz])	Neoadjuvant chemotherapy, N (combination with trastuzumab [Tz])
PTX/EC	3 (+ Tz: 1)	0
PTX/FEC	29 (+ Tz: 3)	15 (+ Tz: 1)
mab-PTX/FEC	8 (+ Tz: 2)	23 (+ Tz: 9)
DTX/FEC	37 (+ Tz: 6)	17 (+ Tz: 4)
PTX	6 (+ Tz: 3)	0
FEC	26 (+ Tz: 2)	0
TC	54 (+ Tz: 7)	0
HER	1	0
TS-1	1	0
UFT	44 (+ Tz: 1)	0
ANZ/HER	0	1
ddEC/mab-PTX	0	1
EC	0	1
EC/DTX	2	4
EC/mab-PTX	0	1
EC/PTX	4 (+ Tz: 2)	1
FEC/mab-PTX	0	1 (+ Tz: 1)

Table 3. Surgical and Anesthetic Complications

Criteria	No. of cases (%)
Wound infection	11 (2.5)
Hematoma	13 (0.7)
Axillary lymphocele	33 (7.7)
Bronchospasm	2 (0.4)
Nausea/vomiting	25 (5.8)

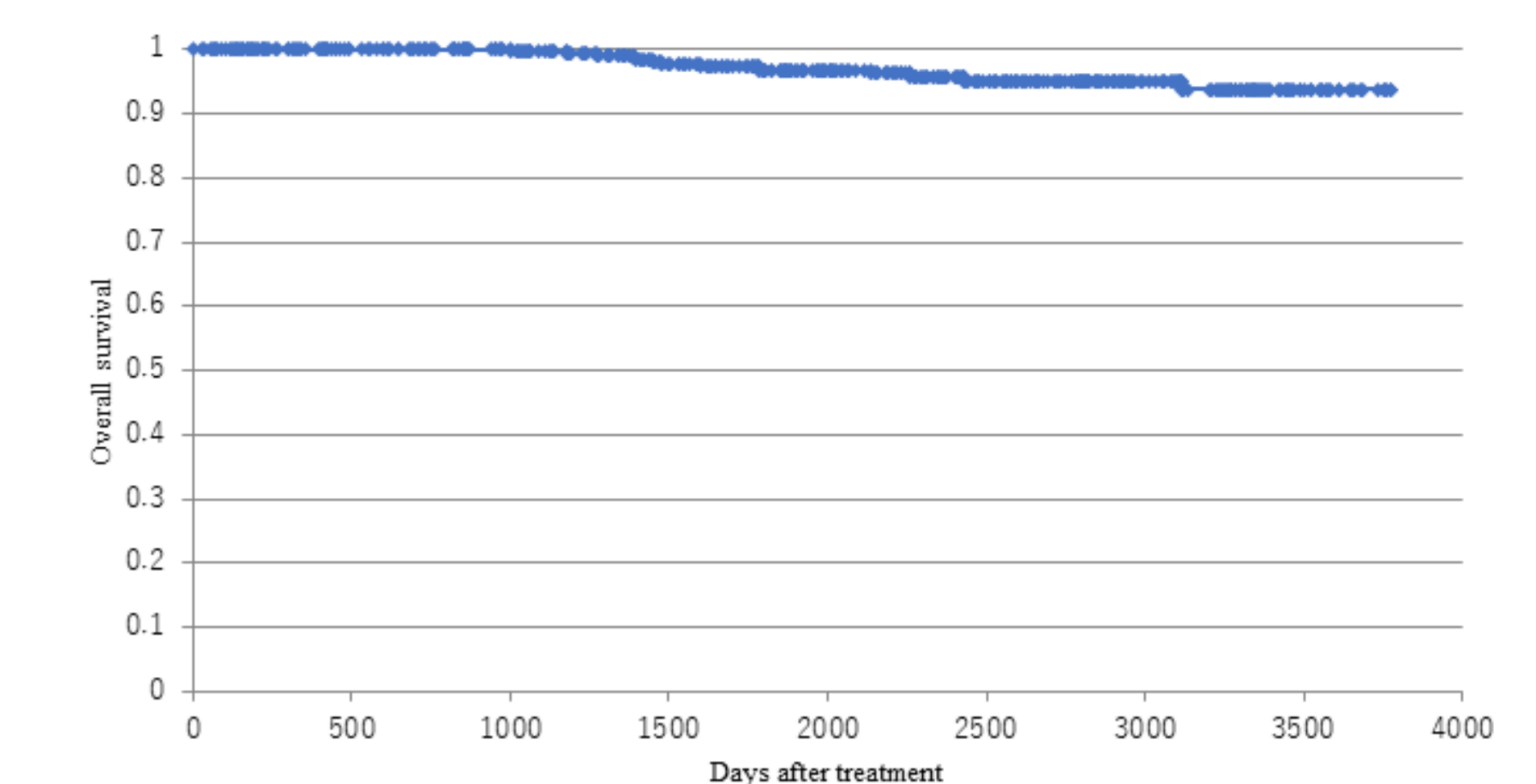


Fig. 1 Cumulative overall survival curve for 425 breast cancer patients who underwent outpatient BCS with local anesthesia/anesthetic sedation. Days after treatment refers to the number of days after either surgery or

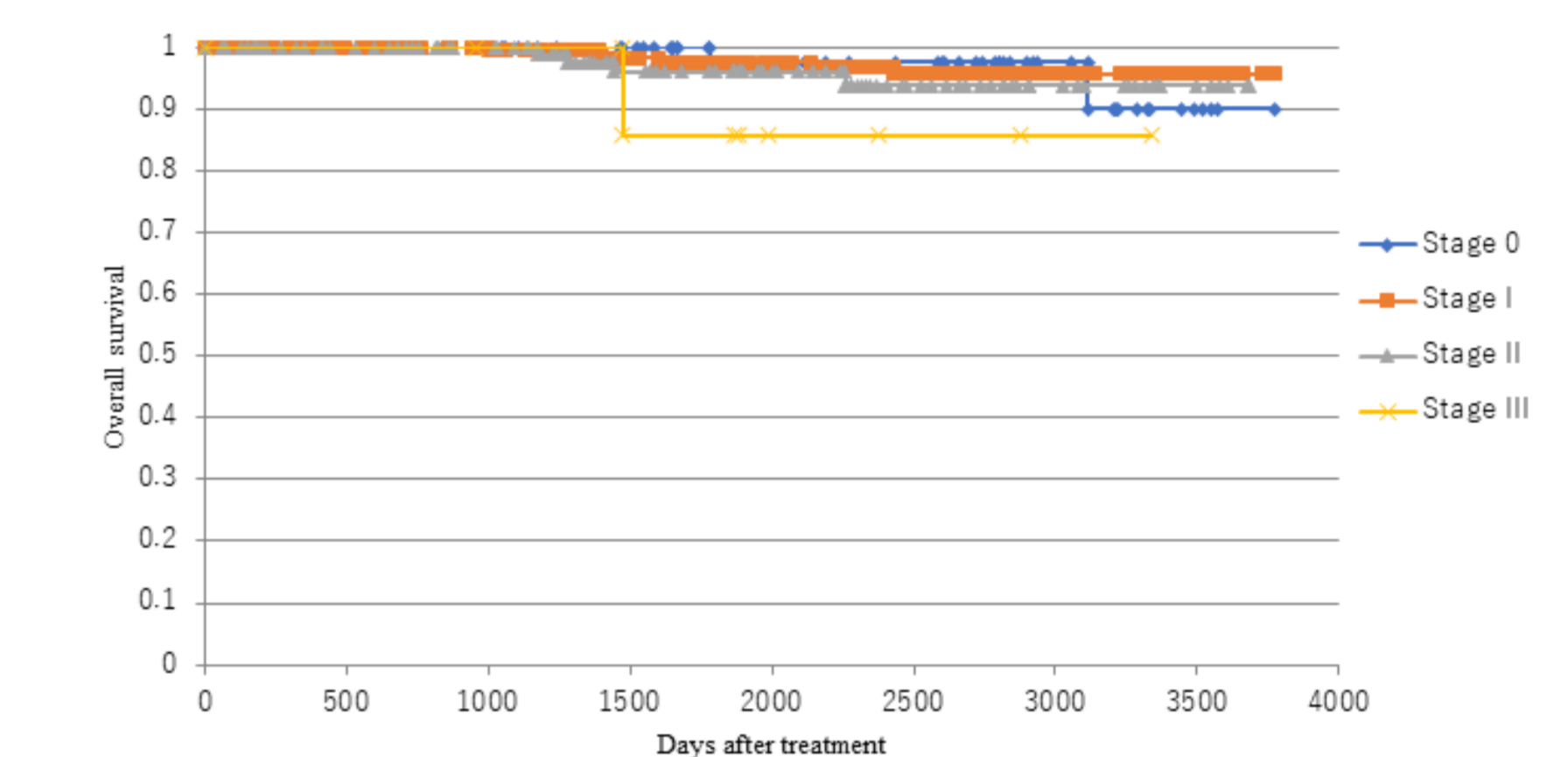


Fig. 2 Cumulative overall survival curves by pStage of patients undergoing outpatient BCS.

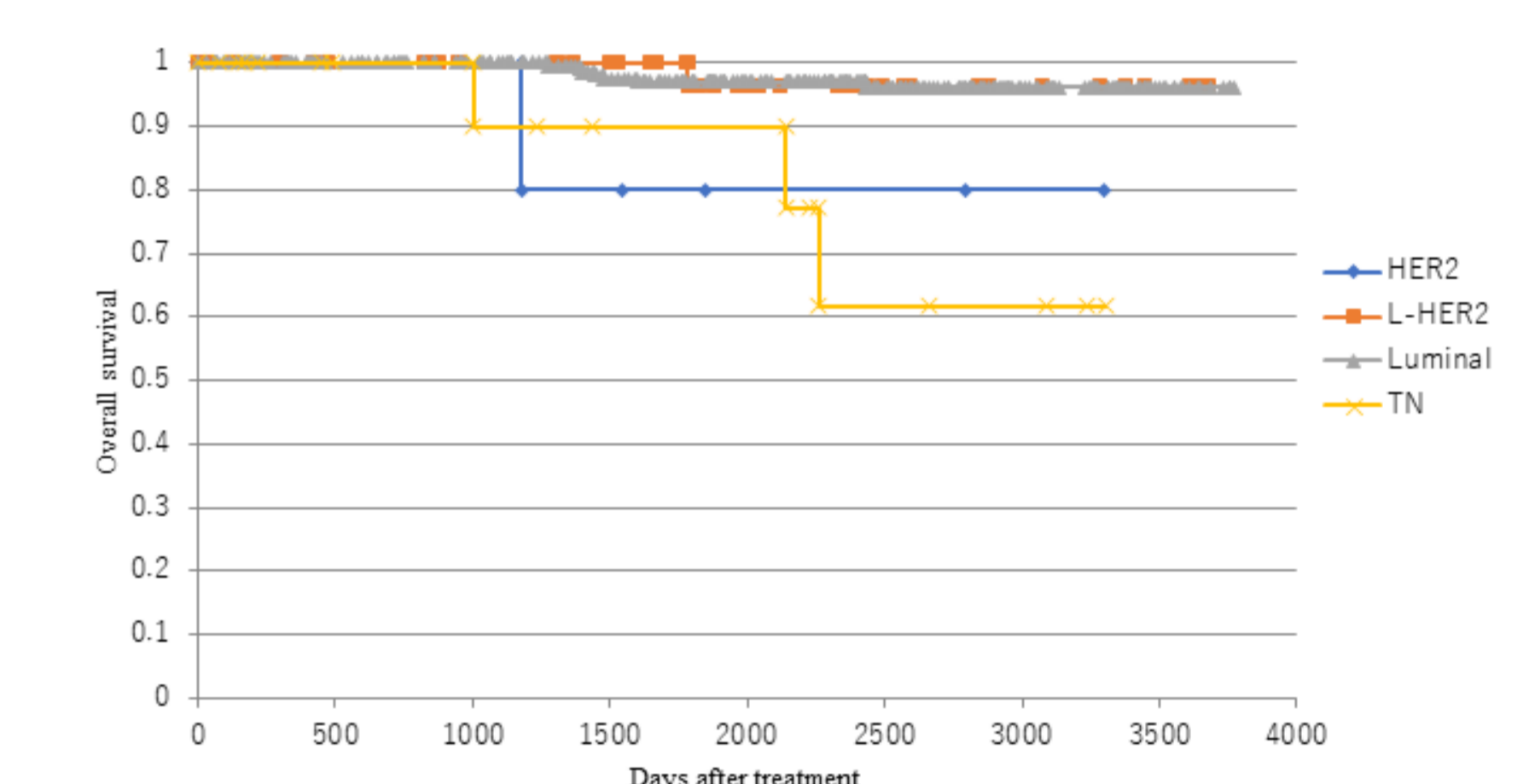


Fig. 3 Cumulative overall survival curves by intrinsic subtype of patients undergoing outpatient BCS. L: luminal, LH: luminal-HER2, TN: triple negative.

CONCLUSIONS

- Most elective breast cancer surgeries consisting of breast-conserving procedures/ALN management can be performed safely and feasibly in an outpatient setting, and did not increase the risk of complications.
- Given that disease recurrence was lower than with general anesthesia (GA), patients receiving LA/anesthetic sedation in an outpatient setting may provide potential benefits in terms of cancer recurrence and cancer-related mortality in patients with breast cancer by avoiding GA/opioid-induced immunosuppression in the perioperative period.

REFERENCES

- Kim R, Kawai A, Wakisaka M, et al. Outcomes of outpatient breast cancer surgery at a private breast clinic. *Breast J* 24: 628–32, 2018.
- Kim R. Anesthetic technique for cancer surgery: Harm or benefit for cancer recurrence? *Eur J Surg Oncol* 44: 557–8, 2018.
- Kim R. Effects of surgery and anesthetic choice on immunosuppression and cancer recurrence. *J Trans Med* 16: 8, 2018.
- Kim R, Kawai A, Wakisaka M, et al. Differences in immune response to anesthetics used for day surgery versus hospitalization surgery for breast cancer patients. *Clin Trans Med* 6: 34, 2017.
- Kim R. Anesthetic technique and cancer recurrence in oncologic surgery: unraveling the puzzle. *Cancer Metastasis Rev* 36: 159–77, 2017.