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Comparison of Radioactive Seed Localized Excision and Wire Localized Excision of Breast Lesions: A Community Hospital's Experience

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Abstract

Studies comparing wire localized excision (WLE) and radioactive seed localized excision (RSLE) may not reflect community hospital practice. To compare the oncologic safety and operating room time, we performed a large retrospective cohort study of patients who underwent WLE or RSLE in a community hospital. RSLE had shorter operation time and smaller surgical specimens relative to WLE but no differences in the positive margin rates.

Background: Most data comparing wire localized excision (WLE) and radioactive seed localized excision (RSLE) derive from academic institutions with limited data from community hospitals. This study aimed to compare positive margin rates between WLE and RSLE and to determine if there were any differences in specimen volume and operation time. **Patients and Methods:** A retrospective cohort study was conducted on patients who underwent WLE or RSLE at a Canadian community hospital. Group characteristics were compared as appropriate. Multivariable logistic regression was used determine if the localization techniques were independently associated with having a positive margin. Statistical significance was set as $P < .05$. **Results:** The cohort consisted of 747 (WLE) and 577 (RSLE) patients. Both groups had similar mean age, mean tumor (invasive and ductal carcinoma-in-situ) size, histologic grade distribution, presence of lymphovascular invasion, and extensive intraductal component, nodal status, and hormone receptor and HER2 status. Compared to WLE, patients who underwent RSLE had significantly lower invasive positive margin rates (8.1% vs. 12.3%, $P = .03$), shorter operation time (39.5 minutes vs. 68.7 minutes, $P = .0001$), and smaller surgical specimens (21.4 cm^3 vs. 30.2 cm^3, $P = .008$). Ductal carcinoma-in-situ positive margin rates were not different between the groups. However, the localization technique was not independently associated with having a positive margin (odds ratio = 1.55; 95% confidence interval, 0.99-2.44). **Conclusion:** RSLE led to a shorter operation time and smaller surgical specimens compared to WLE, but there was no difference in positive margin rates. RSLE is an effective technique to excise nonpalpable breast lesions in the community setting.

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Introduction

Screening has resulted in a greater incidence of nonpalpable breast lesions.[1,2] Image-guided localization of nonpalpable lesions has become the most common technique. Several methods have been explored to improve localization and excision of nonpalpable breast lesions.[3]

Wire localized excision (WLE) consists of introducing a thin guide wire into the tumor's core under local anesthesia with imaging guidance. After the tumor is excised, the specimen is assessed by mammography and/or ultrasound to confirm adequate margins. Depending on the margin status, additional surgery may be necessary. Limitation of WLE include wire migration, diathermy burns, difficulty locating the wire tip, and poor cosmesis.[3-5] Additionally, the positive margin rate after WLE ranges from 21% to 43%.[6-8]

Radioactive seed localized excision (RSLE) is an alternative surgical technique.[9] RSLE uses a titanium seed containing iodine-125,

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which is introduced into the tumor percutaneously under ultrasound or stereotactic guidance. Intraoperatively, a handheld gamma probe is used to localize the seed and guide excision. RSLE has few complications[10] and safety concerns,[11,12] making it an attractive alternative to WLE.[9,13-15] Access to nuclear medicine remains a significant barrier to its implementation.

Most data comparing RSLE and WLE derive from large academic institutions,[10,16-19] with very limited data deriving from community hospitals.[20,21] Given that margin positivity is considered a quality measure,[22] we aimed to compare the margin positivity rate between RSLE and WLE of nonpalpable breast lesions within a community practice. As secondary objectives, we compared specimen volume, operation time, and reoperation rates between both techniques.

Patients and Methods

Study Design

After receipt of ethics board approval, a retrospective cohort study was conducted on patients who underwent WLE or RSLE as treatment for nonpalpable breast lesions at North York General Hospital, Toronto, Ontario, Canada, between June 1, 2011, and July 31, 2017. Patients were identified from the Department of Pathology's Cancer Care Ontario database. We included patients with nonpalpable breast lesions treated with breast conserving surgery. Patients were excluded if they had bilateral tumors, if they underwent both RSLE and WLE, or if the purpose of the surgery was diagnosis. Patients who underwent concomitant bilateral or additional procedures were excluded from operation time analysis.

Data Collection

Extracted data included date and type of surgery, breast tumor type, and margin status. A chart review was conducted to obtain details not captured by the database. Operative notes, synoptic pathology reports, and electronic operative records were reviewed. Preoperative diagnosis and wait times were not collected.

Surgical Technique

NYGH is a community hospital with 7 experienced general surgeons. Physicians did not change during the study period. Additional intraoperative margin samples were taken at the discretion of the surgeon. Pathology specimen handling and reporting followed the College of American Pathologists and Cancer Care Ontario standards.

For WLE, a hook-wire device was placed on the day of surgery, as previously described.[23] The wire was placed using either mammographic or ultrasound guidance as deemed appropriate by the radiologist.

For RSLE, an iodine-125 titanium seed (Standard Iodine-125 Source; Best Medical International, MPM Medical, Freehold, NJ) was used. Seeds were preloaded into a needle after occluding the tip with bone wax. Seed placement was performed with mammographic or ultrasound guidance at the discretion of the radiologist. The needle was then guided into the lesion, and a stylet was used to displace the seed through the bone wax and into the parenchyma. Seed position was confirmed with a mammogram. Patients underwent surgery 1 to 7 days later. Excision was guided using the Node Seeker system and Gamma Probe (IntraMedical Imaging, Los Angeles, CA). Seed retrieval was verified by the presence of counts within the specimen and absence of activity in the cavity. Specimen radiography was performed to document retrieval of the seed and target lesion.

Surgeons participated in an RSLE training course, either electronically or in person. In March 2015, 2 to 4 sequential cases from each of the 7 surgeons' practice were selected to undergo RSLE. In these initial cases, a wire was simultaneously placed to confirm the area of excision. Once each surgeon became familiar with the procedure, he or she individually discontinued using WLE. Currently all 7 surgeons only use RSLE. Handling of the radioactive seeds followed provincial safety regulations and institutional protocols.

Definitions

The volume of the primary lesion was estimated using the formula for the volume of an ellipsoid, ($4/3 \times \pi \times {}^1/_2$ length $\times {}^1/_2$ width $\times {}^1/_2$ height), as previously described.[16] Operation time was calculated as the time between incision and completion of the surgical procedure. Reoperation was defined as either reexcision of margins or completion mastectomy for positive margins. Negative margins for ductal carcinoma in situ (DCIS) were defined as ≥ 2 mm. Negative margins for invasive lesions were defined as no ink on tumor. For clarity, we use the term "positive margin" to refer to margins from the initial lumpectomy. The margin reported was the final margin obtained from the index surgery. The final margin status for patients who underwent reoperation was not recorded.

Statistical Analysis

Continuous data are presented as medians with interquartile range. Univariate comparisons were done by the Student t test, Pearson chi-square test, or Fisher exact test, as appropriate. A multivariable logistic regression analysis was used to evaluate the association of the localization technique and positive margin, rate adjusting for confounders (lymph node surgery, oncoplastic procedure, neoadjuvant chemotherapy, presence of DCIS, invasive histologic subtype, and invasive tumor size). Variables included in the model were selected a priori. SAS 9.4 software (SAS Institute, Cary, NC) was used for data management and statistical analyses. Statistical significance was set at $P < .05$.

Results

Patient, Tumor, and Surgery Characteristics

A total of 2602 patients underwent breast surgery; of these, 742 (28.5%) and 582 (22.4%) underwent WLE and RSLE, respectively. Table 1 summarizes the patient characteristics. Mean age at time of surgery was similar between RSLE and WLE patients. Neoadjuvant chemotherapy was significantly more common in patients who underwent RSLE than WLE (14% vs. 1.7%, $P = .0001$).

The frequency of invasive tumors (RSLE 76.8% vs. WLE 73.2%, $P = .1$) and DCIS (RSLE 23.2% vs. WLE 26.8%, $P = .1$) as the primary tumor was similar. Distribution of invasive histologic types was similar, with invasive ductal carcinoma being the most common type. In patients with invasive tumors, DCIS was present equally in both groups (RSLE 73.4% vs. WLE 76%, $P = .4$). Other pathologic characteristics were similar between both groups. In both groups, most patients did not have nodal involvement (RSLE 62% vs. WLE 59%, $P = .7$) or did not have their lymph nodes assessed (RSLE 24.9% vs. WLE 26.8%, $P = .7$)

Table 1 Patient Characteristics

Variable	WLE (N = 742)	RSLE (N = 582)	P
Age (years), mean (SD)	61 (12.0)	61(11.6)	.4
Sex			.4
Female	742 (100)	581 (99.8)	
Male	0	1 (0.1)	
Operation time (Minutes), Mean (SD)			
Overall population[a]	68.7 (6.4)	39.5 (8.0)	.0001
Invasive tumor[b]	68.8 (6.3)	41.7 (6.1)	.0001
DCIS only tumor[c]	69.6 (6.4)	38.9 (8.4)	.0001
Year of Surgery			.0001
2011	40 (5.4)	0	
2012	208 (15.7)	0	
2013	184 (24.8)	0	
2014	240 (32.3)	0	
2015	70 (28.8)	173 (29.7)	
2016	0	258 (44.3)	
2017	0	151 (25.9)	
Lymph Node Surgery			.9
None	199 (26.8)	145 (24.9)	
SLNB	529 (71.3)	415 (71.3)	
ALND	14 (1.9)	22 (1.7)	
Additional Procedures			
Any procedure	641 (86.4)	469 (80.6)	.004
Additional intraoperative margin	413 (55.7)	73 (12.5)	.0001
Breast only procedures	417 (56.2)	130 (22.3)	.0001
Oncoplastic procedure	24 (3.2)	80 (13.7)	.0001
No. of Wires or Seeds per Procedure			.04
One	724 (97.6)	553 (95.0)	
Two	16 (2.2)	27 (4.6)	
Three	2 (0.3)	2 (0.3)	
Specimen Volume (cm^3), Mean (SD)			
Overall	30.2 (23.0)	21.4 (21.8)	.008
DCIS only	32.2 (25.6)	20.3 (34.9)	.0001
Invasive	29.5 (21.9)	21.7 (15.9)	.0001
Primary Histology			.1
DCIS only	199 (26.8)	135 (23.2)	
Invasive[d]	543 (73.2)	447 (76.8)	
Invasive Histologic Subtype			.2
DCIS microinvasion	26 (2.6)	11 (2.5)	
IDC	460 (84.7)	394 (88.1)	
ILC	46 (4.6)	34 (7.6)	
Mixed	11 (2.0)	8 (1.8)	
DCIS associated with invasive tumor[e]	393 (76)	320 (73.4)	.4
Tumor Size (cm), Mean (SD)			
DCIS[d]	3.6 (2.6)	2.8 (2.7)	.9
Invasive	1.6 (1.0)	1.6 (1.3)	.2
Grade			.08
1	169 (22.8)	138 (23.7)	
2	365 (49.2)	312 (53.6)	
3	208 (28.0)	132 (22.7)	
Lymphovascular invasion	99 (18.2)	60 (13.4)	.05
Extensive intraductal component	101 (18.6)	75 (16.8)	.5
pT			.1
is	199 (26.8)	135 (23.2)	
1[f]	416 (56.1)	351 (60.3)	
2	122 (16.4)	87 (14.9)	
3	5 (0.7)	9 (0.7)	
pN			.7
X	199 (26.8)	145 (24.9)	
0	438 (59.0)	361 (62.0)	
1	89 (12.0)	64 (11.0)	
2	14 (1.9)	9 (1.5)	
3	2 (0.3)	3 (0.5)	
Estrogen Receptor			.2
Positive	491 (90.4)	394 (88.1)	
Negative	52 (9.6)	53 (11.9)	
Progesterone Receptor			.8
Positive	429 (79.0)	355 (79.4)	
Negative	114 (21.0)	92 (20.6)	
HER2			.6
Positive	57 (10.5)	43 (9.6)	
Negative	486 (89.5)	404 (90.4)	
Neoadjuvant chemotherapy[e]	9 (1.7)	61 (14.0)	.0001

Data are presented as n (%) unless otherwise indicated.
Abbreviations: ALND = axillary lymph node dissection; DCIS = ductal carcinoma-in-situ; IDC = invasive ductal carcinoma; ILC = invasive lobular carcinoma; RSLE = radioactive seed localized excision; SLNB = sentinel lymph node biopsy; WLE = wire localized excision.
[a]WLE (n = 101) and RSLE (n = 113).
[b]WLE (n = 20) and RSLE (n = 24).
[c]WLE (n = 81) and RSLE (n = 89).
[d]Includes DCIS microinvasion tumors.
[e]Excludes DCIS microinvasion tumors.
[f]T1mic tumors distribution: WLE: n = 26 (3.5%) and RSLE n = 11 (1.9%), $P = .1$.

Most patients underwent additional procedures during the primary surgery (RSLE 80.6% and WLE 76.5%, $P = .08$). Frequency of lymph node surgery was similar between RSLE and WLE. Oncoplastic procedures were more frequent in patients who underwent RSLE than WLE (13.7% vs. 3.2%, $P = .0001$). Additional intraoperative margins were obtained less frequently during RSLE than WLE (12.5% vs. 55.7%, $P = .001$).

DCIS Margin Rate

Table 2 summarizes the margin rate for patients with DCIS only tumors. RSLE tended to have a lower DCIS positive margin rate compared to WLE (11.9% vs. 16.1%, $P = .2$). The number of positive margins tended to be lower with RSLE than WLE. Reoperation rates for DCIS positive margins were similar between RSLE and WLE (81.3% vs. 78.1% $P = .8$). In both groups,

Table 2 Comparison of Margin Status of Patients With DCIS Tumors Who Underwent WLE or RSLE

Variable	WLE (N = 199)	RSLE (N = 135)	P
DCIS Margin Status			.2
Positive	32 (16.1)	16 (11.9)	
Negative	167 (83.9)	119 (88.1)	
No. of Positive Margins			.4
0	167 (83.9)	119 (88.1)	
1	16 (8.0)	10 (7.4)	
> 1	16 (8.0)	6 (4.4)	
Reoperation[a]			.8
Yes	25 (78.1)	13 (81.3)	
No	7 (21.9)	3 (18.7)	

Data are presented as n (%). Excludes tumors with DCIS with microinvasion.
Abbreviations: DCIS = ductal carcinoma-in-situ; RSLE = radioactive seed localized excision; WLE = wire localized excision.
[a]Tumors with positive margins only.

reexcision of margins was the most common type of reoperation (RSLE 69.2% and WLE 60%), followed by completion mastectomy (RSLE 30.8% and WLE 40%).

Invasive Tumor Margin Rate

Table 3 summarizes the margin rate for invasive tumors. The invasive positive margin rate was significantly lower with RSLE than WLE (8.1% vs. 12.3%, $P = .03$). For invasive tumors associated with DCIS, the DCIS positive margin rate tended to be lower with RSLE than WLE (6.3% vs. 9.1%, $P = .2$). When compared to WLE, the number of positive margins with RSLE was significantly lower. Reoperation rates between RSLE and WLE were similar (74.7% vs. 69%, $P = .4$). In both groups, reexcision was the most common type of reoperation (RSLE 72.4% and WLE 65.3%), followed by completion mastectomy (RSLE 27.6% and WLE 34.7%).

Table 3 Comparison of Margin Status of Patients With Invasive Breast Tumors Who Underwent WLE or RSLE

Variable	WLE (N = 543)	RSLE (N = 447)	P
Margin			.02
Positive	71 (13.1)	37 (8.3)	
Negative	472 (86.9)	410 (91.7)	
Invasive Margin			.03
Positive	67 (12.3)	36 (8.1)	
Negative	476 (87.7)	411 (91.9)	
DCIS Margin[a]			.2
Positive	38 (9.1)	21 (6.3)	
Negative	380 (90.9)	310 (93.7)	
No. of Positive Margins			.04
0	472 (86.9)	410 (91.7)	
1	50 (9.2)	24 (5.4)	
> 1	21 (3.9)	13 (2.9)	
Reoperation[b]			.4
Yes	49 (69.0)	28 (75.7)	
No	22 (31.0)	9 (24.3)	

Data are presented as n (%). Includes tumors with DCIS with microinvasion.
Abbreviations: DCIS = ductal carcinoma-in-situ; RSLE = radioactive seed localized excision; WLE = wire localized excision.
[a]Invasive tumors with DCIS.
[b]Tumors with positive margins only.

Operation Time

Mean operation time was significantly lower for RSLE relative to WLE (39.5 vs. 68.7 minutes, $P = .0001$). Mean operation time was significantly shorter for RSLE than WLE for DCIS (38.9 vs. 69.6 minutes, $P = .0001$) and invasive (41.7 vs. 68.8 minutes, $P = .0001$) tumors.

Specimen Volume

Overall mean specimen volume for all patients was significantly smaller with RSLE than WLE (21.4 vs. 30.2 cm^3, $P = .008$). The mean specimen volume was significantly smaller RSLE than WLE for DCIS (20.3 vs. 32.3 cm^3, $P = .0001$) and invasive (21.7 vs. 29.5 cm^3, $P = .0001$) tumors.

Multivariable Logistic Regression Analysis

Despite the difference observed in the rate of positive margins for invasive cancer in the univariate analyses between RSLE and WLE, the localization technique was not independently associated with having a positive margin [odds ratio (OR) = 1.55; 95% confidence interval (CI), 0.99-2.44] after adjusting for confounders such as the concomitant procedures (lymph node surgery and oncoplastic procedures), receipt of neoadjuvant chemotherapy, concomitant DCIS, type of histology, and size of the invasive tumor (Table 4). Presence of concomitant DCIS (OR = 2.99; 95% CI, 1.51-5.95) and size of the invasive tumor (OR = 1.36; 95% CI, 1.17-1.59) were independently associated with having a positive margin.

Discussion

This study describes the largest cohort of patients undergoing RSLE in a community hospital. We compared the pathologic and operation time associated with RSLE or WLE for DCIS and invasive tumors. Patients who underwent RSLE had significantly lower positive margin rates on their index surgery and shorter operation time and smaller surgical specimens. However, after adjusting by confounders, RSLE was not independently associated with lower positive margin rates.

The primary outcome of this study was to compare the rate of positive margins between RSLE and WLE of nonpalpable breast cancers (DCIS and/or invasive disease) within a community practice. Tumor characteristics known to increase the likelihood of positive margins were equally present between both groups. In our invasive tumor cohort, RSLE had a lower positive margin than WLE for the invasive component only. Other studies have also described similar results,[10,24-26] with RSLE reducing positive margin rates by 35% to 59%.[9,11-14,27] A meta-analysis also reported an improved risk ratio for margins of 0.51 with RSLE compared to WLE.[25] Nevertheless, some studies have not observed this difference, which may be due to sample size and study design. In a systematic review, several studies included patients undergoing diagnostic excision.[28] Consequently, there were high proportions of benign lesions (18.8%-83.6%), which may have affected the results. Reexcision rates after RSLE range from 3% to

Table 4 Odds Ratio Estimates From Logistic Regression of Invasive Positive Margins by Type of Localization Technique

Variable	OR	95% CI
RSLE vs. WLE	1.55	0.99-2.44
Lymph node surgery (no vs. yes)	1.52	0.52-4.43
Oncoplastic procedure (no vs. yes)	0.77	0.33-1.83
Neoadjuvant chemotherapy (yes vs. no)	1.75	0.60-5.12
DCIS (no vs. yes)	2.99	1.51-5.95
Histology (ILC vs. IDC)	0.54	0.23-1.26
Histology (mixed vs. IDC)	0.65	0.17-2.39
Invasive tumor size	1.36	1.17-1.59

Abbreviations: CI = confidence interval; DCIS = ductal carcinoma-in-situ; IDC = invasive ductal carcinoma; ILC = invasive lobular carcinoma; OR = odds ratio; RSLE = radioactive seed—localized excision; WLE = wire localized excision.

42%, while the rates after WLE are reported as 14% to 56%.[17,26,29-31] Our reoperation rates fall within these ranges. Our study did not show any difference in reoperation rates for invasive tumors and DCIS, as reported by others.[17,31,32] It is worth noting that reoperation (and the lack thereof) are influenced by many factors. In this study, factors that may have influenced the surgeon and the patient to choose between reexcision, completion mastectomy, and no further surgical treatment may have included location and extent of the positive margin, patient preference, surgeon and/or tumor board recommendation, comorbidities, travel distance, and desired cosmetic result.

Operation time has frequently been used as a measure of comparison between RSLE and WLE. Theoretically, RSLE may be surgically easier to perform than WLE because the handheld probe allows the surgeon to identify the hot spot easily in 3 dimensions as he or she operates, rather than having to review the patient's imaging and construct a dissection plane. The literature has reported mixed results. A meta-analysis demonstrated RSLE had a shorter operation time than WLE.[28] Data from our study fall in line with this study, although our study had shorter operation times for both DCIS and invasive tumors. Our operation times are under 50 minutes, which is within the limit described in a recent meta-analysis.[26] The studies showing that RSLE has longer operation times than WLE show that it adds up to 5 to 10 minutes.[16,32] Possible explanations for this include having to troubleshoot issues with the handheld probe and the fact that most studies have been carried out at academic centers, where teaching residents and fellows takes place. Shorter operation time may translate to lower health care costs and shorter anesthetic time, which makes RSLE more attractive than WLE.

RSLE significantly reduced the specimen volume for DCIS and invasive tumors. Overall, studies have had mixed results on this matter. On the one hand, some data,[20] including ours, have demonstrated that RSLE is associated with smaller surgical specimens. Of these studies, only one showed that the reduced size was attainable only in benign lesions.[32] Our study showed that RSLE conferred a smaller surgical specimen for both DCIS and invasive tumors, which may be the result of the larger sample size. On the other hand, several other studies have reported no difference in specimen volume.[16,21,24,31] The heterogeneity in these studies has been described in several publications,[28,33] which have shown no meaningful difference between both techniques on the matter of specimen volume.[33] A meta-analysis reported that the volume of excised tissue from excised specimens is increased with RSLE.[28] The authors suggested that a wire is more helpful to exactly localize the center of the lesion, while the maximal amount of counts is often more diffuse. Further data are necessary to confirm that RSLE produces smaller specimens than WLE. Confirming that RSLE decreases specimen volume is important because it may translate to better cosmesis, wound healing, and patient satisfaction.

RSLE has additional benefits that were not measured in our study but that have been well described by others. For instance, patients report that RSLE is more convenient[27] and less painful[24] than WLE; however, both confer a similar anxiety level, operative experience, and medication requirements.[24,34] Another benefit is the concept of improved logistics and workflow, as seeds can be implanted a few days before surgery, thus minimizing delays the day of the surgery.[35] RSLE also allows for more flexible scheduling of surgeries between the radiology and surgery departments. Women who were candidates for RSLE experienced shorter waiting times between biopsy and surgery (mean, 84 days) compared to the WLE cohort (mean, 103 days).[17] Although different health care systems may allow shorter overall waiting times, the relative shorter intervention time for RSLE compared to WLE may improve overall patient satisfaction.[21] RSLE conveys the advantage that, unlike with WLE, seed implantation offers the surgeon the versatility for the final decision regarding incision placement.[17] This is especially noteworthy in an era where oncoplastic surgery and patient satisfaction with cosmesis have become a standard of care.

Localizing nonpalpable lesions with RSLE is not without limitations. In some centers, postlocalization scintigraphy for confirmation of localization is required. Although this was initially described as part of the technique,[36] it is not essential at our institution. Despite the current evidence in favor or RSLE, uptake remains low. Only two hospitals in Toronto use RSLE. The factors that have been reported to prevent wider adoption include radiation exposure, radiology expertise, licensing, and difficulties in acquisition of radioisotopes and seeds.[28] A major benefit with RSLE is its favorable cost-effectiveness. In a Canadian study, the average cost per patient for RSLE was CAD$250.90 versus CAD$1130.41 for WLE.[37]

The limitations of this study relate to its retrospective nature. Details that would have been noteworthy to assess could not be collected, including complication and seed localization failure rates. Variability in surgeon practice and patient preference may have influenced the decision to perform reoperation.

Conclusion

Univariate analysis indicates that RSLE is associated with lower positive margin rate, shorter operation time, and smaller surgical specimen volume compared to WLE. This may translate to more accurate localization with smaller breast specimens without sacrificing oncologic outcome.

Clinical Practice Points

- Data comparing RSLE and WLE mainly derive from large academic institutions with very limited data deriving from community hospitals.

- This study is the largest cohort of patients undergoing RSLE in a community hospital.
- Consistent with other studies, patients who underwent RSLE had significantly lower positive margin rates on their index surgery, as well as shorter operation time and smaller surgical specimen. However, after adjusting by confounders, RSLE was not independently associated with lower positive margin rates.
- RSLE is an effective technique to excise nonpalpable breast lesions in the community setting.
- Surgeons in any type of hospital setting may incorporate RSLE into their practice without compromising oncologic safety or efficiency in the operating room.

Disclosure

The authors have stated that they have no conflict of interest.

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