

# Complication rates after intraoperative radiation therapy: do applicator size and distance to skin matter?

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## BACKGROUND

- Intraoperative radiation therapy (IORT) has gained popularity for the treatment of selective early stage breast cancer.
- Few studies have examined the relationship between complications and both demographic and technical factors.
- The objective of the current study was to identify factors that contributed to complications, specifically:
  1. Distance from the applicator to the skin
  2. Applicator size

## METHODS

- Data was prospectively collected on 219 patients who underwent IORT with no external beam therapy from November 1, 2013 to August 31, 2018.
- Patients were divided into two groups: complications and no complications.
- Clinical and demographic data were analyzed using Fisher's exact test, student's t-test, and odds ratios.

## RESULTS

	Complications (n = 47)	No Complications (n = 172)	All (n = 219)	p value
Age (Mean +/- SD; years)	65.4 +/- 8.8	65.4 +/- 10.0	65.2 +/- 9.7	1.0
Stage I	32 (68.1%)	120 (69.8%)	152(69.4%)	0.8
DM	11(23.4%)	15(8.7%)	26(11.9%)	<b>0.01</b>
BMI	30.0 +/- 7.9	28.6 +/- 5.9	28.9 +/- 6.5	0.2
History of smoking	8 (17.0%)	42 (24.4%)	50(22.8%)	0.3
Active smoker	1 (2.1%)	10 (5.8%)	11(5.0%)	0.5
Distance to Skin (cm)				
Superior	1.9 +/- 2.4	2.0 +/- 2.6	2.0 +/- 2.6	0.9
Inferior	1.8 +/- 1.6	1.9 +/- 2.5	1.9 +/- 2.4	0.8
Medial	2.0 +/- 1.7	2.2 +/- 3.0	2.2 +/- 2.8	0.6
Lateral	1.8 +/- 1.7	2.0 +/- 3.1	1.9 +/- 2.8	0.6
Closest	1.5 +/- 1.6	1.5 +/- 1.8	1.5 +/- 1.8	1.0
Applicator Size (cm)	3.4 +/- 0.4	3.4 +/- 0.4	3.4 +/- 0.4	0.5

- IORT had an overall complication rate of **21.4%**.
- The most common complication was palpable seroma (n = 37; 78.7%).

Complication	n(%)
Seroma	37(78.7%)
Infection	4 (8.5%)
Soft Tissue Fibrosis	1 (2.1%)
Hematoma	3 (6.4%)
Other	1 (2.1%)

## CONCLUSION

- Neither applicator size nor the closest skin distance were associated with increased complications.
- Traditionally described risk factors such as smoking and BMI were also not predictive.
- Larger prospective studies are needed to examine technical risk factors so all physicians may be optimally trained with outcome in mind.

## REFERENCES

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