

Salvage breast conserving surgery and re-irradiation with intraoperative electrons for recurrent breast cancer: a multicentric Italian study of 109 patients

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Aim

There is a growing interest toward a second breast conserving surgery with partial breast re-irradiation (re-PBI) for local recurrence (LR) after quadrantectomy and whole breast irradiation for primary breast cancer (BC) in lieu of salvage mastectomy (SM). To minimize the toxicity of adjacent organs at risk, intraoperative radiotherapy with electrons (IOERT) may represent a viable choice.

Materials and Methods

A database to collect data on national basis regarding re-PBI with IOERT was set up in the years 2016-2018 upon the joint initiative of two AIRO Study groups. The outcome of such patients was recently updated, providing a long-term follow-up (FU).

Results

A total of 109 patients from 8 Italian centres, treated from 2002 to 2015 were included in the present analysis. Clinical and pathological characteristics of the 1stLR are described in **Table 1**. At a median FU of 8.5 years, there were 48 events, resulting in a disease-free survival of 81.3% and 53.5% at 5 and 10 years, respectively. The cumulative incidence of 2nd LR was 12.2% at 5 years and 32.3% at 10 years (Figure 1). Regarding the site of the 2nd LR, 15/ 31 (48.3%) were in the same site as the 1st LR. The management of the 31 2nd LR consisted in SM (n.24), ri-quadrantectomy (n. 5), no surgery (n.2). Six patients developed distant metastases, leading to a cumulative incidence of 0.9% at 5 years and 5.8% at 10 years. At a median FU of 11.7 years, 23 (21.1%) deaths occurred, of which 15 (13.8%) related to BC. At 5 and 10- years, overall survival was 95.2% and 88.3%, respectively, while BC specific survival were 98% and 94.5%. Regarding late toxicity, the maximum grade of side effects throughout the FU (median, 5.2 years) was considered and available for 89/109 subjects. Grade ≥ 2 side effects were as follows: 43.5% fibrosis (18.9% Grade 3), 6.7% breast pain, 35.5% retraction/atrophy, 44.9%.

Conclusion

Considered that the 1st LR presented in median a favorable profile (small size and long interval from the primary BC), the 2stLR free survival was lower than expected. The cumulative incidence of 2stLR was almost the double compared to other reports and very much the same as modern series of selected patients undergoing repeat quadrantectomy without re-PBI. Fibrosis was higher than that described in the dedicated literature, although the rate of cosmesis reported by patients as good/excellent was quite high.

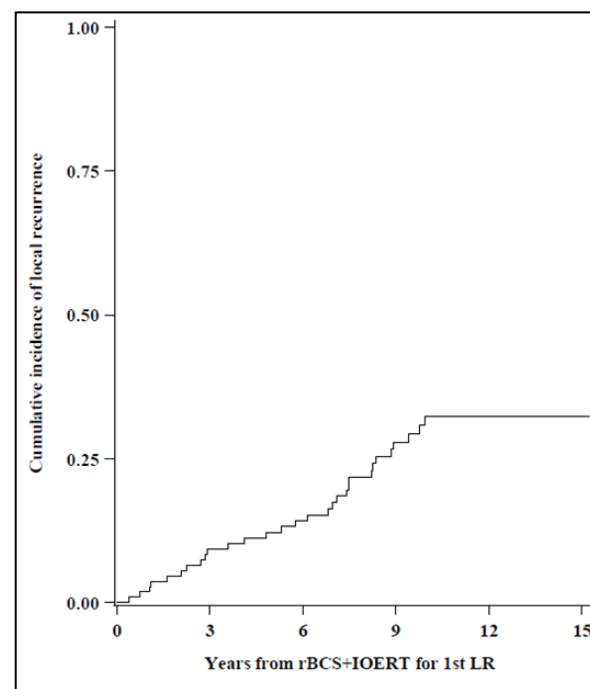


Figure 1. Cumulative incidence of second local recurrence (median FU of 11.7 years; Q1-Q3 7.7-14.6)

Characteristic	Level	Patients (N=109)
Interval between primary BC and 1st LR, median years (min-max)		
		11.1 (2.4-27.7)
Age at 1st LR, median (min-max)		
		62 (40-81)
Site of 1st LR, N. (%)		
	Primary quadrant	45 (41.7)
	Other quadrant	63 (58.3)
	Missing	1
Type of surgery, N. (%)		
	Quadrantectomy alone	62 (56.9)
	Quadrantectomy + axillary investigation	47 (43.1)
pT (cm), median (min-max)		
		0.9 (0.3-3.0)
pN, N. (%)		
	0	42 (38.5)
	1-3	5 (4.6)
	X	62 (56.9)
Grade, N (%)		
	G1	10 (10.4)
	G2	60 (62.5)
	G3	26 (27.1)
	Missing	13
Molecular Subtype, N. (%)		
	Luminal A	44 (43.6)
	Luminal B (Ki67 \geq 20%)	38 (37.6)
	Luminal B (HER2 positive)	9 (8.9)
	HER2 positive	2 (2.0)
	Triple negative	8 (7.9)
	Missing	8
IOERT Dose (Gy), median (min-max)		
		18 (12-21)
Applicator size (cm), median (min-max)		
		4 (3-6)
Electron energy (MeV), median (min-max)		
		8 (4-10)

Table 1. Clinical and histopathological characteristics of the first local recurrence

Acknowledgments

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