

# State of the art in breast intraoperative electron radiation therapy after intraoperative ultrasound introduction

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**SUPPLEMENTARY TABLE 1.** Comparison of the target thickness between needle and intraoperative ultrasound (IOUS) measures in a sample of 23 patients

			point1	point2	point3	point4	point5	Mean (SD)	Mean difference ultrasound vs. needle	p-value
patient	data	Method	mm	mm	mm	mm	mm	mm	mm	
1	21/11/14	needle	14.0	13.0	9.0	10.0	14.0	12.0 (2.3)	0.2	0.27
		ultrasound	11.8	10.3	n.a.	n.a.	14.5	12.2 (2.1)		
2	05/12/14	needle	11.0	13.0	18.0	17.0	n.a.	14.8 (3.3)	-0.3	0.54
		ultrasound	10.3	14.0	16.9	16.6	n.a.	14.4 (3.1)		
3	19/12/14	needle	7.0	11.0	6.0	10.0	13.0	9.4 (2.9)	-0.4	0.68
		ultrasound	8.8	9.3	9.0	8.9	n.a.	9.0 (0.2)		
4	09/01/15	needle	10.0	13.0	11.0	8.0	8.0	10.2 (2.1)	0.4	0.48
		ultrasound	9.4	12.0	12.8	8.1	9.5	10.4 (2.0)		
5	16/01/15	needle	11.0	14.0	12.0	10.5	11.0	11.7 (1.4)	0.3	0.23
		ultrasound	10.4	15.0	11.5	11.5	11.8	12.0 (1.7)		
6	23/01/15	needle	15.0	9.0	12.0	9.0	13.0	11.6 (2.6)	0.0	0.97
		ultrasound	11.5	10.8	13.4	7.9	14.6	11.6 (2.6)		
7	29/01/15	needle	5.0	5.0	6.0	6.0	6.0	5.6 (0.5)	0.2	0.38
		ultrasound	5.0	5.9	6.4	5.3	6.4	5.8 (0.6)		
8	29/02/15	needle	5.0	9.0	6.0	9.0	4.0	6.6 (2.3)	0.5	0.15
		ultrasound	5.6	8.7	5.7	10.1	5.2	7.1 (2.2)		
9	05/03/15	needle	15.0	14.0	11.0	14.0	12.0	13.2 (1.6)	-0.8	0.06
		ultrasound	13.4	14.0	10.9	13.5	10.3	12.4 (1.7)		
10	19/03/15	needle	15.0	14.0	20.0	15.0	18.0	16.4 (2.5)	-0.5	0.27
		ultrasound	16.6	14.3	18.4	13.9	16.2	15.9 (1.8)		
11	23/04/15	needle	10.9	12.0	11.2	10.0	13.0	11.4 (1.1)	-0.4	0.27
		ultrasound	10.0	12.0	12.0	9.0	12.0	11.0 (1.4)		
12	30/05/15	needle	11.0	6.0	13.0	15.0	9.0	10.8 (3.5)	-1.2	0.10
		ultrasound	10.0	5.2	13.5	10.7	8.4	9.6 (3.1)		
13	07/05/15	needle	8.0	10.0	9.0	9.0	9.0	9.0 (0.7)	0.2	0.52
		ultrasound	7.6	9.1	10.6	9.1	9.5	9.2 (1.1)		
14	14/05/15	needle	7.0	8.0	5.0	5.0	5.0	6.0 (1.4)	0.3	0.41
		ultrasound	7.1	7.5	6.4	4.7	6.1	6.3 (1.1)		

			point1	point2	point3	point4	point5	Mean (SD)	Mean difference ultrasound vs. needle	p-value
patient	data	Method	mm	mm	mm	mm	mm	mm	mm	
15	28/05/15	needle	10.0	10.0	14.0	10.0	11.0	11.0 (1.7)	-0.4	0.46
		ultrasound	10.9	9.0	14.5	9.0	9.5	10.6 (2.3)		
16	11/06/15	needle	13.0	9.0	9.0	15.0	8.0	10.8 (3.0)	-0.6	0.06
		ultrasound	11.3	8.3	8.3	14.6	8.5	10.2 (2.8)		
17	18/06/15	needle	5.5	5.5	9.0	4.0	n.a.	6.0 (2.1)	0.9	0.30
		ultrasound	6.1	5.8	8.7	6.8	n.a.	6.9 (1.3)		
18	08/10/15	needle	16.0	9.0	16.0	11.0	15.6	13.5 (3.3)	-0.1	0.54
		ultrasound	16.0	8.7	15.5	12.0	14.7	13.4 (3.0)		
19	15/10/15	needle	10.0	10.0	9.0	5.0	9.0	8.6 (2.1)	-0.1	0.97
		ultrasound	9.9	9.8	10.3	4.1	8.4	8.5 (2.5)		
20	29/10/15	needle	9.0	11.0	7.0	7.0	15.0	9.8 (3.3)	0.1	0.74
		ultrasound	9.7	11.8	6.6	7.4	14.1	9.9 (3.1)		
21	25/02/16	needle	10.0	12.0	13.0	11.0	n.a.	11.5 (1.3)	-0.5	0.07
		ultrasound	9.9	11.3	11.6	11.2	n.a.	11.0 (0.8)		
22	10/03/16	needle	11.0	16.0	6.0	10.0	9.5	10.5 (3.6)	-0.3	0.37
		ultrasound	10.0	14.0	6.0	11.0	10.0	10.2 (2.9)		
23	01/04/16	needle	11.0	9.0	8.0	9.0	10.0	9.4 (1.1)	0.5	0.09
		ultrasound	11.4	10.5	8.6	8.9	10.0	9.0 (0.2)		
<b>All patients</b>									<b>0.1</b>	<b>0.33</b>

n.a. = not available; SD = standard deviation

SUPPLEMENTARY TABLE 2. Late toxicity according to LENT SOMA scale

	Group 1 (n = 38)	Group 2 (n = 72)	Total (n = 110)
<b>Breast oedema</b>			
1	0	6 (8.3%)	6 (5.5%)
2	0	1 (1.4%)	1 (0.9%)
1+2	0	7 (9.7%)	7 (6.4%)
<b>Fibrosis/ fat necrosis</b>			
1	10 (26.3%)	10 (13.9%)	20 (18.2%)
2	3 (7.9%)	1 (1.4%)	4 (3.6%)
1+2	13 (34.2%)	11 (15.3%)	24 (21.8%)
<b>Teleangectasia</b>			
1	0	0	0
2	0	1 (1.4%)	1 (0.9%)
1+2	0	1 (1.4%)	1 (0.9%)
<b>Arm lymphedema</b>			
1	0	5 (6.9%)	5 (4.6%)
2	0		
1+2	0	5 (6.9%)	5 (4.6%)
<b>Retraction/atrophy</b>			
1	1 (2.6%)	0	1 (0.9%)
2	0	0	0
1+2	1 (2.6%)	0	1 (0.9%)
<b>Pain</b>			
1	1 (2.6%)	3 (4.2%)	4 (3.6%)
2	0	0	0
1+2	1 (2.6%)	3 (4.2%)	4 (3.6%)
<b>G0</b>	22 (58%)	43 (59.7%)	65 (59.1%)
<b>Not known</b>	1 (2.6%)	2 (2.8%)	3 (2.7%)

SUPPLEMENTARY TABLE 3A. Acute toxicity in standard whole breast radiation therapy (WBRT) and hypofractionated WBRT groups

St. WBRT	Group 1 (n = 8)	Group 2 (n = 45)	p-value	p-value
Grade 0	5 (62.5%)	18 (40.0%)	p = 0.43	p = 0.60
Grade 1	2 (25.0%)	20 (44.4%)	p = 0.42	
Grade 2	1 (12.5%)	7 (15.6%)	p = 0.99	
Grade 1-2	3 (37.5%)	27 (60.0%)	p = 0.98	
Hypofr. WBRT	Group 1 (n = 29)	Group 2 (n = 26)		p-value
Grade 0	18 (62.0%)	18 (69.2%)	p = 0.78	p=0.10
Grade 1	6 (20.7%)	8 (30.8%)	p = 0.58	
Grade 2	5 (17.2%)	0 (0.0 %)	p = 0.08	
Grade 1-2	11 (37.9%)	8 (30.8%)	p = 0.78	

Hypofr.= hypofractionated; St. = standard

SUPPLEMENTARY TABLE 3B. Late toxicity in standard whole breast radiation therapy (WBRT) and hypofractionated WBRT groups

St. WBRT	Group 1 (n = 8)	Group 2 (n = 44)	p-value	p-value
Grade 0	5 (62.5%)	24(54.5%)	p = 0.98	p = 0.43
Grade 1	2 (25.0%)	18 (40.9%)	p = 0.65	
Grade 2	1 (12.5%)	2 (4.5%)	p = 0.95	
Grade 1-2	3(37.5%)	20 (45.5%)	p = 0.98	
Hypofr. WBRT	Group 1 (n = 29)	Group 2 (n = 26)		p-value
Grade 0	17 (58.6%)	19(73.1%)	p = 0.40	p = 0.66
Grade 1	10 (34.5%)	6 (23.1%)	p = 0.52	
Grade 2	2 (6.9%)	1 (3.8%)	p = 0.99	
Grade 1-2	12 (41.4%)	7 (26.9%)	p = 0.40	

Hypofr.= hypofractionated; St. = standard