A PROSPECTIVE RANDOMIZED STUDY COMPARING COSMETIC OUTCOME OF SEQUENTIAL ELECTRON BOOST VERSUS SIMULTANEOUS INTEGRATED BOOST WITH IMRT TO LUMPECTOMY CAVITY DURING ADJUVANT RADIOTHERAPY TO BREAST FOLLOWING BCS IN CARCINOMA BREAST IN INDIAN PATIENTS.

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INTRODUCTION

In this study we present our institutional experience to study and compare which is better both in terms of cosmesis in patients of early stage breast cancer treated with breast conservation therapy and undergoing adjuvant radiotherapy, either with simultaneous integrated boost to lumpectomy cavity along with whole breast radiotherapy or with sequential electron boost(SEB) to lumpectomy cavity following whole breast radiotherapy along with acute toxicity profile in both the arms

OBJECTIVES

- To study and compare cosmesis using Harvard cosmesis scale of SIB IMRT versus sequential electron boost in breast cancer patients:
- To study and compare acute toxicity profile during the course of adjuvant radiotherapy of SIB IMRT versus sequential electron boost in breast cancer patients:

DISCUSSION

Moving away from the standard application of two tangential beams with wedges by 2D technique for treating intact breast, use of conformal techniques such as 3DCRT and IMRT allows a more homogenous radiation delivery and better conformity to each patient's anatomy while reducing the normal tissue complications

- Simultaneous Integrated Boost(SIB) using IMRT delivers radiation to the whole breast while simultaneously treating the lumpectomy cavity to a higher dose over a period of five ands half weeks.
- Sequential electron boost(SEB) is a schedule in which boost to lumpectomy cavity is delivered sequentially using electrons for about one and half week following whole breast irradiation for five and half weeks.

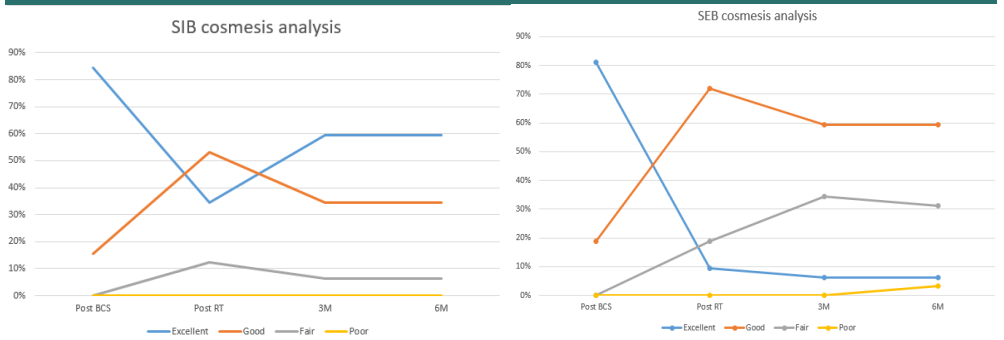
OBSERVATION

Factors	Groups	SIB Arm	SEB Arm	p value	Effect size
Age (years) (mean)	Continuous	48.72	47.63	0.61	1.09
Menstrual Status	Premenopausal	50 %	37.5 %	0.33	0.13
	Postmenopausal	50 %	62.5 %		
Laterality of Tumour	Right	50%	53%	0.81	0.03
	Left	50%	47%		
Quadrant of Tumour	UOQ	53%	47%	0.71	0.13
	LOQ	16%	28%		
	Central	6%	0%		
	UIQ	22%	22%		
	LIQ	3%	3%		
Tumour Size(mean) (cc)	Continuous	12.14	15.36	0.38	3.21
pT Status	T1	19%	0%	0.01	0.25
	T2	78%	91%		
	T3	3%	9%		
pN Status	Present	56%	56%	0.63	0.09
	Absent	44%	44%		
No. of nodes dissected	Continuous	17.13	20.97	0.02	3.84
Histological grade	I	9%	9%	0.20	0.22
	II	41%	19%		
	III	50%	72%		
LVI	Present	44%	25%	0.12	0.19
	Absent	56%	75%		
ER Status	Positive	89%	91%	0.18	0.13
	Negative	11%	9%		
PR Status	Positive	75%	63%	0.80	0.03
	Negative	25%	38%		
Her 2 neu Status	Positive	35%	38%	0.29	0.13
	Negative	65%	63%		

Comparison of patient and disease related characteristics between the two arms

✓ This prospective study intends to compare SIB regimen with SEB regimen in terms of acute toxicity, cosmesis in a set of 64 Indian patients equally randomized amongst the SIB and SEB arms

RESULTS



Line diagram showing comparison of Harvard Score between the two arms at 4 time points in both the arms

✓ Initially post BCS both the arms have excellent cosmesis score. Immediately after RT there is dip in the cosmesis from excellent to good and fair in both the arms but greater with SEB but the difference was not statistical significant(p=0.045)

✓ At the end of 6 months post RT there is stabilization of cosmesis with maximum of excellent to good cosmesis in SIB arm patients where as in SEB arm few patients showed further decrement in cosmetic score from good to fair. There is also a slight increase in poor cosmesis score from 3-6 months and no such change was observed in SIB arm. These changes over a period of 6 months were found to be statistically significant.(p<0.001)

RECOMMENDATIONS

The SIB regimen can be used a standard practice in selected patients of early invasive breast cancer who have undergone BCS. SIB is biologically and dosimetrically equivalent and can be used to decrease the overall treatment time and with excellent cosmesis and acceptable acute toxicity which adds to psychological and emotional satisfaction of the patient

CONCLUSIONS

In a selected cohort of patients who have undergone breast conservation surgery, simultaneous integrated boost along with WBI is considered equivalent radiobiologically to sequential electron boost after WBI. The SIB regimen helps in decreasing patient's inconvenience by reducing the total treatment duration.

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