Associazione Italiana Radioterapia e Oncologia clinica

Società Italiana di Radiobiologia

HALFMOON RADIOTHERAPY:

A REAL-WORLD EXPERIENCE IN A SINGLE INSTITUTION

IEO Istituto Europeo di Oncologia

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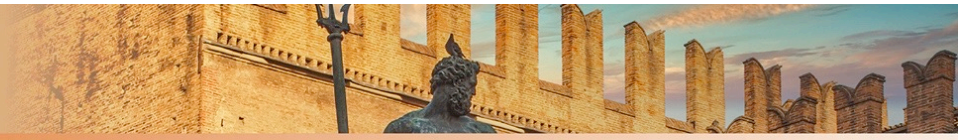

DICHIARAZIONE

Relatore: Dott.ssa Maria Alessia Zerella

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

- Posizione di dipendente in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Consulenza ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Partecipazione ad Advisory Board **(NIENTE DA DICHIARARE)**
- Titolarità di brevetti in compartecipazione ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Partecipazioni azionarie in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Altro

BACKGROUND (1)

The rates of mastectomy with an immediate breast reconstruction (IBR) as a surgical treatment for breast cancer patients are increasing

The interaction of IBR with post-mastectomy radiotherapy (PMRT) has become a subject of great interest

Radiation therapy in the setting of breast reconstruction is challenging:

- little is known about the oncological outcomes associated with these techniques and the impact of RT on cosmetic results
- the reconstructed breast may affect the ideal target coverage and the optimal OARs sparing
- Until recently there was no consensus on the definition of the clinical target volume for chest wall irradiation in the presence of IBR

BACKGROUND (2)

Taking advantage of IMRT, dose distribution can be tailored to the tissues overlying the reconstruction without including the whole implant into the prescribed isodose and sparing the adjacent underlying OARs.

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ORIGINAL ARTICLE – CLINICAL ONCOLOGY

HALFMOON TomoTherapy (Helical ALtered Fractionation for iMplant partial OmissiON): implant-sparing post-mastectomy radiotherapy reshaping the clinical target volume in the reconstructed breast

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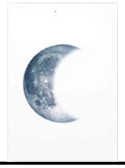
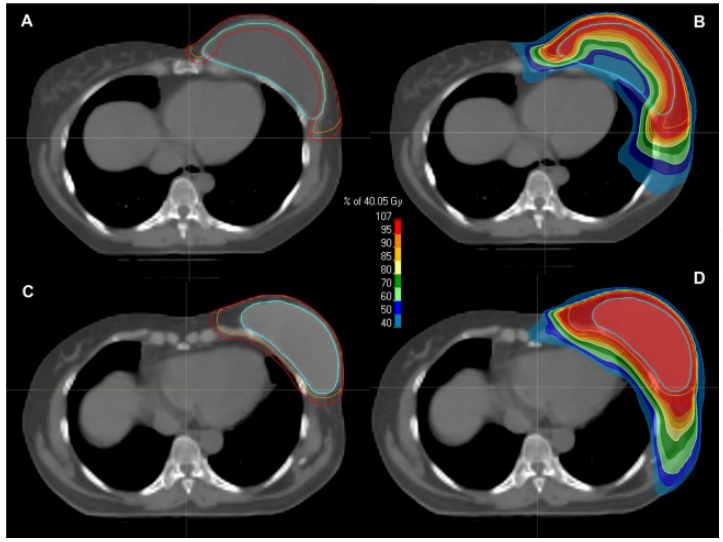


HALFMOON **18 patients**	conventionally contoured CTV plans **54 patients**

40.05 Gy/15 fractions, helical Tomotherapy®

April 2016 to January 2018



- the rate of major surgical revisions was lower than that in the Conventional CTV TomoHelical plans group (6.2% versus 18.5%)
- the dose distribution is more adherent to the true CTV and the PTV coverage is adequate (V95% ≥90% and V90% ≥95% in all cases)
- HALFMOON technique was more advantageous for OARs dosimetry, in particular for ipsilateral lung → lower rate of radiation-induced toxicity

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Original Article

ESTRO ACROP consensus guideline for target volume delineation in the setting of postmastectomy radiation therapy after implant-based immediate reconstruction for early stage breast cancer

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Delineation guidelines for PMRT after implant-based IBR based on a thorough understanding of the surgical procedures, disease stage, patterns of recurrence and radiation techniques.

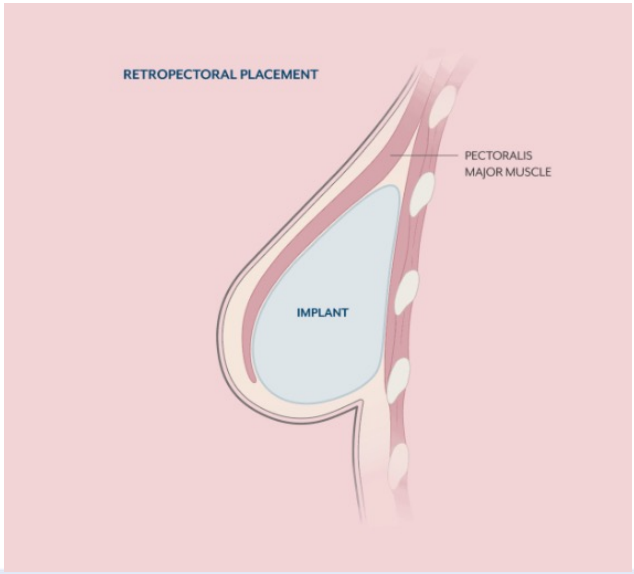
They are based on a consensus endorsed by a global multidisciplinary group of breast cancer experts.

AIMS

Reporting preliminary experience with implant-sparing RT using the HALFMOON (Helical ALtered Fractionation for iMplant partial OmissiON) technique and target contouring according to ESTRO-ACROP recommendation.

METHODS (1)

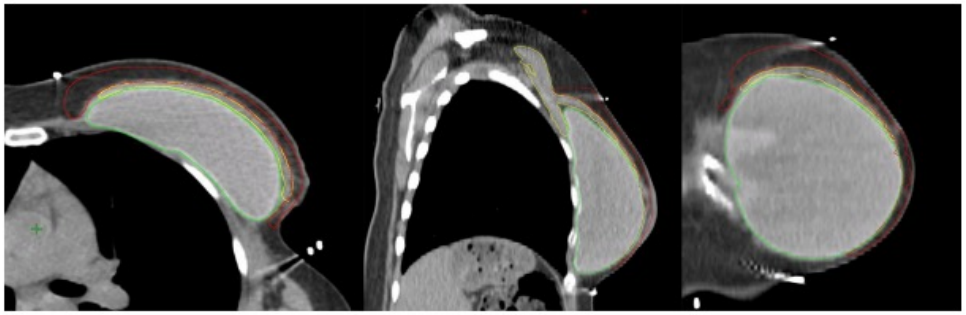
Breast cancer patients treated with mastectomy (total or nipple sparing), immediately reconstructed with implants (tissue expander-TE or permanent implant-PI), receiving **Halfmoon RT** by using TomoTherapy® Hi-Art System (Tomotherapy Inc., Madison, WI) in helical modality (TomoHelical), with a moderated hypofractionated scheme (15-fraction-2.67 Gy/fraction-Total dose 40.05 Gy), at IEO between 02/2020 and 01/2021.



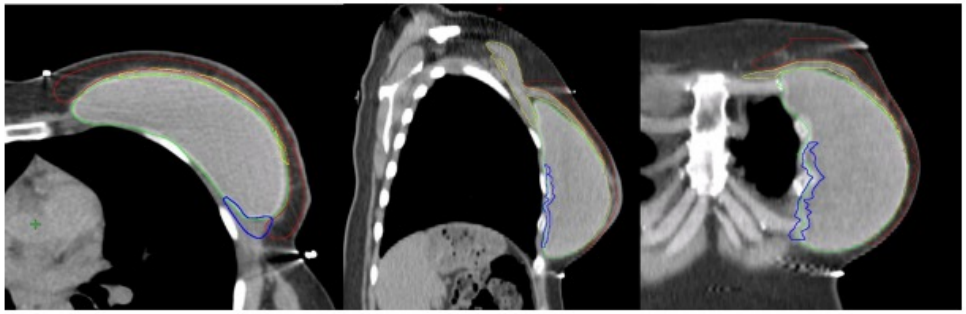
- All the implants were placed beneath the pectoral muscle
- As for our clinical practice, TE was fully inflated before RT
- Data about capsular contracture of the breast implant were collected according to the Baker classification

METHODS (2)

Contouring was based on ESTRO/ACROP guidelines for PMRT after implant-based IBR; the chest wall CTV is composed of ventral part (between the skin and the implant); in case of adverse tumor factors, the partial dorsal part (between the implant and the rib wall) is added to ventral CTV.



CTVp_chestwall with only a ventral part
Pectoral muscles
Implant



CTVp_chestwall with a ventral and dorsal part
Pectoral muscles
Implant

RESULTS

- A total of 47 patients were analysed (baseline characteristics reported in Table 1)
- Patients reconstructed with TE: median time to TE substitution was 17.75 months
- Patients with an IBR with PI: 1/20 required implant substitution after 20 months

Toxicity assessment with RO and/or plastic surgeon available for 34/47 patients (72.3%) with a median follow-up of 1.2 years (IQR 1.0-1.7)

⇩

data about capsular contracture available for 32/34 patients:

21 of them reported Baker grade ≥ 2:

Baker 2 → 8 patients

Baker 3 → 11 patients

Baker 4 → 2 patients

Table 1. Summary of patients' characteristics

Variable	levels	n (%)
age at surgery	49 years (IQR 44-54.5)	
T stage	*0*	3
	1	14
	2	22
	3	7
	x	1
N stage	*0*	9
	1	13
	2	13
	3	10
	x	2
Available FUs	*Radiotherapy*	25
	Oncology	9
	Senology	6
	Plastic surgery	28
	na	4
Type of reconstruction	*TE*	27
	PI	20

DISCUSSION

From the reported experience implant sparing RT using Halfmoon technique is technically feasible and preliminary data demonstrate a low rate of severe capsular contracture

- At the beginning of our experience we adapted tumor risk factors suggested by ESTRO consensus to our clinical practice, contouring dorsal CTV in a major number of patients
- It is necessary that patients treated with Half Moon technique be carefully monitored in terms of long-term oncological safety, treatment toxicity and cosmetic outcome

DBCG RT Recon Trial

PRADA Trial

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Thank you

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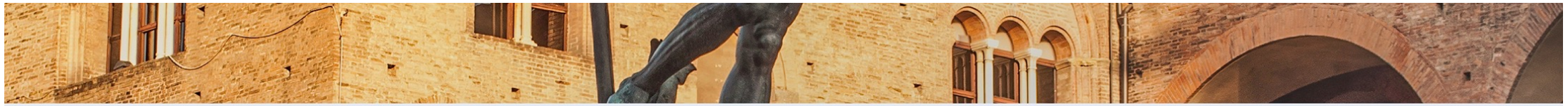

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