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

Orit Kaidar-Person, Birgitte Vrou Offersen, Sandra Hol, Meritxell Arenas, Cynthia Aristei, Celine Bourgier, Maria Joao Cardoso, Boon Chua, Charlotte Coles, Tine Engberg Damsgaard, Dorota Gabrys, Reshma Jagsi, Rachel Jimenez, Anna M Kirby, Carine Kirkove, Youlia Kirova, Vassilis Kouloulias,Tanja Marinko, Icro Meattini, Ingvil Mjaaland, Gustavo Nader Marta, Petra Witt Nystroem, Elzbieta Senkus, Tanja Skyttä, Tove F Tvedskov, Karolien Verhoeven, Liesbeth Boersma, Alice Ho, Claus Kamby, Sofia Rivera, Yvonne Zissiadis, Miika Palmu, Philip Poortmans.
On behalf of a Global Multidisciplinary Group of Breast Cancer Experts. Institutions of the authors are found in the full manuscript, soon to be published in Radiotherapy and Oncology.

The authors dedicate these guidelines to all breast cancer patients, past, present and future

Objectives

Immediate breast reconstruction (IBR) rates after mastectomy are increasing. Postmastectomy radiation therapy (PMRT) contouring guidelines for target volumes in the setting of IBR are lacking. Therefore, many patients who have had IBR receive PMRT to target volumes similar to conventional simulator-based whole breast irradiation.

Our multidisciplinary initiative aims to define delineation guidelines for the clinical target volume (CTV) for PMRT in the setting of implant-IBR. Herein we are presenting the consensus guideline aiming to limit the CTV to clinically relevant volumes and thereby reducing the risks of RT-related complications.

Methods

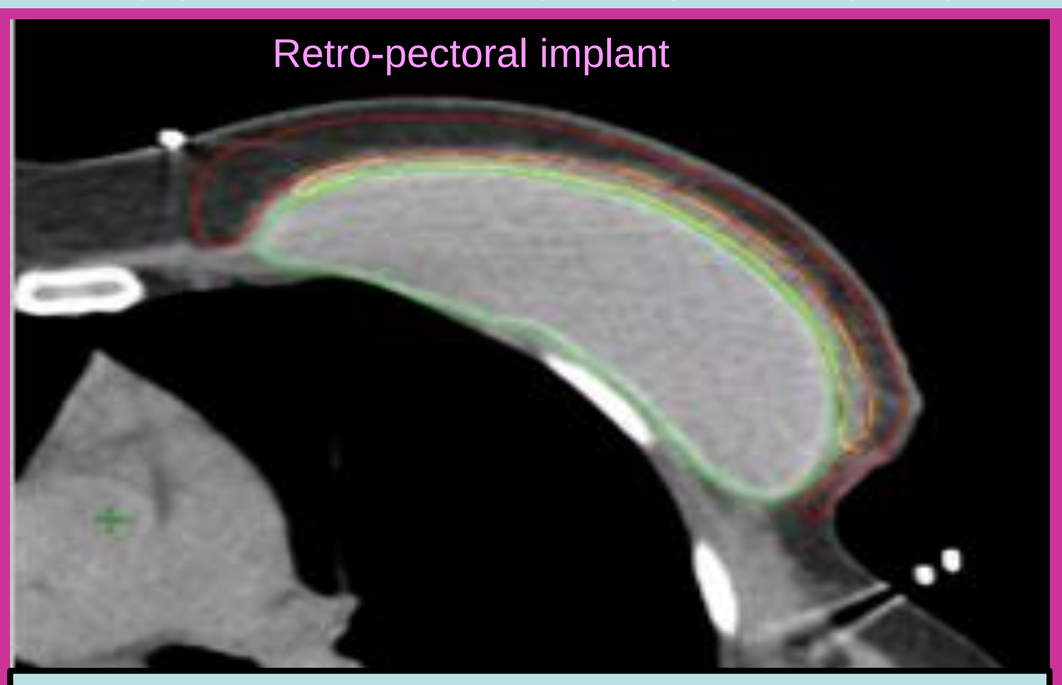
After reviewing the literature of local and regional recurrences after mastectomy and IBR techniques, an international group of breast cancer experts developed a delineation guideline for CTV in the setting of implant-based-IBR. The target volume feasibility and dosimetric were evaluated (1).
In November 2017 a broader international multidisciplinary group of breast cancer experts including breast surgeons, plastic surgeons, radiation oncologists, and clinical oncologists (authors list) were invited to participate in the consensus guidelines development via the following steps:
Between January and March 2017 the current practices for IBR-PMRT of the expert group were assessed via a multiple-choice web-questionnaire of 6 questions.
The expert group participated in a ESTRO's FALCON platform-based CTV contouring exercise for IBR.

Results

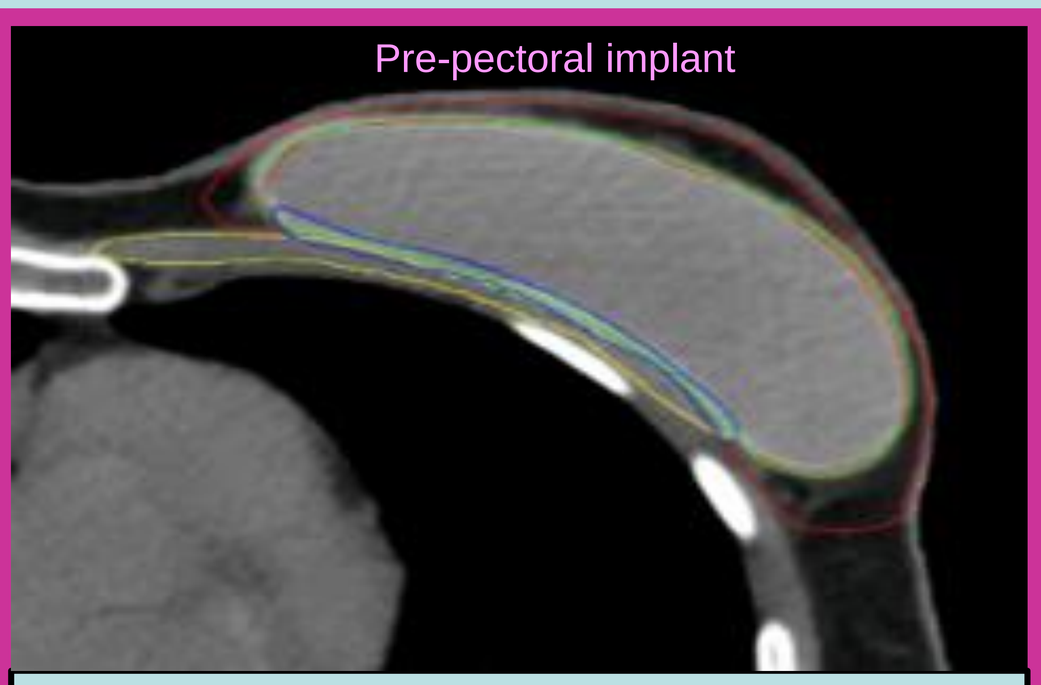
Table 1: CTV delineation guidelines in case of implant-based IBR

Border per region	CTV Retro-pectoral implant	CTV Pre-pectoral implant
Cranial	Guided by palpable/visible signs, planning CT; if appropriate guided by the contralateral breast; max up to the caudal edge of the sterno-clavicular joint	Guided by palpable/visible signs, planning CT; if appropriate guided by the contralateral breast; max up to the caudal edge of the sterno-clavicular joint
Caudal	Guided by palpable/visible signs; if appropriate guided by the contralateral breast	Guided by palpable/visible signs; if appropriate guided by the contralateral breast
Ventral	1. Ventral part: if possible, up to 3-5 mm under the skin surface 2. Dorsal part caudal from original insertion of pectoral muscle: the dorsal side of the implant.	1. Ventral part: if possible up to 3-5 mm under the skin surface 2. Dorsal part: the dorsal side of the implant
Dorsal	1. Ventral part: major pectoral muscle or implant where no muscle 2. Dorsal part caudal from original insertion of pectoral muscle: ribs and intercostal muscles. ** consider including the superficial part of the pectoral muscle if it is thin or in case of local invasion.	1. Ventral part: ventral side of the implant 2. Dorsal part: ventral side of the pectoral muscles or ribs and intercostal muscles where no muscle is present ** consider including the superficial part of the pectoral muscle in case of local invasion.
Medial	Guided by palpable/visible signs; if appropriate guided by the contralateral breast. Lateral to the medial perforating mammary vessels	Guided by palpable/visible signs; if appropriate guided by the contralateral breast. Lateral to the medial perforating mammary vessels
Lateral	Guided by palpable/visible signs; if appropriate guided by the contralateral breast. Usually ventral to the mid-axillary line (important, location of most residual glandular tissue). Ventral to the lateral thoracic artery	Guided by palpable/visible signs; if appropriate guided by the contralateral breast. Usually ventral to the mid-axillary line (important, location of most residual glandular tissue). Ventral to the lateral thoracic artery

* The ventral part is always part of the CTV, the dorsal part is only included depending on anatomical and tumour-related factors



CTVp_chestwall with only a ventral part (red).
Pectoral muscles (yellow) and implant (green).



CTVp_chestwall with a ventral (red) and dorsal (blue).
Prepectoral implant (green) Pectoral muscles (yellow).

Conclusions

The current guidelines are intended for target volume delineation after implant-based IBR. This does not indicate that we support one breast reconstruction procedure over the other. By using volume-based RT, we aim to reduce potential complications by tailoring the target volume to tissues at risk for recurrence. It is necessary that patients treated according to the current guidelines be carefully monitored in terms of long-term oncological safety, treatment toxicity, and cosmetic outcome. These guidelines are being validated in the DBCG RT Recon Trial (ClinicalTrials.gov NCT03730922). It is essential to read the full publication prior to using these guidelines in clinical practice. For delineation of nodal CTVs we recommend using the ESTRO guidelines (2).

1) Nissen ESY, et al., . PO-0918: Consensus on target volume delineation and treatment planning strategy for the DBCG RT Recon trial. Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology. 2018;127:S492-S4
2) Offersen B, et al. ESTRO consensus guideline on target volume delineation for elective radiation therapy of early stage breast cancer, version 1.1. Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology. 2016;118:205-8

ESTRO38 PV-0043
Poster viewing 1 : Breast and Skin
Orit Kaidar-Person
DOI: 10.3252/pso.eu.ESTRO38.2019
Poster presented at: ESTRO 38
PosterSessionOnline.com