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**Manuscript Type:** MINIREVIEW

**Adaptive Radiation Therapy of breast cancer by repeated imaging during irradiation**

Sager O *et al.* Adaptive radiation therapy for breast cancer

Omer Sager, Ferrat Dincoglan, Selcuk Demiral, Bora Uysal, Hakan Gamsiz, Fatih Ozcan, Onurhan Colak, Yelda Elcim, Esin Gundem, Bahar Dirican, Murat Beyzadeoglu

### Abstract

Breast cancer is the most frequent cancer among females and also a leading cause of cancer related mortality worldwide. A multimodality treatment approach may be utilized for optimal management of patients with combinations of surgery, radiation

### Match Overview

1	Crossref 44 words Xiaojuan Chen, Qiao Qiao, Anthony DeVries, Wenhui Li, Adam Currey, Tracy Kelly, Carmen Bergomi, J. Frank Wilson, X.	3%
2	Internet 38 words www.ncbi.nlm.nih.gov	2%
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Adaptive Radiation Therapy (ART) of the intact breast by



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<https://www.sciencedirect.com/science/article/pii/S0167814017327615>

Phase I trial of stereotactic MR-guided online **adaptive radiation therapy** (SMART) for the treatment of oligometastatic or unresectable primary malignancies of the abdomen Author links open overlay panel  
Lauren Henke a Rojano Kashani a Clifford Robinson a Austen Curcuru a Todd DeWees a Jeffrey Bradley  
a Olga Green a Jeff Michalski a Sasa Mutic a ...

Cited by: 78

Author: Lauren Henke, Rojano Kashani, Clifford R...

Publish Year: 2017

### [Adaptive Radiotherapy: Merging Principle Into Clinical ...](#)

<https://www.researchgate.net/publication/41894270...>

The objective of this work is to provide a state-of-the-art review of computer-aided methods developed for **adaptive treatment planning and radiation therapy planning** for cervical cancer **radiation** ...

### [Evaluation of adaptive radiotherapy \(ART\) by use of ...](#)

<https://www.researchgate.net/publication/324257907...>

Evaluation of **adaptive radiotherapy (ART)** by use of replanning the tumor bed boost with **repeated** computed tomography (CT) simulation after whole **breast irradiation (WBI)** for **breast cancer patients** ...

### [Magnetic Resonance Imaging-Guided Adaptive Radiation ...](#)



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Adaptive radiation therapy for breast IMRT-simultaneously ...

<https://www.sciencedirect.com/science/article/pii/S0167814011007547>

Purpose. It has been shown that seroma volumes decrease **during breast** conserving radiotherapy in a significant percentage of patients. We report on our experience with an **adaptive radiation therapy** (ART) strategy involving rescanning and replanning patients to take this reduction into account **during** a course of intensity-modulated **radiation therapy** with simultaneously integrated boost (IMRT-SIB).

Cited by: 18

Author: Coen W. Hurkmans, Ingrid Dijkmans, Mira...

Publish Year: 2012

Imaging radiation dose in breast radiotherapy by X-ray CT ...

<https://www.nature.com/articles/s41467-020-16031-z>

**Imaging** Cherenkov emission **during radiation therapy cancer** treatments can provide a real-time, non-contact sampling of the entire dose field. The emitted Cherenkov signal generated is proportional ...

A Survivin-Associated Adaptive Response in Radiation Therapy

<https://cancerres.aacrjournals.org/content/73/14/4418>

Jul 15, 2013 · **Adaptive** responses can be induced in cells by very low doses of ionizing **radiation** resulting in an enhanced resistance to much larger exposures. The inhibitor of apoptosis protein, survivin, has been implicated in many **adaptive** responses to cellular stress. Computerized axial tomography used in image-guided radiotherapy to position and monitor tumor response uses very low **radiation** doses ...

Cited by: 28

Author: David J. Grdina, Jeffrey S. Murley, Richard ...

Publish Year: 2013

Magnetic Resonance Image Guided Radiation Therapy for ...

<https://www.sciencedirect.com/science/article/pii/S0360301616330656>

For **early-stage breast cancer**, **breast conservation therapy** has been established as an effective alternative to mastectomy for more than 2 decades (1). **Whole-breast irradiation** is a component of **breast conservation therapy** and can entail 5 to 6 weeks of daily **treatments**.

Cited by: 22

Author: Sahaja Acharya, Benjamin W. Fischer-Valuc...

Publish Year: 2016

Seroma change during magnetic resonance imaging-guided ...

<https://ro-journal.biomedcentral.com/articles/10.1186/s13014-017-0843-7>

Jun 20, 2017 · Based on the spatial pattern of recurrence, **partial breast irradiation (PBI)** can be introduced as an alternative to conventional **whole-breast irradiation** followed by boost in selected patients with **early breast cancer**, aiming for a short **treatment** time and reduced toxicity.

Cited by: 4

Author: Seung Hyuck Jeon, Seung Hyuck Jeon, Kyu...

Publish Year: 2017

PEOPLE ALSO ASK

Can radiation therapy be done before or after cancer?

How is radiation therapy used to treat bone cancer?

How do radiation and chemotherapy affect cancer cells?

What is radiation therapy after surgery called?

Feedback

Radiotherapy, including internal mammary nodal irradiation ...

<https://www.appliedradiationoncology.com/articles/...>

The impact of **radiation therapy** (RT), including internal mammary nodal (IMN) RT on cardiac function in patients receiving concurrent **treatment** with trastuzumab, was studied. Patients and Methods: Thirty-seven patients with stage I–III human epidermal growth factor-2 (HER2)–positive **breast cancer** treated with trastuzumab with or without ...

Magnetic Resonance-Guided Hypofractionated Adaptive ...

<https://www.cancer.gov/about-cancer/treatment/...>

Magnetic resonance-guided **adaptive radiation therapy** uses a machine that contains both the device that delivers the radiation and a **magnetic resonance imaging scanner**. This allows the **treatment** team to adjust or re-plan **treatment during the course of treatment**. **Hypofractionated radiation therapy** delivers higher doses of **radiation therapy** over a shorter period of time and may kill more tumor cells and have ...

Computed Tomography Number Changes Observed During ...

<https://www.sciencedirect.com/science/article/pii/S0360301614045714>

**Image guided intensity modulated radiation therapy** (IMRT) is the standard **treatment for head and neck cancer** (HNC) . A variety of **image-guided** technologies have been used to account for **interfractional** variations, including setup uncertainty and anatomic changes.

Cited by: 15

Author: Mei Feng, Cungeng Yang, Xiaojian Chen, Sh...

Publish Year: 2015

Adaptive radiation therapy for head and neck cancer

<https://appliedradiationoncology.com/articles/...>

Why Is Art Necessary?

Dosimetric Benefits of Art

Clinical Experience

Head and neck radiation therapy provides a unique **challenge intreatment delivery due to significant anatomic changes related to tumorresponse and weight loss that can occur during the course of treatment**.With expected anatomical changes of both tumor and normal tissue during a5- to 7-week course of radiation, relying solely on computed tomography(CT) images acquired before therapy could lead to (1) underdosing ofthe tumor and/or (2) unnecessary exposure of organs at risk (OARs) tohigher ...

See more on appliedradiationoncology.com

Radiation Therapy for Cancer - National Cancer Institute

<https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy>

Brachytherapy is most often used to **treat cancers** of the head and neck, **breast**, cervix, prostate, and eye. A **systemic radiation therapy** called **radioactive iodine**, or I-131, is most often used to **treat** certain types of **thyroid cancer**. Another type of **systemic radiation therapy**...





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<https://www.nature.com/articles/s41467-020-16031-z>

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**Publish Year:** 2012

### [Adaptive Radiotherapy - an overview | ScienceDirect Topics](#)

<https://www.sciencedirect.com/topics/medicine-and-dentistry/adaptive-radiotherapy>

John P. Gleysteen, ... Daniel R. Clayburgh, in Oral, Head and Neck Oncology and Reconstructive Surgery, 2018. **Adaptive** Radiotherapy. **Adaptive** radiotherapy (ART) for head and neck **cancer** is an emerging tool to counter morphologic changes in patient and tumor anatomy **during** a course of radiotherapy by creating new **radiation** plans **during** the course of **treatment**.

### [Radiotherapy, including internal mammary nodal irradiation ...](#)

[https://www.appliedradiationoncology.com/articles/...](https://www.appliedradiationoncology.com/articles/)

The impact of **radiation therapy** (RT), including internal mammary nodal (IMN) RT on cardiac function in patients receiving concurrent **treatment** with trastuzumab, was studied. Patients and Methods: Thirty-seven patients with stage I–III human epidermal growth factor-2 (HER2)–positive **breast cancer** treated with trastuzumab with or without ...

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## Radiation Therapy

Treatment for cancer involving radioactive energy to destroy the cancer cells and their division.

**Type of procedure:** Noninvasive

**Recovery time:** Can take several days

**Duration:** Few minutes

**Hospital stay:** Not typically needed

## May treat

### Cancer

Common

Cancer is a group of diseases involving abnormal cell growth ...

[Read more](#)

## What to expect before procedure

- Before the treatment, tests like CT Scan, MRI and X rays are done.
- For immobilization, devices like headrests, tapes, sponges and casts can be used.
- Simulation is done before the treatment for patient awareness.
- This treatment requires multiple sessions and the appointments should be made according to availability.

## What to expect during procedure