

# Current Role of Radiation in Thyroid Cancers

Divya Kukreja<sup>1</sup>, Deep Chakrabarti<sup>2</sup>, Mrinalini Verma<sup>3</sup>

## ABSTRACT

Thyroid cancer comes under the category of head–neck cancers (HNC) but unlike other sites, thyroid cancer still has undefined role of radiation. Here, we had briefly summarized the indications of radiation in various types of thyroid cancers.

**Keywords:** Anaplastic thyroid cancer, Anaplastic thyroid carcinoma, Endocrine, Endocrine cancer, Endocrine surgery, Medullary carcinoma, Papillary thyroid carcinoma, Thyroid cancer.

*Indian Journal of Endocrine Surgery and Research* (2021); 10.5005/jp-journals-10088-11164

Thyroid cancer is a relatively rare malignancy that can be broadly classified into three categories on the basis of histopathology: differentiated thyroid carcinoma (DTC) that includes papillary carcinoma and follicular carcinoma, medullary thyroid carcinoma (MTC), and anaplastic thyroid carcinoma (ATC). The mainstay of treatment for thyroid neoplasms is surgery with or without radioactive iodine ablation depending on the type of tumor and other relevant indications (size, lobe involvement, etc).

Earlier, the role of external beam radiotherapy was not clearly defined. It was used either as adjuvant treatment after resection or as a palliative measure given to the primary site if there was fungating lesion or bleeding (hemostatic radiotherapy). Palliative radiotherapy may also be used for the relief of local symptoms such as pain, either to the local site or to a distant site, e.g. bone. The only indication to give external beam radiotherapy postsurgery is the presence of gross residual disease or R1 (margin-positive) resection. For all broad categories, radioactive iodine ablation is indicated for intermediate and high-risk DTC; however, it has no role in MTC and ATC.

Other than the presence of gross residuum after surgery, the other indications of EBRT are in ATC where it is recommended to give radiotherapy regardless of whether surgery is done or not. In ATC, radiotherapy achieves best outcomes in stage IVA IVB disease in terms of local control and survival. In multiple studies giving radiotherapy after complete or near-complete surgery, usually EBRT is given postoperatively. However, there are some trials giving preoperative radiotherapy in stage IVA IVB disease but the approach has not been adopted by many centers. Benefit of radiotherapy is unclear in incidentally detected ATC after thyroidectomy. Benefits and toxicities of radiotherapy must be balanced and complications such as lymphedema, limited neck motion must be discussed with the patients.<sup>1–3</sup>

In medullary thyroid carcinoma, postoperative adjuvant radiotherapy to the neck and mediastinum should be considered in patients at high risk for local recurrence, e.g. patients having microscopic or macroscopic residual disease, extra thyroidal extension or extensive lymph node metastasis, and those at risk

<sup>1,3</sup>Department of Radiotherapy, King George's Medical University, Lucknow, Uttar Pradesh, India

<sup>2</sup>Department of Oncology, King George's Medical University, Lucknow, Uttar Pradesh, India

**Corresponding Author:** Mrinalini Verma, Department of Radiotherapy, King George's Medical University, Lucknow, Uttar Pradesh, India, e-mail: drmrinalini79@gmail.com

**How to cite this article:** Kukreja D, Chakrabarti D, Verma M. Current Role of Radiation in Thyroid Cancers. *Indian J Endoc Surg Res* 2021;16(2):86.

**Source of support:** Nil

**Conflict of interest:** None

of airway obstruction. The potential benefits must be weighed against the acute and chronic toxicity associated with the therapy.

## ORCID

Divya Kukreja  <https://orcid.org/0000-0003-4961-2502>

Deep Chakrabarti  <https://orcid.org/0000-0002-9511-6844>

Mrinalini Verma  <https://orcid.org/0000-0001-8446-4707>

## REFERENCES

1. Bible KC, Kebebew E, Brierley J, et al. 2021 American Thyroid Association guidelines for management of patients with anaplastic thyroid cancer: American Thyroid Association anaplastic thyroid cancer guidelines task force. *Thyroid* 2021;31(3):337–386. DOI: 10.1089/thy.2020.0944.
2. Wells Jr SA, Asa SL, Dralle H, et al. Revised American Thyroid Association guidelines for the management of medullary thyroid carcinoma: the American Thyroid Association Guidelines Task Force on medullary thyroid carcinoma. *Thyroid* 2015;25(6):567–610. DOI: 10.1089/thy.2014.0335.
3. Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American Thyroid Association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid* 2016;26(1):1–333. DOI: 10.1089/thy.2015.0020.