Sparing of swallowing-related organs in radiotherapy for oropharyngeal squamous cell carcinoma

We read the ORATOR study by Anthony C Nichols and colleagues,[1] published in *The Lancet Oncology,* with great interest. The authors designed a phase 2, randomised, controlled trial comparing the functional outcome of radiotherapy (with or without concomitant systemic therapies) with that of transoral robotic surgery (TORS) and neck dissection (with or without adjuvant concomitant chemoradiotherapy) for the treatment of T1–T2, N0–2 oropharyngeal squamous cell carcinoma (OPSCC).

At a first preliminary analysis, patients with OPSCC treated with radiotherapy showed superior swallowing-related quality-of-life scores 1 year after treatment. Although the authors stated that "the difference did not represent a clinically meaningful change" between the two therapeutic options, we believe that with greater technical shrewdness, the swallowing-related quality of life scores could have improved further in the radiotherapy group. Intensity-modulated irradiation (the technique adopted in the ORATOR study) could reduce swallowing dysfunction by producing a concave dose distribution and reducing doses to the swallowing-related organs at risk.[2] These technical aspects could be of fundamental importance in comparing the two treatments for OPSCC.

Radiation damage to the pharyngeal constrictors and the glottic or supraglottic larynx can result in dysphagia and aspiration after radiotherapy.[3] In a previous study, in the absence of sparing of swallowing-related organs at risk, a significant reduction in swallowing-related quality of life, assessed by MD Anderson Dysphagia Inventory (MDADI) composite score, was reported.[4] Specifically, Patterson and colleagues observed a decline in MDADI composite score from before radiotherapy to 3 months after radiotherapy (76·6 *vs* 59·4, p<0·01) without a subsequent improvement during follow-up. Therefore, to prevent swallowing dysfunction, the dose to the pharyngeal constrictor muscles and the larynx should be as small as possible. Unfortunately, the study by Nichols and colleagues does not mention a strategy for the sparing of swallowing-related organs at risk in the radiotherapy group.

In the ORATOR trial, chemotherapy was administered to 68% of patients in the radiotherapy group, compared with 24% in the TORS group. Concomitant cisplatin was the most common regimen used in the radiotherapy group, which could have affected the onset of hearing loss that was reported in a greater proportion of patients in the radiotherapy group than the TORS group. Additionally, the use of intensity-modulated radiotherapy could spare high doses to the healthy ear structures, but no dose constraints related to these organs at risk seem to have been adopted in the ORATOR study. Moreover, the addition of concurrent chemotherapy to radiotherapy for head and neck cancer is recognised to improve the therapeutic ratio, but concomitantly, it increases the severity of painful mucositis that negatively affects swallowing function during and after radiotherapy. Concurrent cisplatin is estimated to add 8–10 Gy to oral mucosa compared with radiotherapy alone for OPSCC.[5]

In summary, we appreciated the authors' efforts to compare radiotherapy and TORS for the treatment of OPSCC. The modern scientific community needs such studies, but the field of radiotherapy is constantly progressing and offering new therapeutic options to patients with OPSCC, which could improve functional outcomes.

We declare no competing interests.

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