The local recurrence in head-and-neck cancers (HNCs) is the preeminent pattern of presentation in treatment failure. Reirradiation is a useful modality to treat inoperable HNC patients with recurrent disease. Surgery may be persuasive in some patients, but this is often not feasible in all because of the location or extent of lesions. Nasopharynx and oropharynx have the locations which are inaccessible for surgery. It is presumed that because of the high risk of complications, reirradiation should be avoided. However, reirradiation in HNCs can be an option in patients with recurrence/second primary with longer duration and in resource-constraint centers. We report an interesting case of reirradiation in HNC treated with the conventional technique.

Keywords: Cobalt-60, reirradiation, squamous cell carcinoma

Loco-regional recurrence is the reigning pattern of treatment failure in the locally advanced head-and-neck cancers (HNCs). Five-year survival rates <50% are reported for nonnasopharyngeal squamous cell HNCs. In the electively irradiated neck, a recurrence rate of 4%–11% has been reported. The management of recurrence involves various modalities such as surgery, chemotherapy, reirradiation, and the use of targeted agents like cetuximab either alone or as combination therapy. Brachytherapy and external beam radiotherapy both have also been used liberally. The radiation doses have conventionally been restricted due to mucosal toxicity, osteoradionecrosis, nerve injury, and carotid vascular damage associated using conventional external beam radiation techniques. However, one has to speculate about factors like the duration of recurrence and performance status of the patient is an important factor which contributes to the success of reirradiation, especially in two-dimensional setup.

A 60-year-old male patient presented with the chief complaint of pain in the throat and 2 cm × 2 cm hard mobile lymph node in the right neck level II. Patient was a smoker for 20 years and ear, nose, and throat evaluation showed an ulcer-proliferative growth in bilateral (B/L) vallecula, aryepiglottic fold (AEF), and epiglottis. Histopathological examination (HPE) of biopsy suggested a well-differentiated squamous cell carcinoma. All staging workup was done, and the patient was labeled as Ca Supraglottis (T2N1M0) Stage III. The patient received chemoradiotherapy (CRT) @66GY/33#/6.5 weeks with cisplatin 50 mg/m² intravenously (i/v) weekly. External beam radiation therapy (EBRT) was given by Equinox™ Cobalt-60 machines using two parallel and opposed fields, the patient was planned manually with a field of 17 cm × 10 cm till 44 Gy. Thereafter, portal reduced to 17 cm × 7 cm (cord excluded) and was followed by further reduction of portal of size 7 cm × 7 cm. The patient achieved a complete response, which was assessed using contrast-enhanced computed tomography and was kept on regular follow-up. After 6 years patient presented with a small growth of 3 cm × 4 cm in the left tonsillar region. During follow-up magnetic resonance imaging neck suggested altered intensity soft-tissue thickness in the left tonsillar region with obliteration of left pyriform sinus besides AEF and left paraglottic region also showed altered intensities signals. Detailed staging workup was done, and patient staged and labeled as ca left tonsil T4aN0M0 (Stage IV A) (second...
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malignancy). HPE suggested as moderately differentiated squamous cell carcinoma of the left tonsil. The patient subsequently refused surgery and reirradiation was planned. CRT was given as 40 Gy/20#/4 weeks with cisplatin 50 mg/m² i/v weekly with B/L parallel opposed field f/b boost of 20 Gy/10#/2 weeks was delivered with cisplatin 50 mg/m² i/v weekly. The portal was initially 7.5 cm × 9 cm [Figure 1] up to 40 Gy thereafter, reduced to 6 cm × 6 cm [Figure 2] size. EBRT was given by Equinox™ Cobalt-60 machines using two parallel and opposed fields. The patient had a complete response after the treatment and now is on regular follow-up from the past 2 years. Acute radiation morbidity was scored as per radiation therapy oncology group (RTOG) criteria. Maximum-recorded skin, mucosal membrane toxicity was scored as Grade-III, whereas pharyngeal and laryngeal toxicity was scored as Grade-II. All acute toxicities were recorded during the treatment, end of the treatment, and subsequent follow-ups. All were managed conservatively and did not affect the treatment. Late radiation morbidity was scored as per the RTOG criteria during the last follow-up. Skin toxicity was scored as Grade-I, subcutaneous tissue toxicity was scored as Grade-I, mucous membrane toxicity was Grade-I, and salivary glands toxicity was Grade-II, for which symptomatic treatment was administered. The laryngeal and pharyngeal function was well preserved.

Reirradiation seems to be a valuable treatment option for patients with inoperable recurrences of HNCs. Following the irradiation of HNC, the most common patterns of failure are either local recurrence or the development of a second malignancy. Both are arduous to manage when they occur in a previously irradiated area. Based on the available literature and our own experience, the following recommendations can be made for patients with recurrent disease or a second primary tumor after previous irradiation: If the tumor is resectable, surgical resection, with or without re-irradiation, provides the highest likelihood for successful salvage. Postoperative reirradiation should be considered in patients at high risk of subsequent recurrence (e.g., in cases of positive resection margins and/or extranodal spread). If the disease is unresectable, definitive reirradiation with concurrent chemotherapy can be proffered to the patient. Furthermore, the majority of patients present at unresectable stage. Increasing interest has embarked on the use of concurrent chemotherapy and radiation therapy for formerly irradiated patients with recurrent or second primary of HNC. Substantial response and survival have been reproducibly demonstrated in a small (15%–20%), but determinate minority of patients. Even though the likelihood of a positive outcome is limited in these cases, it should be realized that no other curative treatment options are available. Because of peril associated with reirradiation, discerning of patients who might derive benefit is of utmost importance. The most important factor is the interval of time from initial radiotherapy treatment. The longer the interval, the less likely the chances of development of side effects and greater the likelihood of loco-regional control. Higher the dose delivered, greater the probability of local control. Salama et al.[7] reported a 3-year overall survival and Loco- regional control of 30% and 56%, respectively, for patients who have received >58 Gy compared with only 6% and 33% among those who received <58 Gy. The role of concurrent chemotherapy remains in limbo with reirradiation to the head and neck.[8,9] How and whether chemotherapy affects normal tissue tolerance, in the setting of reirradiation is largely unknown. Although intensity-modulated radiation therapy has been universally ushered in for its ability to deliver elegantly conformal treatment plans to complex

Figure 1: Picture showing lateral portal (Phase I - reirradiation)

Figure 2: Picture showing lateral portal after cord off (Phase II - reirradiation)
target volumes. However what about the patients belonging to low-socioeconomic status and incapable of expenses of conformal techniques as well as centers where only conventional techniques were followed due to resource constraint, like in our case. Re-irradiation with conventional techniques may benefit patients, especially where the time duration of the recurrence/appearance of the second primary is of longer duration and patient with good performance status. In our case, it was 6 years and the patient had good performance status and also tolerated well with minimum toxicities and having normal organ function. Hence in nutshell such kind of patients and in underprivileged radiotherapy centers, a conventional technique using cobalt-60 appears to be a good option and can be offered.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form, He has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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