

# Dental consultation in patients planned for/undergoing/post radiation therapy for head and neck cancers: A questionnaire-based survey

Apeksha Mainali, Sumanth KN<sup>1</sup>, Ravikiran Ongole<sup>2</sup>, Ceena Denny<sup>2</sup>

Department of Oral Medicine & Radiology, Kanthipur Dental College Hospital and Research Centre, Kathmandu, Nepal  
<sup>1</sup>Department of Oral Diagnosis, Oral Medicine & Oral Pathology Faculty of Dentistry, Melaka Manipal Medical College, Melaka, Malaysia <sup>2</sup>Department of Oral Medicine & Radiology, Manipal College of Dental Sciences, Mangalore, India

## ABSTRACT

**Background:** Mouth and pharyngeal cancers account for approximately 6% of cancers worldwide. Radiotherapy is one of the means of treatment of head and neck cancer. Consultation with a dental team experienced in caring for patients undergoing treatment for head and neck cancer will improve the quality of life of such patients.

**Aims and Objectives:** To evaluate the attitude of oncologists toward dental consultation to patients planning for/prior to/undergoing/post radiation therapy for head and neck cancers and to evaluate the number of radiation oncologists who encounter oral complaints and consider worth referring to a dentist.

**Materials and Methods:** A questionnaire-based study was carried out following mailing of covering letter and self-administered questionnaire comprising 11 items, to 25 radiation oncology centers selected in India based on convenient sampling.

**Results:** Out of the 25 centers, we received response from 20 centers with 60 completely filled questionnaires. Five centers did not respond for further correspondences.

**Conclusion:** The study indicated a need for awareness and education among radiation oncologists regarding dental consultation in patients planned/undergoing/post radiation therapy for head and neck cancer.

**Key words:** Dental consultation, radiation therapy, questionnaire

Received : 01-06-09  
Review completed : 28-07-10  
Accepted : 10-11-10

Cancer is a public health burden in which there is uncontrolled tissue growth which results from an imbalance between cell division and apoptosis. Head and neck cancer impacts uniquely on the health and well-being of patients, which accounts for approximately 6% of cancers worldwide.<sup>[1]</sup> Cancer of head and neck is treated by chemotherapy, radiotherapy or surgery. When radiotherapy is implemented, consultation with a dental team experienced in caring for patients undergoing treatment for head and neck cancer should be completed before the start of therapy. Many oral conditions, such as

poor oral hygiene, broken teeth, defective restorations and periodontal disease, are likely to precipitate complications during and after a course of radiation therapy. The criteria used for dental extractions before radiation therapy are not universally accepted and are subject to clinical judgement. However, teeth in the high-dose radiation field should be considered for extraction before radiotherapy if they are non restorable; if they require significant restorative, periodontal or endodontic intervention or if they have moderate to severe periodontal disease.<sup>[2]</sup>

A cross-sectional questionnaire-based study was carried out with an aim to evaluate the attitude of oncologists toward dental consultation prior to/undergoing/post radiation therapy for head and neck cancers and also to evaluate the number of radiation oncologists who encounter oral complaints and consider worth referring to a dentist.

## MATERIALS AND METHODS

Covering letter and self-administered questionnaire, comprising 11 items, were sent to 25 radiation oncology centers in India based on convenient sampling, via post,

### Address for correspondence:

Dr. Sumanth KN  
E-mail: [sumikn@rediffmail.com](mailto:sumikn@rediffmail.com)

Access this article online	
Quick Response Code:	Website: <a href="http://www.ijdr.in">www.ijdr.in</a>
	DOI: 10.4103/0970-9290.93454

with a request to arrange to forward the questionnaire to the Head of Department and staff of their Radiation Oncology Department.

## RESULTS

### Analysis and interference

Following all mailings, a total of 60 completely filled questionnaires were received from 20 centers. The other five centers did not respond on further correspondence. Data were fed to SPSS software version 11.5 and statistical analysis was done.

### Descriptive statistics

Frequencies and percentages were calculated. Convenient sampling was done.

The respondents' opinions on dental consultation and practice attributes in patients undergoing/before/after radiotherapy are given in Table 1.

## DISCUSSION

All oncologists strongly believed in dental consultation for patients undergoing radiotherapy. However, no fixed opinion was seen amongst dentists regarding the ideal time to begin radiotherapy to start surgical procedures. Most of the oncologists referred patients with post radiation oral complications to dentists, while few treated themselves and even referred to ENT. Mucositis and dry mouth were the commonest oral complaints that were encountered in patients after/during radiation therapy. Though they were frequently encountered, most radiation oncologists did not consider them worth referring to a dentist. The post radiation oral complications which the radiation oncologists considered worth referring to a dentist were in the order of radiation caries, followed by osteoradionecrosis, poor oral hygiene, difficulty in opening mouth, loss of taste sensation, candidiasis, mucositis and dry mouth. Management of caries is a field that needs to be handled by a dentist. Although most of the oncologists referred patients with radiation caries to dentists, it was surprising to find that there were some (20%) radiation oncologists who did not consider radiation caries to be worth referring to a dentist. Most of the oncologists opined that dental consultation and treatment will help in improving the quality of life in a patient, whereas some referred patients to dentists depending on the socioeconomic status of the patient. Results indicated a need for awareness and education among radiation oncologists regarding dental consultation in patients planned for/undergoing/post radiation therapy for head and neck cancer

Patients undergoing radiation therapy must be kept under regular surveillance from the beginning itself. Monitoring of the oral cavity should be increased during radiation

therapy in an effort to decrease the severity of side effects. Systematically applied oral hygiene protocols may reduce the incidence, severity and duration of oral complications during therapy.<sup>[1]</sup> It is imperative that patients continue their oral hygiene regimen throughout their course of cancer therapy. Most adverse affects of radiations are caused by either direct toxic effect on a specific organ or damaging rapidly dividing normal cell population. The oral tissues directly affected by head and neck radiation therapy include the salivary glands, the mucosal membranes, the jaw muscles and bone. Dry mouth (xerostomia) is a common and significant consequence of head and neck radiotherapy, followed by rampant caries and candidal infections. Mucositis, characterized by inflammation and ulceration of the oral mucosa, is the most significant acute side effect, seen by approximately the third week of treatment.<sup>[3,4]</sup> Another potential consequence of radiotherapy to the oral cavity is fibrosis around the muscles of mastication, leading to difficulty in mouth opening.<sup>[5]</sup> Osteoradionecrosis is a condition characterized by exposed bone that fails to heal after high dose radiations to the jaws.<sup>[6]</sup>

After the completion of radiation therapy, acute oral complications usually begin to resolve. Patients should continue to follow an oral health self-care regimen to keep the teeth and gingiva healthy and to facilitate repair of any residual oral damage. Oral exercises should be introduced to reduce the risk and severity of trismus.

Long-term management and close follow-up of patients after radiation therapy is mandatory to facilitate the management of any chronic complications. Thus, complications of radiotherapy must be considered thoroughly so that every effort is undertaken to minimize the oral morbidity of these patients before, during and after cancer treatment and throughout the patient's lifetime.

The following recommendations should be considered for head and neck radiation:

- A pre-treatment oral evaluation and prophylactic treatment is recommended to minimize oral discomfort during cancer therapy.
- Any periodontally weak or mutilated tooth should be extracted.<sup>[7]</sup>
- Abscessed teeth should be extracted or treated endodontically.
- Ideal time to begin radiotherapy following oral surgical procedures (extraction of teeth) is 2 weeks, and after radiotherapy the ideal time for a patient to undergo oral surgical procedures (dental invasive procedures/intervention) varies from 6 months to 1 year.<sup>[8]</sup>
- Additional therapies include restoration of carious teeth with permanent or temporary restorations, replacement of faulty restorations, grinding of rough edges of tooth or restorations,<sup>[7]</sup> removal or correction of ill-fitting partial or complete prosthesis, and removal orthodontic band.<sup>[9,10,11]</sup>

**Table 1: Results of the questionnaire**

	Frequency	Percent
1) Do you think that there is any necessity for dental consultation for patients undergoing radiotherapy?		
Yes	60	100
2) If yes, how many days prior to radiotherapy will you consider dental consultation?		
First day of radiation therapy	5	8.3
2–3 days prior	10	16.7
1 week prior	16	26.7
At least 15 days prior	29	48.3
3) What in your opinion is the ideal time to begin radiotherapy following oral surgical procedures (extraction of teeth)?		
2–3 days	7	11.7
1 week	20	33.3
15 days	33	55
4) What in your opinion is the ideal time after radiotherapy the patient can undergo oral surgical procedures (dental invasive procedures/intervention)?		
At least 15 days	7	11.7
2 months	4	6.7
6 months	14	33.3
1 year	35	58.3
5) If the patient is advised to undergo dental extractions and if such procedures can delay radiotherapy schedule for a few days, do you usually oblige?		
Yes	51	85
No	9	15
6) If the patient is advised to undergo dental extractions and he/she is not willing for the same, do you educate your patient to undergo extraction?		
Yes	60	100
7) Do you recommend/advise patients oral prophylaxis (cleaning of teeth) prior to radiotherapy?		
Yes	56	93.3
No	4	6.7
8) How do you usually handle post radiation oral complications?		
Refer to a dentist	43	71.7
Refer to ENT	5	8.0
Treat myself	11	18.3
No need of any treatment for such oral complication	1	1.7
9) What are the common oral complaints that you encounter in your patients after/during radiation therapy?		
Mucositis		86.7
Dry mouth		86.7
Loss of taste sensation		73.3
Candidiasis		68.3
Difficulty in opening mouth		66.7
Radiation caries		58.3
Poor oral hygiene		53.3
Osteoradionecrosis		40
10) Which of the following post radiation oral complications do you consider worth referring to a dentist?		
Radiation caries	48	80
Osteoradionecrosis	42	70
Poor oral hygiene	34	56.7
Difficulty in mouth opening	32	53.3
Loss of taste sensation	17	28.3
Candidiasis	14	23.3
Mucositis	10	16.7
11) Choose the one that reflects your opinion regarding dental consultation in radiotherapy undergoing patients		
Helps in improving quality of life of such patient	56	93.3
Dental referral is done depending on the socioeconomic status of the patient	4	6.7

The complications of radiotherapy must be considered thoroughly so that every effort is undertaken to minimize the oral morbidity of these patients before, during and after cancer treatment and throughout the patient’s lifetime.

## CONCLUSION

Thus, the potential oral sequelae associated with radiotherapy can be prevented, reduced or alleviated with careful and

continuous dental care. Dentists and radiation oncologists should work as a team; early referral of such patients leads to good patient compliance and successful treatment.

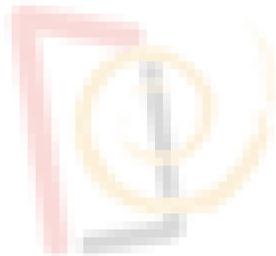
## REFERENCES

1. Singh V, Malik S. Oral care of patients undergoing chemotherapy and radiotherapy: A review of clinical approach. *Int J Radiology* 2007;6:1.
2. Koga DH, Salvajoli JV, Alves FA. Dental extractions and radiotherapy in head and neck oncology: review of the literature. *Oral Dis* 2008;14:40-4.

3. Foote RL, Loprinzi CL, Frank AR, O'Fallon JR, Gulavita S, Tewfik HH, *et al.* Randomized trial of a chlorhexidine mouthwash for alleviation of radiation-induced mucositis. *J Clin Oncol* 1994;12:2630-3.
4. Epstein JB, Silverman S Jr, Paggiarino DA, Crockett S, Schubert MM, Senzer NN, *et al.* Benzylamine HCl for prophylaxis of radiation induced oral mucositis: results from a multicenter, randomized, doubleblind, placebo-controlled clinical trial. *Cancer* 2001;92:875-85.
5. Whitmyer CC, Waskowski JC, Iffland HA. Radiotherapy and oral sequelae: preventive and management protocols. *J Dent Hyg* 1997;71:23-9.
6. Cremonese G, Bryden G, Bottcher C. A multidisciplinary team approach to preservation of quality of life for patients following oral cancer surgery. *OHL Head Neck Nurs* 2000;18:6-11.
7. Beumer J 3rd, Harrison R, Sanders B. Postradiation dental extractions: A review of the literature and a report of 72 episodes. *Head Neck Surg* 1983;6:581-6.
8. Ballonoff A, Chen C, Raben D. Current radiation therapy management issues in oral cavity cancer. *Otolaryngol Clin North Am* 2006;39:365-80.
9. Veltrini VC, Capellozza AL, Damante JH. Evaluation of health questionnaires used in dentistry. *Special care in Dentistry* 2004;22:221-5.
10. Meirovitz A, Murdoch-Kinch CA, Schipper M, Pan C, Eisbruch A. Grading xerostomia by physicians or by patients after Intensity-modulated radiotherapy of head-and-neck cancer. *Int J Radiation Oncology Biol Phys* 2006;66:445-53.
11. S. Aneel, Beena. Radiation caries-A rational approach towards its prevention and management. *J Indian Den Ass* 1993;64:1.

**How to cite this article:** Mainali A, Sumanth KN, Ongole R, Denny C. Dental consultation in patients planned for/undergoing/post radiation therapy for head and neck cancers: A questionnaire-based survey. *Indian J Dent Res* 2011;22:669-72.

**Source of Support:** Nil, **Conflict of Interest:** None declared.



#### Announcement

#### Android App



Download  
**Android  
application**

FREE

A free application to browse and search the journal's content is now available for Android based mobiles and devices. The application provides "Table of Contents" of the latest issues, which are stored on the device for future offline browsing. Internet connection is required to access the back issues and search facility. The application is compatible with all the versions of Android. The application can be downloaded from <https://market.android.com/details?id=comm.app.medknow>. For suggestions and comments do write back to us.