

# Managing Complications of Radiation Therapy in Head and Neck Cancer Patients: Part II. Management of Radiation-induced Caries

Wen Lin Chai,<sup>1</sup> Wei Cheong Ngeow,<sup>1</sup> Roszalina Ramli<sup>2</sup> and Roslan Abdul Rahman<sup>2</sup>

Faculty of Dentistry, <sup>1</sup>University of Malaya, Kuala Lumpur, and <sup>2</sup>Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur, Malaysia.

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Head and neck cancer is becoming a more recognizable pathology to the general population and dentists. The modes of treatment include surgery and/or radiation therapy. Where possible, pretreatment dental assessment shall be provided for these patients before they undergo radiation therapy. There are occasions, however, whereby head and neck cancer patients are not prepared optimally for radiation therapy. Because of this, they succumb to complicated oral complications after radiation therapy. The management of xerostomia has been reviewed in Part I of this series. In this article, the management of dental caries, a sequelae of xerostomia following radiation therapy is reviewed. [*Singapore Dent J* 2006;28(1):4-6]

**Key Words:** caries, complication, fluoride, head and neck cancer, management

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Xerostomia caused many problems. Epstein et al showed that candidiasis was noted in 16% of his patients and rampant caries and increased difficulties with dentures in 7.4% of patients, respectively.<sup>1</sup>

Irradiation does not directly cause radiation caries.<sup>2</sup> The reduction in saliva production secondary to radiation therapy diminishes one of the body's natural oral protectors in terms of pH-buffering capacity and remineralization of incipient caries. This, in turn, predisposes patients to a much more aggressive and extensive rate of caries, commonly known as radiation caries.<sup>3</sup> Moreover, the environmental changes taking place in the mouth, namely low pH (acidic environment) and reduced saliva (xerostomia), caused reduced cleansing action and the shift of the normally well-balanced microflora in favour of the more cariogenic organisms such as *Streptococcus mutans*, lactobacillus, and the actinomyces.<sup>4</sup> Conversely, organisms usually associated with periodontal health, such as *Streptococcus sanguis*,

were decreased in these patients.<sup>5</sup> In addition, there is also an increase in the amount of plaque per unit area while the number of microorganisms per gram plaque remains the same.<sup>6</sup>

Radiation-related caries appears as a spotty white demineralization buccally and lingually. The buccal and lingual cervical thirds lesions finally encircled the tooth while the exposed dentine of the attrited incisal and occlusal edges become soft and brown. Caries can occur within 3 months after radiation therapy; therefore, it is important to start preventive measurement early.

## Preventive Measurement

Weekly prophylaxis with fluoridated polishing paste is advocated if mucositis has not developed. Otherwise, fluoride gel can be given in custom fabricated, flexible plastic tray after toothbrushing and flossing. Patients should be reminded to do so for a minimum of 5-10 minutes once daily. Neutral pH preparations of either sodium or stannous fluoride gel in concentrations of 0.4-1% are more effective and better tolerated than acidulated preparations that are commonly used.<sup>7</sup> Acidulated preparations

**Correspondence to:** Dr Wei Cheong Ngeow, Faculty of Dentistry, University of Malaya, 50603 Kuala Lumpur, Malaysia. E-mail: ngeow@um.edu.my