

## CASE REPORT

# Addressing oral health barriers to care in head and neck cancer patients using a novel collaborative care approach

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**Abstract**

With appropriate interprofessional collaboration, dental schools have the capacity to facilitate the dental management of patients with head and neck cancer who are facing multiple barriers to care.

**KEYWORDS**

access to health care, dental school, head and neck cancer, interprofessional education, oral health

## 1 | INTRODUCTION

Dental schools can play a key role in access to care when dental clearance is needed before head and neck cancer treatment. The current case report describes a collaborative healthcare model involving the combined efforts of a university teaching hospital and a dental school to address multiple barriers to care. Health inequities experienced by newly diagnosed indigent cancer patients can lead to delays in necessary medical, dental, and mental health care. Survival rates for laryngeal cancers range from slightly over 50% to just over 30% for those in advanced cancer stages.<sup>1</sup> Oral effects for treatment of this type of cancer can include oral mucositis, infections, xerostomia, and dental caries, all of which require the collaboration of multiple medical and dental providers and place enormous strain on the patient.<sup>2-4</sup> The lack of available family support, inadequate insurance or finances, and poor health literacy affecting adherence to prescribed recommendations can lead to poor treatment and survival outcomes.<sup>5,6</sup> In a large study of cancer survivors, 11% did not seek dental care because of financial concerns.<sup>7</sup> However, routine dental visits by cancer survivors have been associated with a decrease in mortality risk.<sup>8</sup> Therefore, improving access to

medical and dental care through innovative, collaborative models is needed to address inequities.<sup>9</sup> The current case report describes a novel, collaborative healthcare model involving the combined efforts of a university teaching hospital and a dental school to address multiple barriers to care by providing high-quality dental assessment and care for newly diagnosed cancer patients.

## 2 | CASE PRESENTATION

The case describes a 63-year-old African-American female patient presenting with a T<sub>2</sub>N<sub>2b</sub> supraglottic laryngeal cancer and considerable medical complexities, including hypertension, type II diabetes, chronic obstructive pulmonary disease, dementia, schizophrenia, and a nonspecified heart abnormality with a history of myocardial infarction. Healthcare barriers included a history of multiple intermittent medical providers, mental illness, intermittent family support, and the patient's inability to navigate a complex healthcare system.

The patient initially presented to the urgent care department of a metropolitan hospital with complaints of fatigue, productive yellow cough, pyrosis, and localized

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swelling of the left neck that she noticed 1 month prior. After radiographic and clinical examination, the patient was treated for suspected acute pneumonia and referred to the otolaryngology department of a partnered university teaching hospital for evaluation and management of the neck mass.

Clinical and nasolaryngoscopic examination by the otolaryngology providers indicated a suspected left supraglottic laryngeal squamous cell carcinoma, which was confirmed through fine-needle aspiration biopsy. After diagnosis, the patient had usual and customary care from the hospital-based head and neck cancer team, including otolaryngology, medical and radiation oncology, and speech pathology. Through a collaborative, preexisting partnership between the university teaching hospital and dental school, both located in the same metropolitan area, the patient was referred for dental evaluation, treatment, and clearance before the planned chemoradiation therapy.

The patient was affected by numerous social determinants of health that caused substantial barriers to receiving timely dental care before her planned cancer therapies. The patient's unemployment status and lack of dental insurance presented a financial barrier to seeking care. A private grant—designated for dental care of head and neck patients who were referred by the teaching hospital and treated by the managing dental school—was available and used for the required dental treatment before the patient's cancer therapies. All necessary dental evaluations and treatments were available free of charge, which removed a possible barrier to timely cancer care because there was less potential for interference from unresolved dental complications.

As a result of the interprofessional and interinstitutional collaboration, the patient received a no-cost comprehensive clinical and radiographic dental examination approximately 2 weeks after her cancer diagnosis. The patient was advised to have full mouth extractions because

of gross caries and severe periodontal disease, and treatment was planned for the following week (Figure 1). Current recommendations support a complete dental and radiographic evaluation and the delivery of all urgent dental care before head and neck cancer therapy begins. For example, teeth with gross carious lesions, periapical pathology, or periodontal disease may warrant extraction so that they do not precipitate dental complications and infections during or after head and neck cancer therapy.<sup>2-4</sup> Possible therapy sequelae include oral mucositis, infections, saliva change/xerostomia, tissue fibrosis, trismus, sensory dysfunctions, dental caries, periodontal disease, and osteoradionecrosis; therefore, pretreatment dental clearance is imperative for a successful outcome.<sup>3,10</sup>

When the patient arrived for her planned dental surgical appointment at the dental school, she presented a letter from her primary care provider that recommended general anesthesia because of "other medical conditions," which caused postponement of the planned surgery. This unfortunate lack of timely communication between the primary care physician and dental school resulted in delay of essential care. The oral surgeon clinical faculty member, acknowledging the need for safety and expediency in completing the patient's dental treatment, volunteered to treat the patient through his private practice at a local hospital where general anesthesia could be used to facilitate the patient's care in accordance with her primary care physician's recommendations. The timely intervention of the treating oral surgeon was appreciated by the patient and her family.

On the day of surgery, the patient underwent a customary preoperative anesthesia evaluation, had an echocardiogram, and was cleared by the anesthesia and cardiology teams for treatment. The oral surgery was completed uneventfully, and the patient was discharged in good health the same day. Postoperative recommendations had been reviewed with the patient preoperatively and were provided in written form at the time of discharge. Expenses associated with hospital charges were paid for by a combination of Medicare and state Medicaid insurance. The oral surgery fees were waived by the dental school clinical faculty member.

One week later, the patient returned to the dental school for postoperative evaluation and was cleared dentally for her pending cancer treatments. Timely and definitive dental care allowed her treating medical providers the ability to coordinate her care without concern over unresolved or persistent dental disease. The patient was informed that she could complete her dental care through the fabrication of complete dentures but has not pursued this option. We suspect the patient's mental health, another barrier to comprehensive care, has impacted her ability to pursue complete dentures and ultimately a better quality of life.



**FIGURE 1** Preoperative panoramic radiograph obtained for the patient of the current case report for urgent dental care before head and neck cancer therapy. The radiograph shows severe periodontal disease and numerous nonrestorable teeth

### 3 | DISCUSSION

The current case report highlights the importance of interdisciplinary and interinstitutional collaborative care in the successful medical and dental management of a socioeconomically disadvantaged patient with laryngeal cancer and management needs outside the scope of a single institution.

For head and neck cancer patients, the timing of therapy, patient conditions, and availability of dental services are often suboptimal, complicating management.<sup>4</sup> The patient of the current report had numerous medical and emotional comorbidities that made coordinating her dental care challenging. Oftentimes, necessary dental services are not available at all medical centers, so patients are required to seek outside dental providers for pretreatment clearance and management, resulting in inadequate communication between their treating medical center and dentist, and forcing the patient to potentially rely on a dental provider with insufficient experience in the management of oncology patients. Because of financial constraints, the necessary dental care may be difficult to obtain, which can adversely affect the timing and outcome of planned cancer therapies. The patient in our report benefited from a grant that provides access to care in the head and neck cancer patient population, allowing her to obtain dental services free of charge.

Through the support of that privately funded grant, the dental school of the current report works collaboratively with the oncological treatment teams of patients and provides comprehensive dental care to patients undergoing or recovering from the treatment of head and neck cancers. Because of the partnership with the teaching hospital and their department of otolaryngology, patients referred to the dental school by the hospital receive coordinated diagnoses, treatment, and necessary follow-up to support the oncological treatment plan.

This collaborative, interdisciplinary, and interinstitutional model of care represents an innovative path that provides head and neck cancer patients with needed dental treatment while identifying and addressing barriers to care. After referral, patients undergo a comprehensive dental examination at the dental school by third-year or fourth-year dental students supervised by a faculty member who has supplemental training in the dental management of head and neck cancer patients. Additionally, patients receive same-day consultation from dental specialists in oral pathology, periodontics, and prosthodontics as a part of the development of a comprehensive treatment plan. Findings from the examination and treatment planning recommendations are discussed and finalized with the treating medical

providers at the teaching hospital, including otolaryngologists, radiation oncologists, medical oncologists, and social workers. Given this model, academic dental schools are in a unique position to offer multispecialist interventions at a single location; thus, alleviating transportation issues often experienced by lower income cancer patients.

We believe this model presents an extraordinary opportunity for dental students because they are the initial provider of dental diagnostic services and the deliverers of direct patient care. Further, these developing practitioners can experience firsthand collaborative, interprofessional care by interacting with medical colleagues while gaining experience in the management of medically complex patients. Under faculty guidance, students have the opportunity to review patient medical records—such as examination and treatment notes, various imaging results, radiology reports, laboratory values, and pathology reports—which allows them to examine the medical management of these patients at a level more commonly reserved for general and specialty dental residents and practitioners who focus on special patient care.

Research suggests that patients diagnosed with head and neck cancer who are treated with or without radiation experienced a statistically and clinically significant increase in cost and consumption of dental care in the year of diagnosis and the following year when compared with patients without head and neck cancer who are matched by age and gender.<sup>11</sup> Another study found that head and neck cancer patients had a decreased probability of being treated by a dental provider at the time of diagnosis or any time after.<sup>12</sup> Although contrary to current guidelines for the multidisciplinary care of head and neck cancer patients, these findings suggest that these patients have extensive dental needs and that barriers to care may influence their ability to obtain adequate and sustained dental care.

The model for collaboration between multiple interdisciplinary and multispecialty facilities described in the current report is repeatable in major metropolitan centers across the United States. However, the incorporation of this model is largely dependent on the following factors: the willingness and potential for healthcare providers to engage in interdisciplinary patient management, institutional support for the inclusion of dental care in the comprehensive management of head and neck cancer patients, and outside sources of funding for reimbursement of dental treatment relative to medical needs when these two areas of healthcare are combined for the management of complex patients. Therefore, we hope that successes in interdisciplinary care, such as those demonstrated by the relationships and structure of the current report, will encourage other institutions

to engage in these practices and continue to highlight the need for interdisciplinary management of patients treated for head and neck cancers.

An important component of this model is external grant funding. We acknowledge that such funding is vital because it allows referred head and neck cancer patients to receive comprehensive dental care throughout their diagnostic and treatment timelines. However, the addition of social work support and the willingness of providers within the multidisciplinary cancer treatment team to pursue institutional and community resources cannot be understated. The professional relationships that providers and support staff develop, in conjunction with an understanding of available resources and motivation to help patients navigate the healthcare system, encourages patients as they deal with their head and neck cancer diagnosis and treatment.

We are hopeful that the current case report encourages relationship building between academic medical and dental clinics for the betterment of oncological patient care. Through these combined efforts, current patients can experience improved direct interventions, and the next generation of head and neck cancer treatment providers can provide better patient care because of this interprofessional and collaborative training.

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#### CONFLICT OF INTEREST

The authors have no conflicts of interest to report.

#### AUTHOR CONTRIBUTIONS

Matthew D. Greaves oversaw patient case management, conceived and oversaw development of presented case report, and provided significant contributions to manuscript writing. Richard J. Vargo and Joan M. Davis provided significant contributions to manuscript development and writing.

#### ETHICAL APPROVAL

The Institutional Review Board of A.T. Still University reviewed and deemed exempt the presentation of this case.

#### CONSENT

The authors have confirmed during submission that patient consent has been signed and collected in accordance with the journal's patient consent policy.

#### DATA AVAILABILITY STATEMENT

Data sharing is not applicable—no new data generated.

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