Point of Care

The Point of Care section of JCDA *answers everyday clinical questions by providing practical information that aims to be useful at the point of patient care. The responses reflect the opinions of the contributors and do not purport to set forth standards of care or clinical practice guidelines. Readers are encouraged to do more reading on the topics covered. If you would like to submit or answer a question, contact editor-in-chief Dr. John O'Keefe at jokeefe@cda-adc.ca.*

Question 1

How can the limitations of an atrophic mandibular denture-bearing area be overcome when making a definitive impression for a mandibular complete denture?

The creation of a complete mandibular denture for a patient with an atrophic denture-bearing area presents significant challenges to the clinician (**Fig. 1**).

A "suitable" denture-bearing area has both appropriate height and sufficient width, both of which limit the ability of displacing forces to dislodge the complete prosthesis that rests on it. However, in atrophic mandibles, where there has been extensive bone loss, there is little structure available to provide resistance to the displacing forces that arise from occlusal contacts during mastication or functional muscular activity. This problem is complicated by the fact that patients presenting with an atrophic mandibular ridge are typically elderly, have been edentulous for a considerable period of time, have a complicated medical history and may have limited financial means. Although an implant-retained mandibular overdenture might be considered for such patients, this type of prosthesis is usually contraindicated because of insufficient bone or for financial or other medical reasons.

A functional impression technique is often suitable for making an impression of an atrophic denture-bearing area. This type of impression is made by applying a suitable material, such as a tissue-conditioning agent, to the fitting surface of the existing prosthesis. The patient is instructed to wear this material for up to 48 hours, during which time an impression of the atrophic area is made under functional stresses.

Technique

Examine the patient's existing mandibular complete denture, specifically at the buccal and lingual extensions. If these are overextended, reduce these areas first. Clean the mandibular denture with ethanol.

Apply the tissue-conditioning material (Ardee tissue liner, Reliance Dental Manufacturing Co., Worth, Ill.) to the fitting of the mandibular denture as 2 rectangular strips, 1 for each half of the fitting surface. Trim and seal the overlap at the midline with a hot wax knife. Adapt the material to the periphery of the denture, and seal the edges to the labial or buccal and lingual surfaces using the hot wax knife (**Fig. 2**).

Insert the denture in the mouth, and ensure that the maxillo-mandibular relationship or the vertical dimension of occlusion has not been significantly altered. Discharge

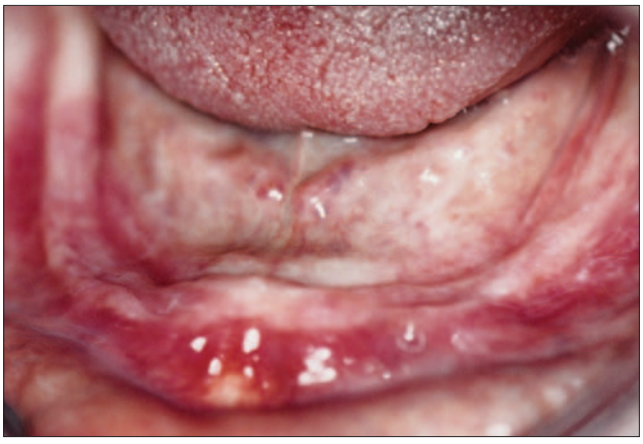

Figure 1: *Atrophic mandibular denture-bearing area.*

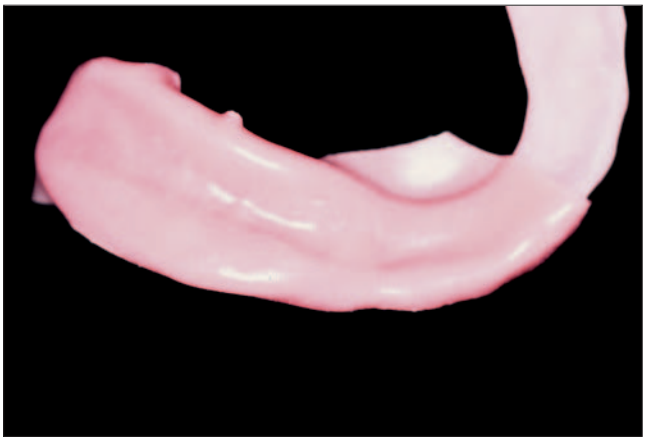

Figure 2: *A strip of Ardee tissue liner applied to the left half of the intaglio of the mandibular complete denture.*

the patient, with instructions to wear the denture continuously for the next 48 hours and to perform habitual oral and masticatory functions.

After 48 hours, re-examine the patient. At this time, a satisfactory functional impression of the denture-bearing area will have been made with the tissue-conditioning agent. Make a master cast using this impression, and use this cast in constructing a replacement complete denture in the usual fashion.

Because this type of impression is made over a number of days and under habitual occlusal loading, the technique should result in even distribution of occlusal forces on the denture-bearing area. It is particularly useful for patients who report constant pain or soreness under a mandibular complete denture.

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Question 2

What can I do to assess a patient with burning mouth syndrome?

Burning mouth syndrome (BMS) is a symptom complex defined as a burning sensation of the oral tissues in the absence of clinical and laboratory abnormalities. The most common sites are the anterior tongue, the anterior palate and the lips, individually or in combination. Symptoms are often bilateral, but if they are unilateral, other causes of burning, including injury or tumour, must be considered. BMS may be associated with complaints of altered taste and dry mouth. Events leading to the onset of BMS are often not identified, but the condition may follow oral or dental treatment, medication use or viral infection. The pain may interfere with falling asleep, but it rarely wakes the patient and may be less severe during eating. Patients may be distraught and focused on unremitting symptoms.

Causes

BMS is currently believed to represent a form of neuropathy, with potentially varied and multiple causes. Despite the relatively common presentation of this condition in perimenopausal women, hormone replacement usually has little effect on established symptoms. However, it remains possible that irreversible neurologic change may occur in the perimenopausal period; once this has become established, there is no response to hormone replacement. Vitamin and iron deficiency are rare, and symptoms do not respond to supplementation. Other systemic conditions that have been considered include diabetes, because of the peripheral neuropathies that may occur in association with this condition, but no relation to immune-mediated conditions has been seen. Local dental conditions, including dry mouth, reactions to dental materials such as dental amalgam and gold, and candidiasis have not been identified as causative. Tongue habits such as pressing the tongue against the teeth and muscular hyperactivity have occasionally been identified as causative. Despite the common reports of dry mouth in patients with BMS, few studies have reported a reduction in saliva volume. However, some studies have shown changes in salivary constituents, including proteins, mucin, immunoglobulins, changes in pH and buffering capacity, which may be due to altered autonomic nerve function or interactions between the cranial nerves subserving taste, pain and salivation. One recently developed theory suggests that damage to the taste function results in reduced inhibition of painful sensations arising in the oral cavity, which in turn results in BMS.

Angiotensin-converting enzyme (ACE) inhibitors used for treating hypertension (e.g., captopril) have been reported to cause burning and are associated with taste changes. Discontinuing or reducing the dose may lead to remission of oral complaints.

Diagnosis

The diagnosis of BMS (and its management) may be difficult because patients often present with multiple oral complaints, may be focused on their symptoms and may be anxious or depressed, which intensifies the pain experience. It is not known if psychological dysfunction in people with chronic pain is the result or the cause of pain, but it must be considered in patients with complex medical problems and severe symptoms. The diagnosis of BMS is based on clinical characteristics, including bilaterality, increase in

pain during the day, decrease in pain with eating and ruling out potentially related local and systemic conditions. Salivary flow and taste can be assessed. A thorough history and clinical examination are needed to assess the condition, to rule out underlying mucosal or systemic disease, and to determine if medical laboratory testing or referral may be appropriate.

Management

After local oral or systemic conditions have been ruled out or treated, therapy for BMS involves the use of centrally acting medications for neuropathic pain, such as tricyclic antidepressants, benzodiazepines or gabapentin. Studies support the prescription of low-dose clonazepam (0.25 to 1.0 mg) or tricyclic antidepressants (10 to 40 mg). The well-known beneficial effects of tricyclic agents, including amitriptyline, desipramine, nortriptyline, imipramine and clomipramine, in cases of chronic pain are separate from their antidepressant actions. In resistant cases, combinations of medications with different mechanisms of action may be provided; however, there are no studies to guide use of combination therapy for BMS. If a patient is receiving ACE inhibitors, a change in medication could be considered if other choices are available. Topical therapies, including clonidine and capsaicin, may be considered for application to local sites.

Counselling and support may be an important part of overall management. Appropriate management may include referral to practitioners experienced in managing chronic orofacial pain, specifically BMS.

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Question 3

Should panoramic radiography be used as a screening tool to detect oral diseases, including cancer, and is there a recommended interval for obtaining panoramic radiographs?

Current recommendations for diagnostic imaging in dentistry, including panoramic radiography, were developed by a consensus panel convened by the U.S. Food and Drug Administration in 1983. The guidelines were published in 1988,[1] and their efficacy has been assessed on several occasions[2–7] since then.

The guidelines suggest that imaging be performed only after identification of a positive historical finding, sign or symptom, and then only if the identification of the finding, sign or symptom is deemed to have a beneficial impact to the patient's diagnosis or treatment plan. According to the guidelines, panoramic radiography is recommended for children during the early mixed-dentition stage and in late adolescence to detect congenital tooth abnormalities and to establish the presence and eruptive pattern of the developing permanent dentition, including third molars. Before the fabrication of removable dentures for a partially or completely edentulous adult patient, panoramic radiography is recommended to detect impacted teeth, retained tooth roots, and other intraosseous or extraosseous conditions that might affect the success of prosthodontic rehabilitation.

In assessing the need for radiographic examinations in the absence of historical findings, signs or symptoms, disease prevalence should be an important consideration, as should the probability of such lesions being present if clinical signs or symptoms are absent. However, such data are difficult to acquire, and published studies are rare.[8–11] The

limited prevalence data for oral and maxillofacial pathoses suggests that the probability of identifying a serious bone abnormality in a patient without detectable signs or symptoms (an asymptomatic patient) is "infinitesimal."[2] The use of oral and maxillofacial radiography, in particular panoramic radiography, as a screening tool for such lesions is not supported in the literature.

Apart from bitewing radiographic examinations for dental caries, there is similarly no support in the literature for "routine" or "fixed-interval" (e.g., every 5 years) full-mouth intraoral or panoramic radiographic examinations in the asymptomatic patient. Indeed, given the many technical pitfalls of panoramic radiography (e.g., the inability to produce dimensionally accurate images and to resolve fine anatomic details), the usefulness of this imaging technique in general dentistry should be thought of as limited. ◆

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Question 4 How should I treat a patient with xerostomia?

Xerostomia is a condition associated with both a decrease in the amount of saliva produced and an alteration in its chemical composition, which together cause dryness of the mouth. Xerostomia can affect numerous aspects of oral function, contributing to pain, caries and oral infections. It can cause a significant decline in quality of life by decreasing taste sensation. Patients with xerostomia often report an avoidance of some foods, such as dry foods (e.g., bread) and sticky foods (e.g., peanut butter). In addition, xerostomia may impair a patient's ability to speak, cause cracks and fissures in the oral mucosa and contribute to halitosis. Wearing dentures can be very uncomfortable, and chewing difficulties may be exacerbated because of reduced surface tension between the dry mucosa and the denture. Xerostomia is also a contributing factor in the high prevalence of geriatric malnutrition.

Causes

Medications

The most common cause of xerostomia is the use of certain systemic medications. Over 500 medications have been known to cause xerostomia. Causal drug categories include anticholinergics, antidepressants and antihypertensives, to name only a few. With the ageing of the population, xerostomia is likely to be encountered with increasing frequency in the dental setting.

Radiation Therapy

Xerostomia is one of the major side effects of radical radiation therapy for head and neck malignancies, occurring as a result of irradiation to the salivary glands.[1] The degree of destruction of glandular tissue depends largely on the dose of radiation administered. Unless the whole gland

has undergone high doses of radiation, partial recovery over a period of 6 to 12 months is likely.

Management

Prevention of Caries and Comprehensive Dental Care

Because of diminished salivary output, patients with xerostomia are more prone to caries. Thus, diligent oral hygiene, appropriate dietary instruction and regular dental care are essential. Antibacterial mouthwashes such as 0.12% chlorhexidine are useful for inhibiting the development of dental plaque and gingivitis. Fluoride is the single most important intervention in the case of radiation-induced damage. For low-risk patients, the recommended regimen is regular application of topical fluorides plus a daily rinse with 0.05% sodium fluoride. For more severely affected patients, a high-concentration fluoride solution such as 1.23% acidulated phosphate fluoride gel, applied in a tray for 4 minutes, is recommended.

Biotene and Oralbalance

Biotene and Oralbalance products (Laclede Professional Products, Rancho Dominguez, Calif.) contain 3 primary enzymes (lactoperoxidase, lysozyme and glucose oxidase) and a protein (lactoferrin) that is found naturally in human saliva, acting to deprive bacteria of iron. The goal of this combination of enzymes is to replace the salivary enzyme activity that is absent or decreased in patients with xerostomia, thereby reducing harmful organisms but not harming beneficial ones. Biotene is available as a sugar-free chewing gum, an alcohol-free mouthwash, a moisturizing denture adhesive and a toothpaste, whereas Oralbalance is available as a moisturizing gel.

Pilocarpine

In patients with severe xerostomia, systemic cholinergic stimulants such as pilocarpine (brand name Salagen, Pharmacia Canada Inc.) may be prescribed.[2] Pilocarpine is approved for use as a sialogogue only in patients undergoing radiation therapy, in patients with Sjögren's syndrome and for drug-induced xerostomia. In such patients, products such as oral rinses, saliva substitutes and salivary stimulants and techniques such as sipping water are frequently inadequate.

The usual dosage for adults is one or two 5.0-mg tablets 3 or 4 times daily, not to exceed 30 mg per day.[3] Patients should be treated for a minimum of 90 days for optimal results, because the drug must be administered for several weeks before it takes effect and symptoms begin to improve. After this lag period, the time required to increase salivation after oral administration of the drug is 15 minutes; the effect peaks at 60 minutes, and the increase in salivation lasts for 2 or 3 hours.

Dose-dependent side effects of pilocarpine include perspiration, rhinitis, chills, frequent urination, dizziness, increased lacrimation and pharyngitis. Because pilocarpine is a parasympathomimetic drug, there is some risk of cardiovascular and pulmonary side effects.

Contraindications for pilocarpine include narrow-angle glaucoma, uncontrolled asthma and gastric ulcers. ◆

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