

REVIEW ARTICLE

Eating Disorders and Oral Health- An Update

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ABSTRACT

Dental practitioners have a crucial role in diagnosing patients with eating disorder and can be the first to notice the presence of previously undiagnosed eating disorders. The general dental practitioner should identify the subtle changes in the oral cavity which are early indicators of a serious underlying psychiatric condition. Identification of these minor signs will help in early diagnosis, appropriate referral and management of affected individuals in their early stages. This article is a review of the recent literature on eating disorders and their subsequent oral manifestations. The authors have made an attempt to create awareness and knowledge among dental practitioners about their role in the early diagnosis, intervention and management of affected individuals.

Keywords: Anorexia nervosa, binge-eating disorder, bulimia nervosa

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KEY MESSAGE

Eating disorders are common in our population, yet less understood. Identification of patients with such

psychopathologies may be difficult for a general practitioner. Many of the early changes may be manifested in the oral cavity. This article shed an overview on the oral presentations and the dental management of patients with eating disorders.

INTRODUCTION

Mouth is the mirror of the body and it is well established that many systemic adverse health conditions have manifestations in the oral cavity. Eating disorders are primarily a group of psychopathological disorders where patient demonstrates abnormal diet patterns; manifesting through distorted or chaotic eating behaviours.¹ This affects an individual's physical and emotional wellbeing and in turn affects the quality of life. Other implications vary from disruption of normal lifestyle to generalized weaknesses to even life threatening complications.¹

The earliest manifestations of abnormal eating patterns and disorders have been shown to appear in the oral cavity first which include deterioration of oral aesthetics, discomfort and pain in oral and perioral structures and impairment of oral functions.^{1,2} With the increasing numbers of these conditions, the possibility of a dental practitioner encountering an eating disordered individual is quite high. Hence oral health care practitioners should have a sound knowledge about the various general and oral manifestations of eating disorders. The Diagnostic and Statistical Manual classified eating disorders as anorexia nervosa, bulimia nervosa and eating disorders not otherwise specified.³

Dental surgeons have a significant role in identification of such patients by eliciting a detailed history and evaluating the oral changes. He should be able to communicate the possible findings to the psychiatrist and be able to manage the oral conditions appropriately.

ETIOPATHOGENESIS

The etiology of eating disorders is unknown. Genetic, cultural and psychological factors appear to play a vital role in the etiology of these disorders.² Gene expressions are altered by environmental factors without changing the underlying DNA sequence. Eating behav-

ior is regulated by the hypothalamus-pituitary-adrenal axis and any defect in production, transmission of hormones and neurotransmitters such as serotonin, leptin and norepinephrine manifest in eating disorders.

PREVALENCE

The prevalence of psychosomatic eating disorder has increased drastically in the recent years especially in industrialized countries. The registered incidence rates of anorexia nervosa and bulimia nervosa are up to 8 per 100 000 persons per year and 13 per 100 000 persons per year, respectively.⁴ 1-5 % of the population is affected with eating disorders and women are found to be more commonly affected than males. Studies have shown that about 40- 50% of the subjects suffering from anorexia also have bulimia. Anorexia nervosa usually affects individuals around 20 years of age with a mean age of onset at 17 years and rarely affects subjects after 40 years.¹

DIAGNOSTIC CRITERIA

The diagnostic criteria for anorexia nervosa are^{1,2,3}

1. Refusal to maintain body weight at less than 85% expected for given age and height
2. Distortion of body image
3. Endocrine disorder typified by amenorrhea.

Other diagnostic features are self-induced weight loss achieved by food avoidance and vomiting or purging, amenorrhea for a minimum of three consecutive menstrual cycles and an intense fear of becoming fat or weight gain.

The essential features to qualify for specific diagnosis of bulimia nervosa are

1. Persistent preoccupation with eating, binge eating
2. Inappropriate compensatory methods to prevent weight gain such as self-induced vomiting, excessive exercise and laxative abuse
3. A morbid dread of weight gain.

MEDICAL COMPLICATIONS SECONDARY TO EATING DISORDERS

The disturbed eating pattern leads to a number of medical complications such as bradycardia, hypothermia, hypotension, menstrual irregularities, esophageal or gastric rupture, hypokalemia, cardiac arrhythmias, cardiomyopathy etc. The use of fingers to induce vomiting results in callus formation on the back of hands and fingers due to trauma from maxillary incisors which are called as Russel's sign.⁵

ORAL CONSIDERATIONS

Oral manifestations occurring in eating disorders are a result of metabolic impairment induced by nutritional deficiencies. The other reasons for oral manifestations include neglect of personal hygiene, modified dietary habits (cravings and excessive intake of particular food articles, certain drugs), and unhealthy compensatory methods for weight maintenance (such as induced vomiting). Oro-dental problems associated with eating disorders can occur as early as 6 months following consistent disordered eating behaviors such as caloric restriction and vomiting.¹

Oral manifestations of eating disorder occur in any phase of disease progression and have an important role in assessment, characterization and prognosis of eating disorder. The impact of eating disorders on the oral soft and hard tissues depends on the diet, duration and frequency of binge-purge behavior. Management of patients with eating disorder is a multidisciplinary approach and the oral and dental complications are managed by the dentist.

EFFECT ON HARD TISSUE

1) Tooth erosion

Enamel erosion is the most common and dramatic oral manifestation of eating disorder. The specific type of enamel erosion seen in these patients is termed as perimyolysis, which is secondary to vomiting, gastric reflux and regurgitation. In a case control study it was proved that subjects with anorexia nervosa and bulimia nervosa had higher levels of tooth erosion than the controls and that there was no linear association between the frequency, duration and total number of vomiting episodes.² This may be attributed to difference in susceptibility to erosion between patients, differences in buffering capacity of saliva, flow rate, pH and tooth surface composition.³

Cross-sectional study conducted by Robb on 122 eating disorder patients showed that subjects who suffered from anorexia nervosa had significantly more erosion than control group and the erosion was predominantly on the buccal and occlusal surfaces of posterior teeth. This type of erosion had not previously been associated with eating disorders and no explanation was put forward to account for this phenomenon.⁶

Various studies have shown that tooth erosion become clinically apparent after 2years³, but one report states that it may be visible only after six months of vomiting behaviour.³

2) Dental caries

Prevalence of dental caries among subjects with eating disorder and normal population remain unclear. Cross-sectional study by Touyz concluded that there are no differences in the levels of *Streptococcus mutans* or *Lactobacillus* among the study and control groups and there was no difference in caries prevalence.⁷ This is in contrast to the cross-sectional study conducted by Philipp et al. In his study he found that caries prevalence is lower in eating disorder patients and the authors attributed differences in DMF values to better oral hygiene in the eating disorder patients due to their vomiting. There is no discussion of the mechanism whereby vomiting may improve oral hygiene.⁸

3) Effect on bone

The effect on bone is mainly studied to determine the link between periodontal disease and osteopenia/ osteoporosis. Researchers suggest a positive relationship with periodontal disease. It has been observed that patients with osteopenia/ osteoporosis suffer from more severe periodontitis than controls. Alveolar bone loss will proceed at a much quicker rate if the density of structural bone being destroyed is suboptimal, given the same bacterial infection and host response. Eating disorders patients are at a risk of low peak bone mass and hence more prone for periodontal diseases.^{1,3}

EFFECTS ON ORAL SOFT TISSUE

Oral mucosa is a good marker of underlying general health and the effects of underlying systemic disease may manifest in oral cavity before becoming evident elsewhere in the body.

1) Effect on gingiva and periodontium

Studies show conflicting report about the development of periodontal diseases in patients with eating disorders. Patients with eating disorder may have poor oral hygiene, which in turn lead to gingivitis and potentially predispose to periodontitis. Dehydration of oral soft tissues due to severe vomiting in addition to dilatory deficiency and poor oral hygiene can adversely affect the health of periodontal tissues and oral mucosa. It has been suggested that avitaminosis-C is an etiological factor in periodontal disease in patients with eating disorders.³ Some studies suggest that eating disorder patients do not exhibit more periodontal disease than controls although eating disorder patients tend to have worse oral hygiene and increased prevalence of gingivitis. In a study²⁴ of periodontal factors using Community Periodontal Index of Treatment Needs (CPITN),

and determining probing depth >3mm as indicative of the presence of periodontitis, no difference was found in the prevalence of periodontitis between the eating disorder patients and controls.⁹

2) Effect on oral mucosa

Due to nutritional deficiencies there is an increased susceptibility for development of angular cheilitis, candidiasis, glossitis and mucosal ulcerations in patients with eating disorders. Generalized mucosal atrophy due to deficient intake of iron and vitamins can result in burning sensation especially on the tongue. There will be atrophy of the oral mucosa in patients who engage in binge eating and self-induced vomiting, epithelial erosion can also be due to the direct offending action of acid during vomiting. Also there will be trauma to the soft palate by objects used to induce vomiting.^{2,3}

3) Effect on salivary glands

Patients with eating disorder frequent have enlarged parotid glands.² Occasionally there will be enlargement of the salivary gland in the initial stages of eating disorders but later on it becomes more persistent. The enlargement of salivary glands is due to non-inflammatory enlargement of the gland called sialadenosis caused by peripheral autonomic neuropathy, which is responsible for disordered metabolism and secretion, resulting in acinar enlargement and impaired function.¹⁰ The other findings include hyposalivation, xerostomia, altered salivary flow rate, buffering capacity, pH and composition of saliva and necrotizing sialometaplasia. Changes in the salivary secretions may be due to structural changes in the gland. Xerostomia is a common side effect of various antipsychiatric drugs used in the treatment of eating disorders. Fluid imbalance is due to excessive use of diuretics and laxatives used to prevent weight gain and by persistent vomiting. Lowering of pH of mucosal surfaces in palatal region may be considered as the reason for minor salivary gland pathology.^{1,2,3}

4) Effect on tongue

Patients with eating disorders may experience taste impairment, dysgeusia, hypogeusia, burning sensation, glossodynia etc. This may be due to trace metal deficiencies particularly zinc, somatoform disturbances and mucosal atrophy.^{1,2,3}

DENTAL MANAGEMENT

Oral manifestations of eating disorder may appear in different stages of disease progression, some occur in

the initial stages like sialadenosis, palatal erythema etc. Dentists may be the first health care workers to notice the early symptoms of eating disorder by its oral presentation and can play an important role in preventing the development of a full-blown disorder through early identification, referral and treatment. A detailed history should be recorded and the dental practitioner should ask additional questions related to eating disorder like duration, severity, frequency and duration of treatment. The dental practitioner should observe the patient's body language, avoid judgment and should remain calm. This is important in both diagnosis and therapeutics, as they are the first person to identify and refer patient to a physiologist or psychiatrist. If the patient is less than 18 years of age the dental practitioner should discuss the oral finds to the patients parents and refer them to a physician for expert opinion and management. Eating disorder patients should be instructed to follow proper self-care like reduce the intake of acidic food, proper brushing technique, use of dental floss, maintain oral and peri-oral hygiene and application of topical fluorides. The patients should be instructed not to brush the teeth within one hour of vomiting as the changes of tooth wear increases.² The dental practitioner can provide restorative care, protection of exposed dental surfaces, desensitization of exposed dentin and decreasing solubility of enamel and dentin. The secondary prevention provided by the dental practitioner helps to prevent further damage to the teeth and oral cavity as well as improve oral health. Acute conditions of pain, infection and symptom relief require immediate attention and treatment. Use of composite restoratives that are not acid soluble should be preferred over polyalkenoate (glass ionomer) restorative materials. Use of bonding porcelain and resin (dentine) bonded crowns, metal veneers, metal onlays and a combination of 'double veneer' is proven effective for satisfactory restoration of tooth destruction resulting from typical purging noticed in eating disorder.^{3,11,14,15}

CONCLUSION

Early detection and intervention play a key role in the management of eating disorders. As dental practitioners are often the first health professionals to identify signs and symptoms of disordered eating they can play a pivotal role in preventing the development of a full-blown disorder through early identification, referral and treatment.

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