

THE ORAL IMPACTS OF EATING DISORDERS

An eating disorder is characterised as a behavioral and psychological disturbance related to food.¹ Currently, 12.5% of teenagers aged 17-19 years old in the UK are affected.² An eating disorder can cause both serious mental effects and physical effects in a sufferer. The most common disorders are:

Anorexia Nervosa: Caused by an unhealthy compulsion to lose weight when an individual restricts their food intake to the point of self-starvation.³

Bulimia Nervosa: Forced vomiting after eating, with or without the use of laxatives.

Binge eating: The overconsumption of food, usually leaving the person feeling shame, out of control and uncomfortably full.⁴

These conditions are not only detrimental to an individual's overall health, but can also have a huge impact on their oral health.

Oral manifestations of eating disorders

Erosion

One of the key signs is erosion: non-carious tooth surface loss caused by acids from an individual's diet or stomach.^{5,6} Erosion is most prevalent in patients with Bulimia Nervosa caused by the reflux of gastric acid, due to frequent vomiting or regurgitating food. It most commonly affects the palatal surfaces of anterior teeth. Erosion tends to be more severe in sufferers who brush directly after a vomiting episode,⁷ which aids the degeneration of the already weakened enamel surface.⁸ Patients should be advised to immediately rinse with water to neutralise the pH in the mouth, and wait at least one hour before brushing to allow remineralisation of the tooth enamel.⁹ To regularly monitor a patient's erosion, clinicians should employ the Basic Erosive Wear Examination.¹⁰

Due to the prevalence of eating disorders being most common in adolescence, it would be naive not to consider how important aesthetics is for this age group. Restorative treatment options depend on the severity of the erosion. For example, initial surface loss may just require monitoring, applying fluoride varnish alongside oral hygiene instruction. Distinct surface loss of up to 50% could be restored with bonded composite restorations. If there is tooth surface loss of more than 50%, and causing symptoms that a restoration

cannot resolve, then more invasive routes may need to be explored.^{11,12}

Periodontal complications

Patients suffering from Anorexia Nervosa may have a nutritional deficiency.¹³ A vitamin C deficiency may manifest as bleeding and inflammation of the gingivae.¹⁴ Vitamin D contributes to bone health by aiding the absorption of calcium.¹⁵ Vitamin D is also key for regulating immune system function to help fight off pathogens causing infection or disease.¹⁶

Additionally, inadequate iron levels can impact the immune response and change the oral environment, also increasing the risk of periodontal diseases and anemia. These patients may suffer from oral infections such as angular cheilitis.¹⁷ Ultimately, it is imperative to sustain a balanced diet in order to receive the vitamins necessary in maintaining oral health. In particular, it is vital that clinicians understand the impacts of nutritional deficiencies in order to create effective treatment plans and referrals. For patients with an eating disorder, supplements can be a less overwhelming experience as they do not usually have any calorific value, making them less likely to trigger anxiety around consumption while still providing nutritional benefits.¹⁸

Salivary gland manifestations

Equally important in maintaining good oral health, is salivary flow. Research has shown that patients with Bulimia Nervosa and Anorexia Nervosa have a reduced salivary flow rate, mainly due to medication.¹⁹ Although antidepressant and antipsychotic medications are common drugs prescribed to these patients, they do not help weight gain. They are used to treat closely associated conditions like anxiety and depression that may pair with an eating disorder.²⁰ When mixed with malnutrition, or chronic vomiting, these drugs can often create issues with salivary gland function.²¹ As a result, patients can experience xerostomia, and symptoms should be managed accordingly.²² This should include: frequent recall visits; providing recommendations such as increasing water intake; using salivary substitutes; and topical fluoride application.^{23,24} Oral dryness can not only cause persistent discomfort, it can also create an environment that is more susceptible to fungal infections as well as an increased caries risk.²⁵

Frequent vomiting can also have an effect on the salivary glands. Sialadenosis, characterised as a bilateral swelling of the parotid gland, can be chronic in bulimic patients (Fig. 1).²⁶ It can also occur as a side effect of medication,



■ **Figure 1:** Bilateral swelling of the parotid glands (sialosis).

but is more commonly due to frequent vomiting leading to continuous exposure of acid to the gland.

Oral mucosal manifestations

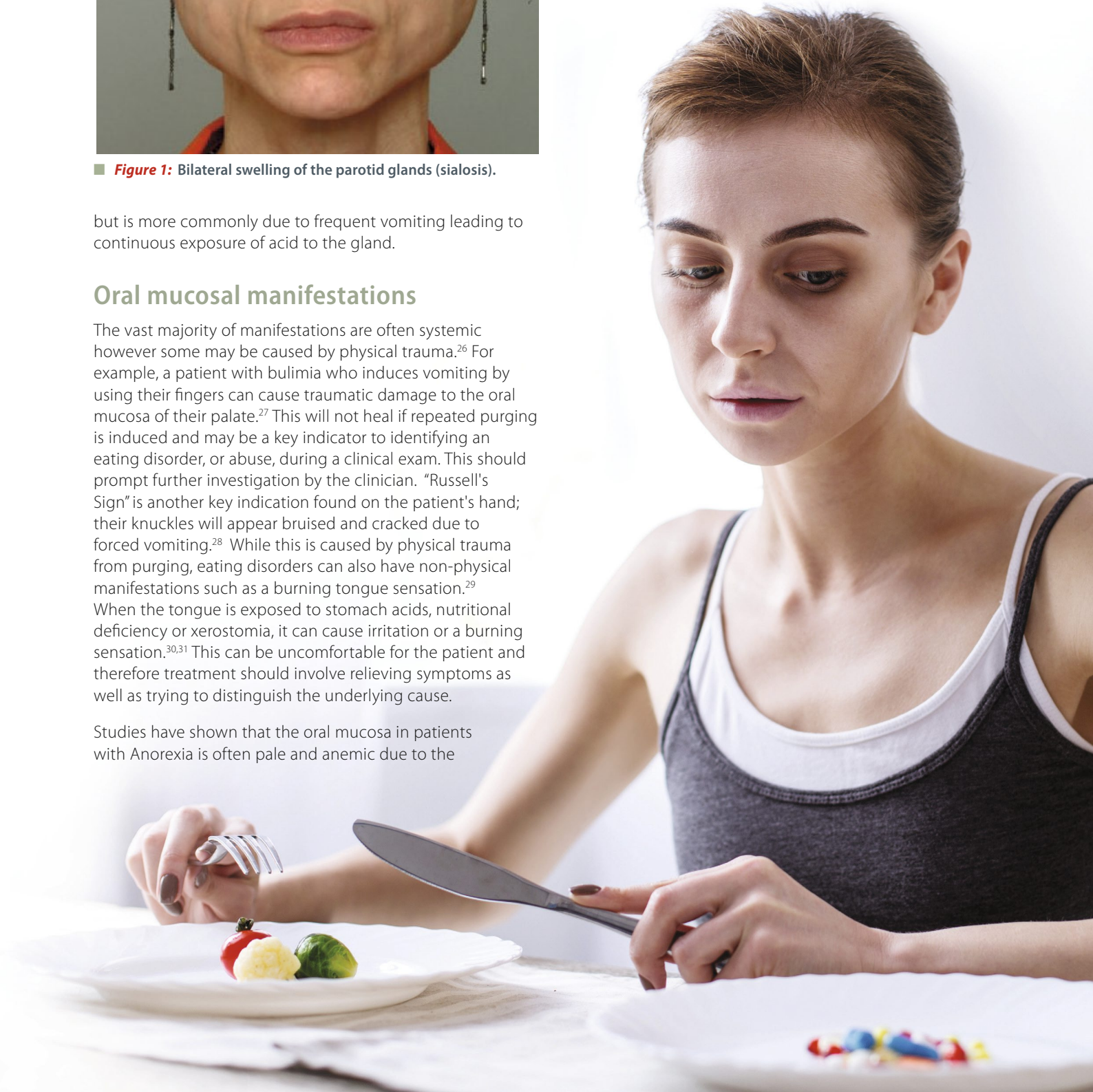
The vast majority of manifestations are often systemic however some may be caused by physical trauma.²⁶ For example, a patient with bulimia who induces vomiting by using their fingers can cause traumatic damage to the oral mucosa of their palate.²⁷ This will not heal if repeated purging is induced and may be a key indicator to identifying an eating disorder, or abuse, during a clinical exam. This should prompt further investigation by the clinician. "Russell's Sign" is another key indication found on the patient's hand; their knuckles will appear bruised and cracked due to forced vomiting.²⁸ While this is caused by physical trauma from purging, eating disorders can also have non-physical manifestations such as a burning tongue sensation.²⁹ When the tongue is exposed to stomach acids, nutritional deficiency or xerostomia, it can cause irritation or a burning sensation.^{30,31} This can be uncomfortable for the patient and therefore treatment should involve relieving symptoms as well as trying to distinguish the underlying cause.

Studies have shown that the oral mucosa in patients with Anorexia is often pale and anemic due to the

lack of nutrients in the body.^{32,33} This makes it more prone to ulceration and hemorrhagic lesions which have reduced healing capabilities.³⁴ It is essential that clinicians undertake a thorough intra-oral examination. This enables early detection of signs from physical trauma to the oral mucosa, which then allows the clinician to further prompt the patient with questions that can give more of an insight into their life. Building rapport creates a platform to assist the patient in receiving help for their mental health as well as oral health.

Binge eating

Binge eating is also a significant disorder often related to bulimia.³⁵ Usually a sufferer's preferred diet has little



nutritional benefit. A high carbohydrate intake may impact xerostomia, caries and halitosis.³⁶ Binge eating also poses a risk of obesity which can lead to more serious conditions such as type 2 diabetes and the potential associated risks of periodontal diseases.^{37,38} The sugar intake from a high carbohydrate diet, and the frequent bingeing episodes, increases caries risk.³⁹ Clinicians need to be able to raise awareness and highlight the long term impacts of a binge eating disorder to the patient so that they can have a holistic overview of their health.

Psychological effect

An eating disorder can impact every aspect of a person's life. From the profound emotional challenges that take a toll on mental wellbeing, to the physical effects that have serious health repercussions.⁴⁰ A negative body perception, for example in Anorexia, can cause an extreme fixation around weight loss and fitness, which ultimately leads to the person being unable to recognise the extent of weight loss.⁴¹ They often then pursue further weight loss, as their body dysmorphia hinders their understanding of the severity of their situation. Bulimia and binge eating disorders have similar emotional effects, where negative feelings towards body shape or size can influence a negative relationship with food.

Having an eating disorder can lead to feelings of shame and low self-esteem, which in turn can make it difficult for those affected to openly seek help.^{42,43} It is common for these patients to attend infrequently for regular dental appointments, however they are more likely to visit to address pain or issues caused by eating behaviors, such as erosion or caries. A dental healthcare provider has the opportunity to offer a supportive environment to compassionately intervene and offer different routes of help.

Depression and anxiety are often associated with eating disorders. An individual who is suffering from depression is less likely to routinely complete good oral care behaviors and furthermore is less likely to attend dental appointments, even when in pain.^{44,45,46} There are many psychological factors that create a vicious cycle regarding eating disorders and dental care and an individual with an eating disorder, as well as other mental health conditions, can be reluctant to seek help.

Communicate and refer

When suspecting an eating disorder, the first step is to be compassionate and non-judgmental, to create a safe space to allow the patient to open up to you. To ensure the patient is not overwhelmed or pressured for answers, it can be useful to ask open ended questions. It is crucial to have an awareness of the external help pathways available such as GP referrals, support groups as well as support from family or friends. Once continuous patient rapport has been established, and the correct pathways followed, it is important to educate the patient on the dental impacts of their eating disorder. Gaining the patient's trust cannot be a rushed process. For treatment in the dental clinic it is a multidisciplinary effort, where diet advice, brushing instruction in relation to habits, and restorative treatment

should be discussed. All appointments should be planned with the patient to reassure the individual of treatment options as well as empowering them.

Through exploring the various known eating disorders, their dental implications as well as their psychological impacts, clinicians can gain a better understanding of how to identify and approach a patient. It is therefore significant to have a broad knowledge of different disorders and how to effectively communicate to patients, along with knowledge of the systems in place to help patients with an eating disorder. For these reasons, there should be a wider focus on teaching undergraduate students so that there is an understanding of how to tailor treatment to different eating disorders as each patient is unique.

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Image courtesy of Professor Mike Lewis.

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