Dysphagia in adults and its relationship with oral health and dental treatment

Learning outcomes

After reading this article, the reader should:

- increase their understanding of dysphagia and its implications for oral care; and,
- be able to manage dental treatment for patients with dysphagia safely.

Introduction

Dysphagia is the medical term for swallowing problems and is defined as "difficulty in swallowing or impairment in the movement of swallowed material from the pharynx to the stomach".[1] Normal swallowing occurs in the following three phases:

1. Oral – the conversion of food into a bolus that is then transported to the back of the oral cavity.
2. Pharyngeal – pharyngeal swallow is rapid and sequential, occurring within seconds, propelling the bolus through the pharynx into the oesophagus. The larynx and trachea are protected from the pharynx during food passage to prevent the food from entering the airway. Breathing stops momentarily to allow the vocal folds to come together.
3. Oesophageal – peristalsis transports the bolus through the oesophagus, and the lower oesophageal sphincter opens as the bolus approaches the stomach.

Dysphagia can be categorised by the location of the swallowing impairment, but for the purpose of this article, we will use the term dysphagia.

Incidence and causes of dysphagia

The prevalence of dysphagia in the general population is estimated at 16-23%, increasing to 27% in those over 76 years of age. It is higher in the presence of neurological diseases, such as dementia, Parkinson's disease or stroke.[2] Estimated incidences of dysphagia are shown in **Table 1**.[3]
Dysphagia typically occurs secondary to primary medical conditions (**Table 2**).

Table 1: Estimated incidence of dysphagia among patient groups.

Nursing home residents	50-75%
Post head and neck cancer treatment	50-60%
Post stroke	40-78%
Multiple sclerosis	33%
Chronic obstructive pulmonary disease	27%
Learning disabilities	5%
Hospital	36%

Table 2: Medical conditions associated with dysphagia.

System	Condition
Nervous system	Stroke, Parkinson's disease, dementia, amyotrophic lateral sclerosis, multiple sclerosis, brain tumours
Respiratory system	Chronic obstructive pulmonary disease, congestive heart failure
Cervical spine	Cervical fracture
Oesophageal and gastrointestinal disorders	Gastrointestinal motility disorders secondary to scleroderma, achalasia, oesophageal spasm, eosinophilic oesophagitis, hiatus hernia, oesophageal stricture
Cancer	Head and neck cancer, lung cancer with metastasis to the lungs, thyroid cancer with compression of the oesophagus, lymphadenopathy
Psychological	Eating disorders (anorexia or bulimia nervosa), post-traumatic stress disorder, functional neurologic symptom disorder (functional dysphagia), dementia
Medication	Anticholinergic medications (e.g., antidepressants, antipsychotics), calcium channel blockers, non-steroidal anti-inflammatory drugs, bisphosphonates, chemotherapeutic agents, muscle relaxants, sedatives

Impact of dysphagia

The consequences of dysphagia will depend on the severity of the condition and include an increased risk of aspiration of oral matter, malnutrition, dehydration, choking, decreased quality of life, and increased frailty.[4]

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Table 3: General and oral signs and symptoms of dysphagia.

General signs and symptoms	Oral signs and symptoms
Food and liquid escaping from the mouth	Difficulty in chewing
Taking a longer time to eat and drink	Dry mouth
Nasal regurgitation	Drooling
Food sticking in the throat	Food being retained in the mouth
Coughing and choking	Difficulty in chewing
Regurgitation	
Wet voice	
Weight loss	
Repeated chest infections	

Dysphagia can be painful, and individuals are often embarrassed about living with dysphagia. There can be a loss of enjoyment of food and increased social isolation.[5] The signs and symptoms of dysphagia are listed in **Table 3**.

A comprehensive medical history and physical examination by the multidisciplinary team will help to determine the aetiology of dysphagia and will often lead to a diagnosis. Speech and language therapists can undertake swallow assessments to assess the swallow with a small amount of liquid. Videofluoroscopy can be undertaken, where a subject swallows food with barium and real-time moving images of swallowing are obtained radiographically. Fibreoptic endoscopic evaluation of swallowing (FEES) is where a flexible nasendoscope (digital or fibreoptic) is inserted transnasally to directly visualise naso-/oro- and laryngopharyngeal structures, secretions, sensory response, and pharyngeal swallow function.

Aspiration pneumonia and dysphagia

Aspiration has been defined as the misdirection of oropharyngeal or gastric contents into the larynx and lower respiratory tract, and is a significant health risk for adults with dysphagia due to the associated risk of aspiration pneumonia.[6,7] Poor oral hygiene leads to the oral cavity becoming colonised by large numbers of potentially pathogenic microorganisms that, if aspirated, can lead to aspiration pneumonia, a condition with high morbidity and mortality rates.[8] Hence, educating patients and their carers about regular, effective oral care and the links to aspiration pneumonia is very important.

Management of dysphagia

The management of dysphagia will depend on the cause and may aim to restore normal swallow function or may include modifications to diet consistency and patient behaviour. Rehabilitative techniques often focus on exercises to achieve lasting change in an individual's swallowing by improving underlying physiological function. Postural techniques aim to redirect the movement of the bolus in the oral cavity and pharynx, and include head rotation after a stroke to redirect food towards the stronger side of the pharynx. The use of capsaicin has been found to have some benefit in longstanding dysphagia.[9]

In patients with severe dysphagia, it may be necessary for enteral feeding via the jejunum with a nasojejunal tube (NJT), or percutaneous endoscopic gastrostomy (PEG) or radiologically inserted gastrostomy (RIG) tube feeding, which are surgically placed in the stomach.

FIGURE 1: Poor oral care post stroke in a patient with dysphagia.

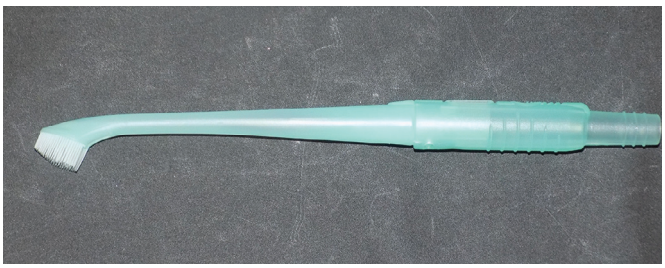

FIGURE 2: Example of a suction toothbrush.

Impact on oral health

There are two main reasons why dental teams must be aware of the importance of dysphagia:

1. Importance of effective daily oral care.
2. Impact on the delivery of dental treatment.

Adults with dysphagia often have increased levels of dental disease as a result of poor oral clearance, resulting in food stagnation in the mouth.[10] Additionally, a dry mouth as a side effect of medication can increase the risk of caries, periodontal disease, and candida infections.[11]

Oral care

The prevalence of caries and periodontal disease is higher in people with dysphagia. Often, patients with dysphagia will need support from a carer, family member, or healthcare professional to maintain a good standard of oral care to prevent dental disease. Furthermore, poor oral hygiene increases the risk of developing aspiration pneumonia. Unfortunately, standards of oral care in care homes and hospitals have been found to be substandard (**Figure 1**), highlighting the need for effective training programmes and accountability for oral care standards.

The dental team's role is to risk assess the patient and advise modifications to their oral care routine to optimise their oral health. This can include:

- an upright or semi-upright posture during oral care can reduce the risk of aspiration;
- people with dysphagia should have mouth care at least three times a day to remove food debris and excess saliva secretions;
- suction toothbrushes that attach to a patient's suction machine or use of oral suction with mouth care (**Figure 2**);

FIGURE 3: Food stagnation on lower implant-retained denture.

FIGURE 4: Hysocine patches and botulinum toxin injected into salivary gland.

- a pea-sized amount/smear of sodium lauryl sulphate-free toothpaste reduces the foaming action of toothpaste – there are several brands available in most high street shops;
- high-fluoride toothpaste can be prescribed for orally fed patients who have a dry mouth and food stagnation;
- patients may be taking regular nutritional supplements or high-calorie snacks and should be advised, if possible, to brush teeth with a fluoride toothpaste after eating or rinse their mouth out with water to reduce food stagnation;
- caregivers should be advised to remove food residue lodged in the mouth's buccal vestibules, tongue and palate for those who cannot rinse effectively after eating;
- people with dysphagia often have dry mouths, so regular dry mouth care, including sips of water and stimulation of saliva, for example with sugar-free chewing gum or sugar-free sweets, is important for those who can have oral fluids – mouth moisturising products in gel or spray form can be used for non-orally fed patients;
- dentures should be cleaned after mealtimes to prevent intra-oral food stagnation (**Figure 3**). They should be removed at night and safely stored in a named denture container to prevent them from getting lost; and,
- mouth care for non-orally fed patients is very important, and can sometimes be overlooked.

Table 4: Dental considerations and management for people with dysphagia.

Consideration	Management
Treatment positioning	Where possible, do not treat supine – may need to compromise and have patient semi-upright
Airway protection	Rubber dam isolation where appropriate Gauze behind teeth when extracting
Reduce water	Hand scaling over ultrasonic scaling Slow handpiece is preferred where possible Reduce water when using ultrasonic scaler and handpieces High-volume suction with saliva ejector used simultaneously Carboxymethylcellulose pads in the buccal sulcus
Allow frequent rests	Hand sign when they need a rest Countdown from five
Dental care	Aim to make teeth cleansable Use of minimally invasive dentistry over conventional methods Local infiltrations preferred to nerve blocks, which may further reduce swallowing ability Repair rather than replace restorations Consider using fast-setting restorative materials
Prosthodontic considerations	Fast-setting impression material Caution taken when working with small dental components Advise patients with unretentive dentures not to wear them due to the risk of aspiration or accidental swallowing

Management of inadequate saliva control

It is often assumed that drooling results from excessive saliva production (sialorrhoea), but this is not the most common reason. The main cause of drooling is when a person has problems with posture, muscle control, nasal obstruction, or difficulty keeping their lips together. Collaboration with speech and language therapy for techniques to improve motor control is beneficial. The use of anticholinergic medications such as glycopyrronium has proven effective in reducing saliva. Hyoscine patches can be applied topically behind the ears; however, there have been some reports of adverse reactions that might impact their use going forward.[12] Salivary gland injection of botulinum toxin will reduce salivary production in that gland; however, its effects are transient, lasting three to six months (**Figure 4**). Surgery may be considered in cases where alternative therapies have been unsuccessful.

Dental intervention

As people with dysphagia have increased oral health risk factors, regular visits to the dental team are important. Patients with dysphagia may be anxious about choking or the sensation of being unable to swallow during treatment. Dentists/hygienists and therapists should ask specifically about dysphagia if a patient has a history of a condition associated with dysphagia (**Table 2**), and should look for common signs and symptoms (**Table 3**). Modifications to dental interventions can be made to deliver care safely (**Table 4**).

Conclusion

Dental professionals will increasingly care for patients with dysphagia as the population ages with increased medical comorbidities. Dental teams must be

aware of patients who are more at risk of dysphagia, and educate patients and carers about the links between oral health and aspiration pneumonia. Patients with dysphagia may have anxieties about having treatment and modifications to dental treatment can be made to ensure that it is delivered safely.

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