



Dysphagia after brain injury

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Introduction

Dysphagia is a medical term for difficulty with chewing and swallowing. The condition is common after brain injury, particularly in the early stages after severe injury when it requires management in hospital. In some cases, the condition can persist and will need to be managed in the long-term.

This factsheet explains what dysphagia is, how normal swallowing works, the signs and symptoms of dysphagia, diagnostic techniques, treatment options and some strategies to overcome the difficulties.

The information is not intended to be used in place of professional assistance and the roles of speech and language therapists and dietitians in treatment are also discussed here.

What is dysphagia?

Dysphagia is caused by injury to some areas of the brain and to nerves and muscles of the head, face and neck. There are two main types of dysphagia associated with brain injury:

- **Oral dysphagia** refers to difficulty chewing and controlling food and drink in the mouth. This includes being unable to close the lips, move the tongue and transfer food to the back of the mouth before it's safe to swallow.
- **Pharyngeal dysphagia** refers to difficulty swallowing food and drinks. Swallowing is a complex sequence of muscular actions that are controlled by the nervous system. If this process is interrupted because of a brain injury, food may 'go down the wrong way' and become caught in the throat or enter the airway. This is known as aspiration.



The impact of dysphagia

Dysphagia can cause profound effects on health if it isn't managed correctly, leading to malnutrition and dehydration because of inadequate intake of food and fluids. Some people can also have a tendency to develop chest infections requiring treatment. One of these infections is called aspiration pneumonia, which is caused by food or fluid getting into the lungs and damaging them. This condition requires treatment with antibiotics. Dysphagia can also impact on quality of life by reducing people's enjoyment of meals and social occasions.

The process of chewing and swallowing

Normal chewing and swallowing is a complicated process involving both conscious and subconscious areas of the brain, such as the swallowing centres in the motor cortex and brain stem, the cranial nerves and many other nerves and muscles. Understanding how swallowing occurs can help with understanding how problems develop. Normal chewing and swallowing can be understood as occurring in the following stages:

Stage one: Oral preparatory stage - The anticipation, sight, smell and taste of food stimulates appetite, triggering the production of saliva which helps to prepare for the process of chewing.

Stage two: Oral stage - Lips are sealed and the tongue, cheeks, soft palate and teeth combine to chew the food to make a soft bolus (a small, round mass). The tongue moves the bolus to the back of the mouth to trigger swallowing.

Stage three: Pharyngeal stage - Once the food reaches the area at the top of the throat called the pharynx, muscles automatically contract to allow swallowing to occur. Two tubes called the trachea and oesophagus emerge from the pharynx. The trachea passes air to the lungs and the oesophagus passes food to the stomach. Parts of the throat called the larynx and epiglottis close during swallowing to prevent food going down the trachea to the lungs and upper airways.

Stage four: Oesophageal stage - The valve at the top of the oesophagus opens, then muscles in the oesophagus contract automatically, pushing the food down towards the stomach.

How chewing and swallowing are affected by dysphagia

Problems will occur if anything affects the nerves, muscles or passageways which are involved in these processes. Difficulties at each of the stages will cause different problems and symptoms.



After a brain injury, it is more likely that stages one to three will be affected. This can be a direct result of damage to the main swallowing centres of the brain or to the nerves and muscles controlling swallowing. It can also be influenced by other effects of brain injury. For example, if the senses of taste and smell are impaired then the oral preparatory stage will be affected and the production of saliva will not be stimulated. Stage one can also be affected by severe cognitive issues, for instance, people may not understand what food is or not have an awareness that they are about to eat.

The effects of brain injury can also mean that people sometimes aren't aware of problems such as food going down the wrong way, because their choking reflex doesn't work. This is known as silent aspiration and is one of the reasons that aspiration pneumonia can occur.

Signs and symptoms of dysphagia

The symptoms of dysphagia include the following:

- Difficulty swallowing
- Choking
- Weight loss
- Leaving food at mealtimes
- Eating very slowly
- Bringing food back up
- Wet/gurgly voice
- Dehydration
- Pain when swallowing
- Coughing
- Drooling
- Weak/absent voice
- A feeling of food being stuck in the throat
- Frequent chest infections (including aspiration pneumonia)
- Changes in breathing patterns while eating or drinking
- Pooling - holding food or fluid in the mouth without swallowing

It is very important to visit a GP as soon as possible if any of these symptoms are recognised.

Diagnosing dysphagia

Doctors, speech and language therapists and dietitians will carry out a range of tests in order to determine the type of dysphagia, the nature of the chewing/swallowing difficulties and how they are affecting the person.



These assessments include the following brief examples in the order they tend to be used:

Hydration assessment – The patient's level of hydration is assessed by taking blood or urine samples. This is to ensure that they aren't dehydrated.

Malnutrition screening – Different screening tools for malnutrition may be used, usually involving measuring height and weight to calculate body mass index (BMI), asking about unplanned weight loss and any illnesses, and carrying out blood tests.

Bedside assessment – This initial assessment involves a specialist checking the condition and movement of the lips and tongue and, if appropriate, performing small swallowing trials. The trials are designed to assess how the person swallows foods and fluids of different consistencies.

Videofluoroscopy – During this test the person will be given a small amount of liquid barium to swallow, which is a non-toxic chemical that coats the inside of the oesophagus and shows up on X-rays. The barium solution is often fruit flavoured so it doesn't taste too bad. They will then be asked to swallow a few mouthfuls of food and drink of different consistencies. As the food is swallowed there will be an examination of the mouth/throat on an X-ray machine. The X-ray machine records a short film of the swallowing reflex and provides a lot of information for the speech and language therapist.

Barium swallow test – This variation of videofluoroscopy also involves drinking a small amount of barium solution. X-ray pictures are taken as the liquid is swallowed, which enables the doctor to see the movement of the muscles in the oesophagus. The barium swallow test is less commonly used because it gives still pictures rather than a film.

Fibreoptic endoscopic evaluation of swallowing (FEES) – This involves a long thin, flexible tube called an endoscope that has a light and a camera on the end. It is placed up one nostril and moved into position so that it can view images of the back of the throat, often while the patient performs some swallowing tasks. This allows clinicians to study the function of the throat while swallowing.

Treatment for dysphagia

Dysphagia is assessed and treated by speech and language therapists (SLTs) and dietitians. SLTs treat the feeding and swallowing difficulties using a variety of swallowing therapy techniques, including exercises which help to trigger the swallowing reflex and strengthen muscles used for chewing and swallowing. Dietitians help to overcome the deficiencies caused by a limited diet and can recommend dietary changes and appropriate nutritional supplements.



Feeding tubes are often used to provide nutrition when people are initially recovering their ability to swallow and are sometimes used for people with severe, long-term dysphagia. The tubes are a way of directly introducing food, fluids and medicines without the person needing to swallow.

If a feeding tube is required on a long-term basis, the brain injury survivor, their family or carers can be trained on caring for the tube and administering the feed, fluid and medications. Specialist nurses and dietitians will give additional support with the long-term management of feed and feeding tubes.

There are a number of different types of feeding tubes available. The most common ones are as follows:

- **Nasogastric tube (NG)** – This type of feeding tube is passed down the nose and into the stomach. They are only designed to be used for 4-6 weeks, usually in the initial stages of treatment for swallowing difficulties.
- **Percutaneous Endoscopic Gastrostomy tube (PEG)** – This feeding tube is placed directly through the abdominal wall into the stomach. An endoscope (narrow camera) is passed down the throat into the stomach to help direct the placement. These tubes are held in the stomach by a soft disc and they are designed for long-term use.
- **Radiologically Inserted Gastrostomy tube (RIG)** - This type of tube is placed through the abdominal wall into the stomach using X-ray guidance. The most common types of RIGs are balloon gastrostomy tubes. These tubes have a balloon that holds them in the stomach. These tubes are designed for people who require long-term tube feeding.

You should always discuss treatment options with the relevant professionals. SLTs and dietitians are available in most hospitals and anyone suffering from dysphagia should be referred to them. Community services are also available in many areas and can be obtained from a GP or by self-referral. Many SLTs and dietitians also work in private practice; details of directories that list dietitians in private practice can be found in the Useful organisations section at the end of this factsheet. It is very important to work with registered and regulated professionals who are trained in dealing with dysphagia.

Coping with dysphagia

The following suggestions can help to compensate for swallowing difficulties. Remember, it is important to discuss any dietary modifications or use of equipment with a trained



professional. In particular, anyone who requires non-oral nutrition should not be offered any form of modified diet without specialist advice.

- **Modifying the texture and consistency of food**
Dysphagia can make food of normal consistency and texture difficult to eat. A solution is to modify the texture of foods. Drinks and foods can be thickened using commercial thickeners, which makes thin liquids and pureed foods safer and easier to swallow. The types of difficulties vary between individuals and some people may benefit from other texture modifications.
- **Maintaining an upright position during and after eating**
It can help the swallowing and digestion process to be positioned upright during a meal and for 30 to 60 minutes afterwards. This applies to both foods and fluids taken by mouth, and to PEG feeds.
- **Making food appetising**
For people who have difficulty at the first stage of swallowing (the oral preparation stage), making food look and smell good can make swallowing easier by triggering the production of saliva.
- **Fortifying food and drinks**
Vitamins and nutrients can be added to foods in order to overcome dietary deficiencies. Vitamin supplements can also be taken, but this can be difficult if swallowing tablets is a problem. A dietitian can advise on these issues.
- **Using specialist equipment**
Items of equipment, such as one-way drinking straws, are available which can help with eating and drinking difficulties. An SLT should be consulted on the appropriate equipment to use.
- **Maintaining good oral hygiene and moisture**
It is important to clean the teeth and gums because dysphagia can cause the mouth to become dry and sore, which can lead to infections if oral hygiene is poor. Some medication can add to these difficulties by reducing saliva production. Swabs and petroleum jelly can be used to maintain moisture. Ensure that the method of cleaning takes account of the person's swallowing difficulties. For example, use a swab that is damp rather than soaking wet so they don't have to swallow extra water.
- **Eating with other people**
Another person who understands the difficulties can help the person with dysphagia to eat, or can help if choking occurs.



- **Eating in the right environment**
It can help to eat in a setting the person is comfortable in and with few distractions.
- **Eating while awake and alert**
Co-ordination can be impaired by tiredness, so it is advisable to eat when feeling alert. This also helps with maintaining an upright posture before and after meals.
- **Eating at the right pace**
It is important not to eat too quickly and to chew thoroughly. SLTs can help to decide the right pace for each individual.

Other issues to consider

Eating at restaurants – Many restaurants will prepare meals to meet the needs of people with dysphagia. Requirements should be discussed with the restaurant in advance.

Taking medication – Some forms of medication can be dangerous for people with dysphagia. For example, tablets with outer casings can be difficult to swallow. However, you should never remove the casing or crush tablets. It is extremely important to discuss dysphagia issues with the doctor when medication is prescribed.

Conclusion

The process of chewing and swallowing is complex, involving many different areas of the brain as well as numerous muscles and nerves of the head, face and neck. Injury to any part of this system can lead to dysphagia.

The condition can have serious effects on health and quality of life. If not managed correctly it can lead to malnutrition, dehydration and chest infections. People can also find that their enjoyment of meals and social occasions is reduced, leading to low mood and loss of confidence.

It is very important to diagnose the form of dysphagia swiftly, and to treat it effectively. Speech and language therapists and dietitians are usually the most appropriate professionals to do this. If you or someone you know are affected by any of the problems discussed in this factsheet, it is recommended that you speak to your GP and seek referral to an appropriate specialist as soon as possible.



Useful organisations

Association for Rehabilitation of Communication and Oral Skills

Tel: 01684 576795

Email: admin@arcos.org.uk

Web: www.arcos.org.uk

Association of Speech and Language Therapists in Independent Practice

Tel: 01494 488306

Web: www.helpwithtalking.com

The British Dietetic Association

Tel: 0121 200 8080

Email: info@bda.uk.com

Web: www.bda.uk.com

Freelance Dietitians Specialist Group - part of The Association of UK Dietitians

Email: admin@freelancedietitians.org

Web: www.freelancedietitians.org

Health and Care Professions Council

Tel: 0300 500 6184

Web: www.hcpc-uk.co.uk

Royal College of Speech and Language Therapists

Tel: 020 7378 1200

Email: info@rcslt.org

Web: www.rcslt.org

Stroke Association

Tel: 0303 3033 100

Email: info@stroke.org.uk

Web: www.stroke.org.uk

To discuss any issues raised in this factsheet, or to find details of our local groups and branches, please contact the Headway helpline free of charge on 0808 800 2244 (Monday - Friday, 9am-5pm) or by email at helpline@headway.org.uk.

You can also find more information and contact details of groups and branches on our website at www.headway.org.uk/supporting-you.

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