



Dysphagia after brain injury

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Introduction

Dysphagia is a medical term used to describe difficulties 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 contained within this factsheet is not intended to be used in place of professional assistance. The roles of licensed healthcare professionals in treatment, namely speech and language therapists (SLTs) and dietitians, are discussed throughout.

What is dysphagia?

The term dysphagia is used to refer to difficulties with chewing and swallowing. Some people with dysphagia have problems swallowing certain foods or liquids, while others are unable to swallow at all.

Dysphagia can have profound effects on one's health if it isn't managed correctly. It can lead to poor nutrition and dehydration due to inadequate intake of food and fluids, and some people can also have a tendency to develop chest infections. One of these infections is aspiration pneumonia, which is caused by food or fluid entering the lungs and damaging them. This condition requires treatment with antibiotics.

Dysphagia can also impact on one's quality of life by reducing the enjoyment of meals and social occasions.



Signs and symptoms of dysphagia

Some of the signs and symptoms of dysphagia include:

- 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 (e.g. aspiration pneumonia)
- Changes in breathing patterns while eating or drinking
- Pooling (holding food or fluid in the mouth without swallowing)

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

The normal 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 this process occurs can help with understanding how problems can develop. Normal chewing and swallowing can be understood as occurring in the following stages:

- **Stage 1: 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 2: Oral stage** – The 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 bolus 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 into the airways and lungs.
- **Stage four: Oesophageal stage** – The valve at the top of the oesophagus opens and the surrounding muscles contract automatically, pushing food down towards the stomach. This usually occurs within seconds, depending on the texture and consistency of food, but can sometimes take longer, such as when swallowing a pill.

Dysphagia after brain injury

Following brain injury, it is most likely that stages one to three of the normal chewing and swallowing process will be affected (see section '*The normal chewing and swallowing process*'). These two types of dysphagia are:

- **Oral dysphagia** – This refers to difficulties with 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 is safe to swallow.
- **Pharyngeal dysphagia** – This refers to difficulties with swallowing food and drink. Food may 'go down the wrong way' and become caught in the throat or enter the airway and lungs. This is known as aspiration (and can lead to aspiration pneumonia).

This can be a direct result of damage to the main swallowing centres of the brain or to the nerves, muscles and pathways in the head, face and neck, which are involved in this process. Therefore, depending on the location and severity of the brain injury, the problems and symptoms experienced will vary from person to person.

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, as the production of saliva will not be stimulated. This stage can also be affected by severe cognitive issues, for instance, people may not understand what food is or have an awareness that they are about to eat.

The effects of brain injury can also mean that people might be unaware 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 why aspiration pneumonia can occur.



Diagnosing dysphagia

Doctors, SLTs and dietitians with expertise in dysphagia will often carry out a range of assessments in order to diagnose the condition. The evaluation will likely include a complete medical history, physical examination, followed by a variety of tests to determine the type of dysphagia and the nature of the patients swallowing difficulties.

The tests most frequently performed (in the order they tend to be used) include:

- **Hydration assessment** – The patient's level of hydration is assessed by taking blood or urine samples. This is to ensure the patient is not dehydrated.
- **Malnutrition screening** – Various screening tools may be used. However, these usually involve measuring the patient's height and weight to calculate body mass index (BMI), asking about unplanned weight loss and any illnesses, and carrying out blood tests.
- **Bedside swallow test** – A specialist will look at the condition of the patient's teeth, lips, jaw, tongue, cheeks and soft palate. The patient may need to move these areas in certain ways or make certain sounds. If appropriate, the patient will be tested on their ability to swallow a series of substances. They could range from water, thicker liquids, pureed foods, soft foods and regular foods.
- **Videofluoroscopy** – This test takes place in the X-ray department. The patient 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 solution is often fruit flavoured so it doesn't taste too bad. The patient will then be asked to swallow different types of food and drink of different consistencies. As various substances are swallowed, there will be an examination of the mouth and throat on an X-ray machine. The machine provides a moving image of the patients swallowing in real time, allowing any problems to be studied in detail.

There are usually few side effects to this procedure, although liquid barium may cause trouble with bowel movements.

- **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 specialist to see the movement of the muscles in the oesophagus. The test is less commonly used because it gives still pictures rather than a film.



- **Fibreoptic endoscopic evaluation of swallowing (FEES)** – An endoscope (a long, thin, flexible tube with a light and a camera on the end) may be inserted into the patient's nostril. Once in position, the specialist can view images of the back of the throat and upper airways to identify any blockages or problem areas, often while the patient performs some swallowing tasks.

The patient may be given a local anaesthetic spray into the nose. However, since the endoscope doesn't go as far as the throat, it will not cause retching.

If someone is experiencing chewing and swallowing difficulties at home, GPs will be able to carry out an initial assessment and if appropriate, will provide onward referral for specialist treatment, for example, to a SLT.

Treatment for dysphagia

Following a diagnostic swallowing evaluation, an individualised treatment programme will be recommended to the patient. Treatments will vary depending on the type and severity of the patient's problems. However, for all patients the main treatment goals are:

1. To improve swallowing functions,
2. To reduce the risk of aspiration (and any infections), and
3. To improve the nutritional status of the affected individual.

The treatments most often used include (but are not limited to):

- **Therapy** – A SLT can provide swallowing exercises and strategies to help strengthen the muscles or stimulate the nerves in the mouth and neck which are used for chewing and swallowing.
- **Diet modification** – Dietitians can recommend various dietary changes, which may include thickening liquids, eating purees or taking nutritional supplements. Taking supplements may be difficult if swallowing tablets is a problem but a dietitian will be able to provide advice on these issues.
- **Feeding tubes** – In the early stages of care or for those with severe, long-term dysphagia, feeding tubes are often placed to support patients who cannot maintain adequate nutrition (food, fluids and medicines) through oral intake.



There are different types of feeding tubes available. The most common ones are:

- **Nasogastric (NG) tube** – The NG tube is passed down the nose and down into the stomach. It is designed for short-term use (four to six weeks), usually in the initial stages of treatment for swallowing difficulties.
- **Percutaneous Endoscopic Gastrostomy (PEG) tube** – PEG is a surgical procedure where a 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. It is designed for long-term use and is held in the stomach by a soft disc.
- **Radiologically Inserted Gastrostomy (RIG) tube** – RIG is a surgical procedure where a tube is placed through the abdominal wall into the stomach using X-ray guidance. The most common type of RIGs are balloon gastrostomy tubes, which are held in the stomach by a balloon. They are also designed for long-term use.

If a feeding tube is required on a long-term basis, the brain injury survivor, their family and carers can be trained on caring for the tube and administering the food, fluid and medication, either at hospital or in the community. It is important to note that feeding tubes can be removed should the ability to maintain adequate oral intake return.

Treatment options should always be discussed with registered professionals who are trained in dealing with dysphagia. SLTs and dieticians are available in most hospitals, as well as in private practices. Details of directories that list those in private practice can be found in the '*Useful organisations*' section of this factsheet. Community services are also available in many areas and can be obtained from a GP or by self-referral.

Strategies to cope with dysphagia

In addition to various treatments and therapies, the following strategies can help to compensate for swallowing difficulties.

It is important to discuss the strategies with a trained professional before implementing them into one's routine. This is particularly important for anyone who requires non-oral nutrition.

- **Maintain an upright position during and after eating** – It can help with 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 orally, as well as to PEG feeds.



- **Make food more appetising** – For people who have difficulty with the first stage of swallowing (see section '*The normal process of chewing and swallowing*'), making food look and smell good can make swallowing easier by triggering the production of saliva.
- **Use specialist equipment** – Items of equipment, such as one-way drinking straws and weighted cups, are available which can help with eating and drinking difficulties.

Certain types of equipment will not be suitable for everyone and these should only be recommended following a swallowing evaluation with an appropriate professional (see section '*Diagnosing dysphagia*').

- **Maintain good oral hygiene** – Those with dysphagia should keep the mouth clean and free of bacteria, especially before and after mealtimes. This is to reduce the risk of aspirating harmful bacteria and any fluid which may be pooling in the patient's mouth. It is also important to remove any debris from the mouth after meals that could pose a choking risk and the development of plaque.
- **Eat with other people** – Eating with someone who understands the patient's swallowing difficulties can help the person to eat, or can help if choking occurs.
- **Eat in the right environment** – It can help to eat in a setting the person is comfortable in and with few distractions. For example, turning off the TV can help them concentrate on the task at hand.
- **Eat 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.
- **Eat 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. It may also be helpful to request to sit in a private area of the restaurant if someone feels uncomfortable eating in public.
- **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, the outer casing should never be removed and the tablets should not be crushed. 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.

Dysphagia can have serious effects on health and quality of life. If not managed correctly, it can lead to deterioration in health, as well as in social participation, leading to low mood and loss of confidence. It is therefore important to diagnose the form of dysphagia swiftly, and to treat it effectively. SLTs 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: 0203 002 3704
Email: office@helpwithtalking.com
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.org
- **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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