

Treatment Options for Dysphagia

Nicole Chiudina

Introduction

Dysphagia is a disorder in which swallowing is difficult due to food/liquid entering the airway resulting in choking, coughing, dehydration, malnutrition, weight loss, pulmonary problems and sometimes death. Dysphagia can occur due to stroke, head and neck cancer, traumatic brain injury, central nervous system infection and degenerative diseases in both young children and in adults.

There are many different treatments that have been proven effective to help one recover from dysphagia including postural techniques, diet modifications, and swallow maneuvers. Deciding on the best treatment option for a specific client is dependent upon the Speech-Language Pathologist's assessment of the client.

A Speech-Language Pathologist's role in dysphagia includes performing clinical swallowing/feeding evaluations, identifying normal vs. abnormal swallows, developing treatment plans to improve dysphagia, educating the client and family on the disorder, etc. (Palmer & Drennan, 2000).

Physiology of Swallowing

There are four phases of swallowing – the oral preparatory phase, the oral phase, the pharyngeal phase, and the esophageal phase. The phase and structures experiencing dysfunction contribute to the decision-making process with regard to what treatment will be used.

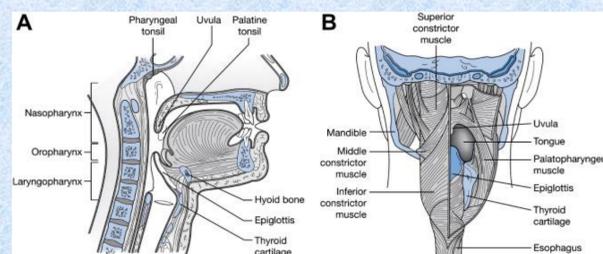
The oral preparatory phase is where food is chewed and the bolus is prepared. The lips create a seal that will prohibit food and/or liquid from escaping the mouth. The tongue tip and tongue blade rise, pushing the bolus to the back of the oral cavity where it is propelled off the tongue. This is where the oral phase begins. During the oral phase the bolus continues to slide through the oral cavity until it reaches the upper pharynx. The back of the tongue makes contact with the soft palate to protect the bolus from entering the nasal cavity. Once the nasal cavity is closed off and the bolus reaches the upper pharynx, the hyoid bone and larynx move forward and up causing the epiglottis to lower over the airway. The pharyngeal phase begins while the epiglottis is lowering to protect the airway; the vocal folds adduct to aid as protection to the airway as well. The pharyngeal muscles contract creating a wave-like movement to propel the bolus downward into the esophagus. Once the bolus reaches the upper esophageal sphincter, the esophageal phase begins. The upper esophageal sphincter contracts and relaxes allowing the bolus to move through the esophagus into the stomach for digestion (Sonies, 2010, p. 443-449).

Prior to Treatment

When a client is having difficulty moving food and/or liquid from their mouth to their stomach, there are many signs and symptoms that a speech-language pathologist will detect during a screening and/or assessment to determine if dysphagia is present. Aspiration is the most common symptom of dysphagia. Aspiration is when food/liquid passes through the vocal folds into the airway; it can include coughing, choking, and gagging. If a person does not realize food/liquid is present in their airway and makes no effort to remove it, it is called silent aspiration. Other signs and symptoms of dysphagia include wet voice after swallowing, extra time and effort to complete a chew or swallow, leakage of food/liquid from the mouth, pocketing of food, pneumonia, chest congestion after eating, weight loss, and dehydration (Palmer & Drennan, 2000).

Treatment of dysphagia requires specific goals to maximize the quality of life of the client. The goals of therapy includes returning the client to the least restricted diet possible and returning the client to a normal swallow by using direct and indirect swallow therapy techniques.

Figure 1: The anatomical structures used during a swallow



Note: Matsuo, K. & Palmer, J.B. (2008). Anatomy and Physiology of Feeding and Swallowing – Normal and Abnormal [diagram]. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2597750/>

Postural Techniques

The physiology of the swallow does not change when using postural techniques, but the chances of aspiration are highly reduced. Postural techniques can be used on clients of all cognitive levels to control the flow of foods and liquids. They require little muscular effort and do not cause fatigue. Postural techniques may be combined with other techniques to improve swallowing safety in the client (Sonies, 2010, p. 463-464).

The chin-down posture requires the client to tuck their chin to their neck before swallowing. A client that has pharyngeal swallow delay benefits from this posture change due to the position in the head. The head being inverted opens up the space for the bolus to pass through while also inverting the epiglottis into a better protective position over the airway (Baylow, Goldfarb, Taveira, & Steinberg, 2009). The head rotation posture requires the client to turn their head toward their weaker side like they are trying to look over their shoulder when swallowing. This forces the bolus to travel along the stronger side by twisting the pharynx. It also applies pressure to the vocal folds to increase adduction and pulls the larynx away from the pharyngeal wall creating a larger space for the bolus to travel down (Palmer & Drennan, 2000).

Swallow Maneuvers

In order for swallow maneuvers to be successful, a client must be able to follow directions and practice the maneuvers on their own. If a client has cognitive difficulties or does not practice on their own, these maneuvers may not be as beneficial to them as they could be.

The Shaker exercise has been proven to be very effective in clients who have upper esophageal sphincter (UES) dysfunction. It requires the client to lay in the supine position and perform head lifts holding it for 60 seconds and then resting for 60 seconds. The client must repeat this cycle three times. The client must also see their toes each time they do a head lift while keeping their shoulders flat on the surface they are on. After that, the client remains in the supine position and brings their chin to their chest at a steady pace for thirty repetitions. The Shaker exercise is performed three times a day for six weeks (Logemann, et al., 2009). The Shaker exercise has been proven by many studies to improve UES opening, larynx elevation, suprahyoid muscle groups, and infrahyoid muscle groups. All of these muscles contribute to the swallowing process and are essential to strengthen in order to return a client to a normal swallow (Mepani, et al., 2009). The Shaker exercise has been shown to initially fatigue the muscles the client is exercising but will lead to fatigue resistance on muscles that need to be strengthened for swallowing as the Shaker exercise continues to be utilized throughout therapy (White, Easterling, Roberts, Wertsch, & Shaker, 2008). The Mendelsohn maneuver is intended to clear residue from the pharynx and results in better laryngeal elevation and better pharyngeal contraction. This maneuver requires a client to place their fingers over their larynx and swallow forcefully, holding their larynx at the highest point for about five seconds after the swallow has occurred. This maneuver is often seen to be combined with the use of surface electromyographic feedback (sEMG). In a study conducted by Bogaardt, Grolman and Fokkens (2009) clients improved their functional oral intake when combining sEMG with the Mendelsohn maneuver from an average of 2.6 to 5.6 on a scale of 1-7 using the functional oral intake scale. Significant improvements in functional oral intake were found.

Conclusion

These treatment options for dysphagia benefit a client most when dysfunction is seen in the pharyngeal phase. This is the most common phase effected by dysphagia in elderly clients. Taking steps to treat dysphagia is vital because of the importance swallowing has for one's quality of life. Research is constantly being conducted on this newer area of expertise a speech-language pathologist must possess. For example, biofeedback and stimulation techniques were at first thought to improve hyoid elevation but newer studies are claiming the treatment to have little effect on swallowing improvement (Humbert et al., 2006). More research in the treatment of dysphagia is needed to better understand and improve treatment options for clients with dysphagia.

Dietary Modification

Some clients with dysphagia struggle to eat and drink foods and liquids of normal consistency. A change in the consistency of their foods while undergoing therapy treatment can ensure both safe swallowing and be a great measure of improvement for patients. Below (table 1) is a chart displaying the National Dysphagia Diet (NDD) published in 2002 by the American Dietetic Association. The NDD was developed through consensus by a panel of dietitians and speech-language pathologists (Sonies, 2010, p. 466). Liquids also have different consistencies that make it easier and safer for a client with dysphagia to swallow. These include thin liquid which is any type of liquid, nectar which is the consistency of tomato juice, honey which is the consistency of honey/syrup, and finally spoon-thick which is the consistency of pudding. (Wilkinson et al., 2002).

Table 1: National Dysphagia Diet

National Dysphagia Diet Level	Consistency of Diet Level
Level 1: Dysphagia Pureed (Most Restrictive)	No breads, chunky foods, seeds, pulp, dry cereals, coarse meats and whole fruits. Requires little to no chewing.
Level 2: Dysphagia Mechanically Altered	Semi-solid foods are allowed. Meats are to be ground up and served with gravy/sauce. Requires some chewing (easily chewed).
Level 3: Dysphagia Advanced Regular	Regular consistency foods are allowed except for hard, dry, sticky or crunchy foods. Meats are served tender. Requires more chewing ability than previous levels.
Level 4: Regular (Least Restrictive)	No restrictions. Regular diet is allowed.

References

- Baylow, H., Goldfarb, R., Taveira, C., & Steinberg, R. (2009). Accuracy of clinical judgment of the chin-down posture for dysphagia during the clinical/bedside assessments as corroborated by videofluoroscopy in adults with acute stroke. *Dysphagia*, 24(4), 423-433. doi:10.1007/s00455-009-9220-5
- Humbert, I., Poletto, C., Saxon, K., Kearney, P., Crujido, L., Wright-Harp, W., ... Ludlow, C. (2006). Effect of surface electrical stimulation on laryngeal movement in normal individuals at rest and during swallowing. *Journal of Applied Physiology*, 101(6), 1657-1663. doi:10.1152/jappphysiol.00348.2006
- Logemann, J. A., Rademaker, A., Pauloski, B. R., Kelly, A., Stangl-McBreen, C., Antioja, J., ... Shaker, R. (2009). A randomized study comparing the shaker exercise with traditional therapy: A preliminary study. *Dysphagia*, 24(4), 403-411. doi:10.1007/s00455-009-9217-0
- Mepani, R., Antonik, S., Massey, B., Kern, M., Logemann, J., Pauloski, B., ... Shaker, R. (2009). Augmentation of deglutitive thyrohyoid muscle shortening by the shaker exercise. *Dysphagia*, 24(1), 26-31. doi:10.1007/s00455-008-9167-y
- Palmer, J. B., Drennan, J. C., & Baba, M. (2000). Evaluation and treatment of swallowing impairments. *American Family Physician*, 61(8), 2453-2462. Retrieved from <http://search.proquest.com/docview/85237476?accountid=13215>
- Sonies, B. C. (2010). Swallowing process and disorders. In N. B. Anderson & G. H. Shames (Eds.), *Human communication disorders an introduction* (pp.441-468). Saddle River, NJ: Pearson Education Inc.
- White, K. T., Easterling, C., Roberts, N., Wertsch, J., & Shaker, R. (2008). Fatigue analysis before and after shaker exercise: Physiologic tool for exercise design. *Dysphagia*, 23(4), 385-391. doi:10.1007/s00455-008-9155-2
- Wilkinson, T. J., Thomas, K., MacGregor, S., Tillard, G., Wyles, C., & Sainsbury, R. (2002). Tolerance of early diet textures as indicators of recovery from dysphagia after stroke. *Dysphagia*, 17(3), 227-232. doi:10.1007/s00455-002-0060-9