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# Dysphagia: an overlooked symptom and the role of a speech-language pathologist

*Disfagija: Previđeni simptom i uloga govorno-jezičnog patologa*

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**Summary**

Dysphagia or swallowing difficulty occurs mostly after structural or neurological disorders and/or disease. Difficulties with oral intake of liquids and solids leads to malnutrition, dehydration and aspiration pneumonia, which in some unrecognized and untreated cases can lead to a fatal outcome. Understanding dysphagia brings us closer to a quicker identification, consequently enables us to prevent further complications and brings us closer to the right diagnostic and treatment procedures. A speech-language pathologist works closely with other professionals during the process of prevention, diagnostics and treatment of dysphagia.

**Key words:** dysphagia, diagnostics, treatment, terminology, scope of practice, deglutition disorder

**Sažetak**

Disfagija ili poremećaj gutanja, javlja se kao posljedica strukturalnih promjena u orofaringolaringealnom području ili kao posljedica neuroloških bolesti. Teškoće uzimanja hrane i pića oralnim putem dovode do malnutricije, kronične dehidracije i, često, aspiracijske pneumonije. Dobro razumijevanje disfagije omogućava nam točniju i pravovremenu dijagnozu, te planiranje terapijskih postupaka, čime ćemo spriječiti nastanak mogućih komplikacija i negativnih posljedica na zdravlje i život osobe s poremećajem gutanja. Logoped tijekom postupka dijagnostike i terapije disfagije surađuje s drugim stručnjacima koji su uključeni u proces.

**Ključne riječi:** disfagija, dijagnostika, obrada, terminologija, cilj prakse, degluticijski poremećaj

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## Introduction

Feeding and swallowing are two processes that cannot be separated. Feeding is the process of food and liquid intake into the oral cavity, and it is completely voluntary,[1] excluding cases of feeding via nasogastric tube (NG) or percutaneous endoscopic gastrostomy (PEG). Furthermore, these processes are influenced by sensory information and social factors. Hunger and thirst are physiological needs for food and liquids, and, therefore, they enable feeding and swallowing. Individuals think of swallowing only when it becomes a difficulty. Swallowing or deglutition is a complex function which transfers a bolus from the oral cavity into the stomach.[2] Feeding disorders and swallowing disorders are two different entities in the professional approach, and even treated by different professions. The swallowing function exists even before birth, and the swallowing reflex begins to develop in the twelfth week of intrauterine development.[3] Fetal lips movements

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and swallowing can clearly be seen on magnetic resonance imaging in the 34th week of gestation as Prayer et al.[3] show. These actions represent the basis for further development of both motor execution of swallowing, as well as speech. The act of swallowing, as well as respiration, is constantly present during wakefulness and sleep, and it can be both voluntary and involuntary. When a person is physiologically stable, swallowing occurs five to six times per minute, and less often when a person is voluntarily controlling swallowing or when emotional reactivity is increased.[4] The main anatomical and functional structures involved in swallowing are the oral cavity, pharynx, and esophagus. The swallowing reflex is primarily triggered in the brain stem via cranial nerves. The cortical and subcortical areas of the cerebrum and the cerebellum have a crucial role before and after the reflex has been triggered.[1] The basic role of swallowing is the transmission of the content from the oral cavity into the esophagus, in order to continue digestion, but also in order to evacuate the oral cavity and prevent the content from entering the respiratory system. Considering that the oropharynx serves dual functions, respiration and swallowing, the neuromuscular system and timely reflexes must be perfectly coordinated in order to separate the respiratory and digestive systems.[4] The physiology of normal swallowing adjusts to the person's age and condition, texture, volume, viscosity, taste, smell and temperature of ingested content.[5,6] Normal swallowing requires precise coordination of the anatomical and physiological structures of the head and neck, which also depends on the neuromuscular activity.[7] Any deviations in the muscular function and/or structural deviations, i.e. any impairment of the integrity of the swallowing physiology is manifested as dysphagia.[8]

## Feeding and swallowing

In order to understand feeding and swallowing impairments, it is necessary to understand the physiology of normal swallowing. Swallowing is divided into three or four stages, depending on the author. The basic phases of swallowing are oral, pharyngeal, and esophageal. The oral phase can be subdivided into oral preparatory, in which the bolus is prepared and formed, and into oral transitory, in which the bolus is further directed towards the pharynx.[5,2] In the oral preparatory phase, food is ingested into the oral cavity, it is chopped by chewing or mastication, mixed with saliva, and formed into a bolus that is, by its size, consistency, and quality, adapted to the further swallowing course. The individual differences in the swallowing function and structure of the ingested content affect the duration of the oral preparatory phase, and individual variations in the duration of mastication are not included in the total duration of the oral transitory phase.[2,9] Even the dental status plays a crucial and frequently forgotten role, the number of teeth and need for a prosthesis are only two of the many dental factors that could have a negative influence on the oral phase.[10] The oral transitory phase begins when the shaped bolus is placed in the middle of the tongue and the lifting of the tongue begins to transfer the bolus across the base of the tongue into the oropharynx.[2] The pharyngeal phase begins when the bolus stimulates the faucial arches,[11] that is when it activates the reflex, and from that point on, swallowing is involuntary. Regarding locus where reflex is triggered, individual physiological variations are possible when swallowing saliva bolus, including the base of the tongue, valleculae and pyriform sinuses.[5,12] In the pharyngeal phase, contraction and elevation of the velum occur, the velopharyngeal port is closed, vocal folds and arytenoids are adducted, the epiglottis is inverted over the laryngeal vestibule The hyolaryngeal complex is displaced superiorly and anteriorly, which leads to the shortening of the pharynx. The aforementioned actions lead to the opening of the upper esophageal sphincter, that is, relaxation of the cricopharyngeal muscle. With the help of the pharyngeal contractions and negative pressure in the esophagus, a bolus progresses towards the esophagus, marking the esophageal phase of swallowing.[11] The coordination of the structures in the pharyngeal phase ensures that two functions are fulfilled: a) satisfying the physiological needs for food and liquids in which b) the respiratory system is protected.

## Defining dysphagia

According to the International Classification of Diseases and Related Health Problems (ICD-10),[13] dysphagia is categorized as follows: symptoms, signs and abnormal clinical and laboratory findings, not elsewhere specified, in category Symptoms and signs involving the digestive system and abdomen, under code R13. Although in recent years, in Croatia, dysphagia has been named and placed in the category of eating disorders, it is extremely important to recognize the difference between disorders and difficulties. Eating disorders are, according to the ICD-10, classified into the category of mental and behavioral disorders, under code F50 - feeding disorders, such as anorexia nervosa (F50.0), bulimia (F50.1), pica in adults (F50.8).[13] As such, these disorders are in the domain of psychiatry and psychology, which further emphasizes the importance

of the terminology delineation of "eating/feeding disorders" and "feeding difficulties" for the clear identification of the scope of practice. Whilst, as mentioned, eating difficulties or dysphagia are consequential to different etiologies, from neurological to otorhinolaryngological, and their root initially does not lie under the psychiatric scope but can lead to the need of psychiatric intervention.

Therefore, the diagnosis and treatment of eating disorders, from early age, e.g. infantile anorexia, and later through life, e.g. selective eating disorder, and posttraumatic eating disorder are in the psychiatrist's and psychologist's scope of practice. On the other hand, prevention, diagnosis, rehabilitation and counseling of dysphagia as a symptom of structural and neurological damage are within the speech-language of the pathologist's (SLP's) scope of practice.

The complexity of dysphagia requires specialized SLP working hands-on in collaboration with a broad variety of other professionals, e.g. neurologist, gastroenterologist, otorhinolaryngologist, radiologist, medical nurse/technician, nutritionist, dietitian, physical therapist, occupational therapist, dentist,....

In the Croatian language, we have to accentuate the difference and name dysphagia as a feeding difficulty and swallowing disorder. Decades ago, in the original translation of ICD to Croatian, when the medical community was not fully aware of the vast problem dysphagia presented and language translations and adaptations were not as sensitive as today, eating disorders were translated into feeding disorders, so the same terminology cannot be used to refer to two different disorders. To avoid confusion and to differentiate diagnosis and the professional areas of expertise, when addressing dysphagia in Croatia we must use feeding difficulties and swallowing disorders.

As aforementioned, dysphagia is the difficulty with feeding and disorder of swallowing, which is the difficulty with the intake of food and liquids in a safe and effective manner, in one or all phases of swallowing. When present, dysphagia implies further health threat, longer hospitalization if aspiration pneumonia occurs, and the risk also is for the suboptimal nutritional status.[14] The most common cause of dysphagia is stroke. However, other neuromuscular diseases (e.g. amyotrophic lateral sclerosis, myasthenia gravis) and neurodevelopmental disorders (e.g. cerebral palsy), demyelinating diseases (e.g. multiple sclerosis), extrapyramidal diseases (e.g. Parkinson's disease, progressive supranuclear palsy, dystonia), craniocerebral trauma, dementia (e.g. Alzheimer's disease, frontotemporal dementia), respiratory diseases (e.g. chronic obstructive pulmonary disease), and autoimmune diseases (e.g. Sjögren's syndrome, scleroderma).[6,14,15] Structural disorders of the upper digestive system, caused by surgery, injuries, and tumors can also lead to deficits in the intake of food and liquids.[16] Feeding difficulties and swallowing disorders are very frequent as a result of surgery for cancer to the head and neck region, while radiation therapy has an unpredictable outcome in the area of feeding and swallowing.[17] The probably of not well-recognized causes of feeding difficulties and swallowing disorders are respiratory disease, particularly chronic obstructive pulmonary disease,[18] changes due to radiation therapy,[19] postextubation[20] post tracheostomy and cardiac surgery.[21] Furthermore, medications can also affect feeding and swallowing. For example, xerostomia, or lack of saliva in the mouth, can make forming and manipulation of the bolus difficult. It can be caused by anticholinergics, antiarrhythmics, antiemetics, antihypertensives, anti-histamines and decongestants, opiates, antipsychotics, and antidepressants.[8] There are also types of drugs that lower the level of consciousness and cause confusion, some of which are antiemetics, antiepileptics (carbamazepine, phenytoin, gabapentin, valproate), benzodiazepines (clonazepam, diazepam, alprazolam), narcotics (morphine, alfentanil, codeine) etc.[22] Based on the above, it is important to consider that dysphagia as a symptom manifests as a result of many etiological causes.

Particular attention should be paid to the possible aspiration or passage of the bolus under or through the glottis, i.e. to the respiratory system, which can lead to aspiration pneumonia.

Next to aspiration, other dysphagia symptoms are: delayed swallow reflex, multiple swallow, premature bolus spill, retention, bolus leakage, penetration, regurgitation. Signs of dysphagia and aspiration can be indirect or direct, which is why the diagnosis must be systematic and multidisciplinary. Indirect symptoms of dysphagia/aspiration are: inexplicable weight loss, frequent airway infections, globus sensation, food residue after the swallow. Direct symptoms are: cough (during and after the swallow), “wet” voice after swallowing, inexplicable food avoiding, avoiding of certain food consistency. When assessing and stating the presence of dysphagia, all the aforementioned symptoms are taken into consideration because aspiration can often be silent, i.e. without clear signs of its presence.[2] Absolute exclusion of aspiration is possible only by radiological and endoscopic examinations.[23] Those are videofluoroscopy and fiberoptic endoscopic evaluation of swallowing or FEES that are most commonly applied in clinical practice. By the time dysphagia is completely excluded by instrumental diagnostic methods, mere suspicion

for aspiration serves as an indicator of a possible threat to the patient's life and health status, although there are more independent factors that can lead to aspiration pneumonia.

**Possible consequences of dysphagia**

The main consequences of dysphagia that are of the highest professional and ethical interest, are: aspiration pneumonia, dehydration, and malnutrition.[24,16,2] The individual's aggravated health status may be jeopardized by joining comorbidities such as aspiration pneumonia[16] or reduced and inadequate intake of food and liquids, which leads to neglecting physiological needs. Approximately 16% of people with stroke have nutritional deficits at admission, and this percentage increases to 22 to 26% at discharge.[25] The presence of dysphagia endangers the health status of the patient, ultimately his life, to which many studies suggest a high correlation of dysphagia and respiratory complications,[9] thus increasing the mortality rate due to aspiration pneumonia.[16,26,27] Coupling with comorbidity, dysphagia increases the cost of treatment and prolongs the length of hospital stay.[26] Apart from the medical consequences of dysphagia, psychosocial consequences may also occur. In many cultures, social life takes place around the table and the food, and food is associated with pleasure, and if an individual has dysphagia, that negatively affects the person's quality of life,[21,28] especially if postural techniques are in use, or, for example, pharyngeal expectoration to remove pharyngeal residues. Diagnosis, prevention, and treatment of dysphagia is within SLP's scope of practice, because he is formally educated for it. Also, he collaborates with other professionals such as physical therapists, nurses, neurologists, nutritionists, otorhinolaryngologist (endoscopic evaluation of swallowing), radiologists (videofluoroscopy), pharmacists, gastroenterologists (esophageal manometry, pH-meter), and doctors of dental medicine, in order to achieve a better outcome of treatment and recovery by multidisciplinary action.

**The role of SLP in a process of diagnostics**

The SLPs work in clinical settings implies assessment, that is, observation, testing, and instrumental assessment. Instrumental radiological diagnosing is performed by a physician specializing in radiology, and fiber-endoscopic diagnosing by a specialist in otorhinolaryngology. After a SLP's assessment is finished, decisions are made and therapeutic goals are set. Early intervention and systematic multidisciplinary treatment are a key in proper and preventive treatment of possible complications, having in mind the real outcomes to which dysphagia can lead.

In the Republic of Croatia, there are laws that direct health professionals in their work. More precisely, "The Law on Quality of Health Care and Social Welfare" (NN 124/11) and "The Law on Health Care" (The Law on Quality of Health Care and Social Welfare, 124/11)[29] direct health services. Therefore, the work of SLPs and other professionals is governed by ethical, professional and legal regulations. The SLP's scope of practice is clearly defined. The SLP works in a team and collaborates with physicians and other professionals in order to ensure the principles set forth in The Law on Health Quality, such as health care quality, health care standard, safety of health procedures, and the like. The Law on Health Care, more specifically Articles 2 and 3, provide access to the system of measures and procedures, including the availability of rehabilitation. The same articles oblige professionals to act carefully regarding the patient's health and security.

**The role of SLP in a process of rehabilitation**

Upon finishing the assessment of nature and severity of dysphagia, the SLP can act in two ways. The first one includes giving recommendations for no per oral intake, meaning that feeding and swallowing are not safe and effective, and the second one includes giving recommendations for modified and/or altered way of feeding and swallowing in order to protect the patient's health and enable him to ingest food and liquids safely.[30,31,2,17] The SLP is implementing the following adaptations and strategies: a) recommendations for postural changes, in collaboration with a physical therapist and nurse (e.g. anteflexion and head rotation on the „weaker side"), b) techniques for improving the patient's sensory function (thermostimulation, olfactory and gustatory stimulation), c) maneuvers and swallowing techniques (e.g. the supraglotic swallow), d) exercises for improving motor control and performance (e.g. Shaker's exercises), e) changing bolus consistency (e.g. thickening liquids), f) introduction of alternative food types.[31]

In the past 20 years, some authors[32,33] state that there is enough work done to make us reconsider efficacy of some therapy approaches in the SLPs treatment process (e.g. thermostimulation).

Therefore, in the process of application stated adaptations and methods it is important to consider applicability and scientific basis for some of those methods. Treatment plan according to Bartolome's criteria[2] implies: recovery strategies, compensatory

strategies, adaptation strategies and other strategies (e.g. pharmacotherapy). Consequently, it is clear that the approach and procedures for recognizing and treating dysphagia requires systematic, clearly defined and elaborated treatment directed towards a more beneficial rehabilitative outcome. The available options are varied, they only need to be applied in a proper and professional manner under the control of a professionally educated specialist.

## Conclusion

Dysphagia or difficulty with feeding and disorder of swallowing is a symptom that occurs due to many etiologic causes. There are multiple consequences of dysphagia, and each of them can negatively affect an individual's health and quality of life. Early diagnosis of dysphagia, immediately upon emergence, allows early intervention and timely treatment to prevent the development of comorbidities. The SLP is an appropriately educated expert, who, in his scope of practice, has the knowledge and skills for an appropriate and proper treatment in the diagnosis and treatment of dysphagia. The SLP's activity takes place in the professional environment of other professions with whom he is systematically and professionally cooperating, as a part of the multidisciplinary team. Dysphagia is a symptom that can potentially lead to an unfavorable outcome, such as death. Therefore, the work of an expert is guided by personal conscience, ethics and legal acts.

Furthermore, the SLPs work with dysphagia patients has to take place under the professional conditions of health care institutions that provide immediate access to a medical intervention, i.e. a physician or a nurse, because the SLPs in Croatia are not trained in performing procedures that have to be available while performing dysphagia diagnostic and treatment procedures (e.g. suctioning, cardiopulmonary resuscitation, etc.). The primary goal is to maintain the patient’s well-being and safety according to the laws, professional and ethical standpoints.

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