

# THE EVALUATION OF DISPHAGIC SYNDROME, IN PATIENTS WITH PREVIOUSLY ACQUIRED BRAIN DAMAGES

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## SUMMARY

**The evaluation of disphagic syndrome, in patients with previously acquired brain damages.**

Recently clinical studies have proved without doubts that in patients affect by neurological diseases, like stroke, parkinsonism syndromes and others neurodegenerative pathologies, there is a very elevated incidence of swallowing disorders even severe. The disease can show up in a full blown way, with clinical evident signs like suffocation or frequent and sudden cough, at the moment in which the patient tries to feed or to drink; or it can appear in a less clear way, through an unable protection of the low airway and with possible pathologies ab ingestis. The first signals are represented by frequent resulting of cough reflex at nutrition or hydratation. Important is to assess the validity of this reflection, monitoring the amount of food reflux in the mouth after swallowing, which then could be perceived like foreign body and be aspired.

The main diagnostic tests are the pHmetry in 24h, ultrasound, esophagography, videofluoroscopy, endoscopic examination and scintigraphy. Through the FEES (Fiberoptic Endoscopic Evaluation of Swallowing) we can then identify the time of swallowing deficit.

Early diagnosis of Dysphagia Syndrome is important to improve living condition and survival of patients.

**Key words:** disphagic syndrome, neurological diseases, swallowing disorders

## RIASSUNTO

**La valutazione stomatologica della sindrome disfagica, nel paziente con pregresse cerebrolesioni acquisite.**

Studi clinici recentemente effettuati hanno dimostrato senza alcun dubbio che nei pazienti affetti da patologie neurologiche come ictus, parkinsonismi e altre patologie neurodegenerative, vi è un'incidenza molto elevata di disturbi della deglutizione anche molto gravi. La patologia si può manifestare in maniera conclamata, con segni clinici evidenti come soffocamento o frequenti e repentini colpi di tosse, nel momento in cui il paziente cerca di alimentarsi o di bere; oppure può esordire in maniera meno chiara, più subdola e rischiosa per la vita del paziente, attraverso un'inefficace protezione delle basse vie aeree e con possibili patologie ab ingestis. I primi segnali sono infatti rappresentati dal frequente scaturirsi del riflesso della tosse in corrispondenza dell'alimentazione o dell'idratazione. Durante la valutazione si andrà ad analizzare prima di tutto le abitudini alimentari dell'ammalato; poi si procederà ad un'attenta analisi dei riflessi deglutitivi, se sono presenti e se sono ritardati. Le principali indagini diagnostiche consistono nella pHmetria in 24h, esame ecografico, manometria, elettromiografia, esofagogramma, videofluoroscopia, esame endoscopico e scintigrafia. Attraverso la FEES (Fiberoptic Endoscopic Evaluation of Swallowing) si può poi identificare il momento deficitario dell'atto deglutitorio. La diagnosi precoce della Sindrome Disfagica è fondamentale per un miglioramento delle condizioni di vita e di sopravvivenza dei pazienti.

**Parole chiave:** sindrome disfagica, patologie neurologiche, disturbi della deglutizione

## Introduction

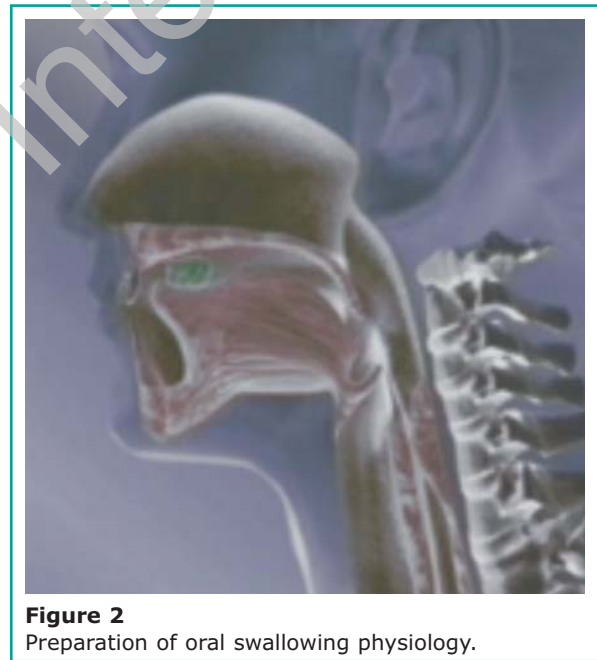
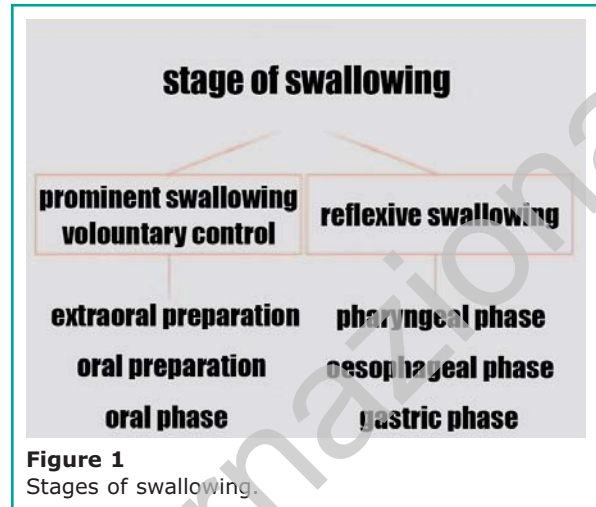
Recently clinical studies have proved without doubts that in patients affected by neurological diseases, like stroke, parkinsonism syndromes and others neurodegenerative pathologies, there is a very elevated incidence of swallowing disorders even severe (1) (Fig. 1).

The disease can show up in a full blown way, with clinical evident signs like suffocation or frequent and sudden cough, at the moment in which the patient tries to feed or to drink; or it can appear in a less clear way, through an unable protection of the low airway and with possible pathologies *ab ingestis* (2, 3). In fact despite the presence of defensive reflex mechanisms in the low airway, like cough exactly, we could hit on a silent inhalation, that starts a series of pulmonary diseases, which could mine the survival of these patients that often have decreased immunological defenses.

Early diagnosis of these particular deficits, associated with a good rehabilitative therapy, contributes to improve the life quality on these patients. It is important the presence of multidisciplinary team, which includes the Dentist, like screening method, the ear, nose and throat specialist, the speech Therapist and the Neurologist (4).

## Treatment

The objective of the evaluation of dysphagia syndrome is the restoration of lost reflex function and of physiological mental scheme (3,4) (Figs. 2,3). The rehabilitative treatment must be set by the neurologist with the aid of Speech Therapist and with the ear, nose and throat specialist therapeutic, with the dentist and ORL, through the packaging of prosthesis, that can help the patient to perform adequately different moments of the swallowing act (Figs. 4, 5). The main goals of therapy are: to prevent aspiration, maintain swallowing and retrieve the nutritional status. Through appropriate compensation strategies, with the recruitment of specific postures and with the training, the patient is sent to control the various sta-



ges of swallowing (5). These measures, called “adaptive”, include the change in diet towards firm, thickened and possibly cold foods, so as to reduce spasticity. Foods must have characteristics of homogeneity, adequate viscosity, palatability and nutritional power. In subjects in which the neurological damage is such that it does not allow adequate active psychological participation, the main objectives are recovery of reflex activity, focusing attention on the oro-pharyngeal sensitivity and the pro-



**Figure 3**  
Voluntary transport of the bolus.



**Figure 5**  
Stage of esophageal swallowing physiology.



**Figure 4**  
Physiological stage of swallowing throat.

tection of the airways. The nutritional component therefore can not be considered as objective as insufficient (5, 6).

## Discussion

Swallowing is a very complex physiologic mecha-

nism with the aim of convey saliva, liquids and bolus from the mouth to the stomach, trough contractive phenomena of the voluntary oropharyngeal muscles and of visceral esophageal muscles. This cyclical function recurs about 2000 times for day with an average duration of 1 sec (3, 7, 8). The first phase, said “oral phase”, is totally voluntary and involves transporting, by oral and tongue muscles, of the bolus towards the rear upper in direction of soft palate and then to the pharynx. The second phase, said “pharyngeal phase”, is characterized by involuntary acts and by activation of mechanisms to activities peristaltic reflexes, triggered by the contact between the sensitive areas and receptors with the food bolus. The muscle lifter the palate veil is positioned to close the pharynx, the folds are close to each other while the epiglottis stoops covering the entrance to the trachea. In last esophageal phase is supported by peristaltic waves advancing in the direction of the stomach, where the lower esophageal sphincter with its closure prevents reflux. When the LES closes, epiglottis is reopened and breathing starts again.

Dysphagia means a disease of the swallowing process, which includes difficulty in transporting a food or liquid bolus from the mouth trough the pharynx and esophagus into the stomach (9).

Causes of this disease can be divided into oropharyngeal and esophageal (Paradowski et al.) according

to the anatomical distinction, or neurological, neuromuscular or muscular for the etiology (Figs. 6, 7, 8). Neurological and neuromuscular causes may localize to different levels (supranuclear level, level of motor and sensory nuclei taking part in swallowing process, peripheral nerves level and muscle level) and include: stroke, brain tumors, bulbar and pseudo-bulbar paralysis, neurodegenerative diseases (Amyotrophic Lateral Sclerosis, Multiple Sclerosis), Tabes dorsalis, Parkinson's disease, Huntington's disease, Myasthenia and myasthenic syndromes, myopathies and peripheral neuropathies (10, 11).

A recent research of Prof. Ruoppolo, has revealed that 67% of patients suffering from stroke develop swallowing disorders at 72h from the cerebrovascular accident and that 8 years after diagnosis 45% of Parkinsonians presents dysphagia more or less evident (12).

Even more important datum the finding that 40% of deaths in patients with acquired brain damages is due to septic infective complications of swallowing, because it is essential a careful clinical evaluation of swallowing capacity and also more nuanced symptomatology relating to (10, 11).

The first signals are represented by frequent resulting of cough reflex at nutrition or hydration.

For the lack of tactile sensitivity in the oral cavity, these patients have difficulty controlling the liquids, are conducted to avoid these substances, risking dehydration and emaciation.

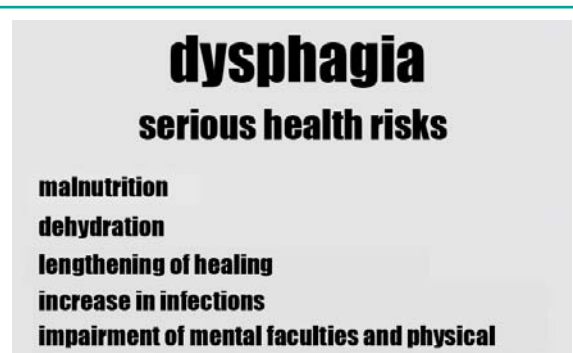
Aspiration is the most frightening event and can be before swallowing, for reduced lingual control function, for lack of sensitivity, to altered lingual mobility or delayed or absent pharyngeal reflex stimulation; into the swallowing moment, for weakness or absence of pharyngeal peristalsis, reduced laryngeal closure, or low lifting of laryngeal structures; and after swallowing, after the end of the act, for the retention of food residue in the pharynx, which is aspirated into the airways from a subsequent inhalation. When there is an aspiration or a stagnation of solids and liquids in the context of the airways microbial populations, including mainly Negative Gram, colonize the residual and trigger infectious processes by *ab ingestis* diseases, occurring primarily with post-prandial remitting type fever of septic nature (4, 8).



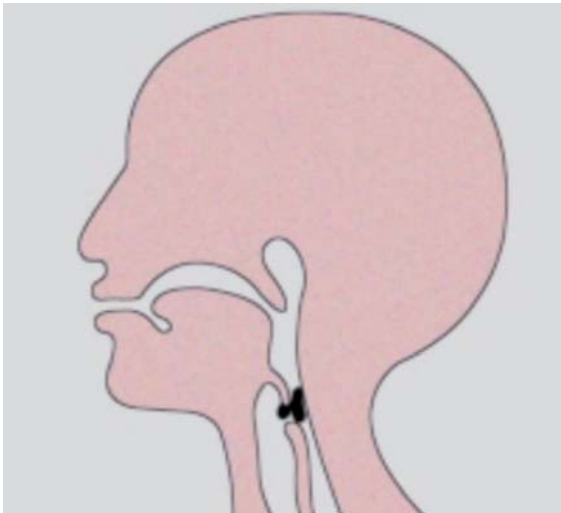
**Figure 6**  
The epiglottis stoops covering the entrance to the trachea.



**Figure 7**  
Causes of swallowing disorders.



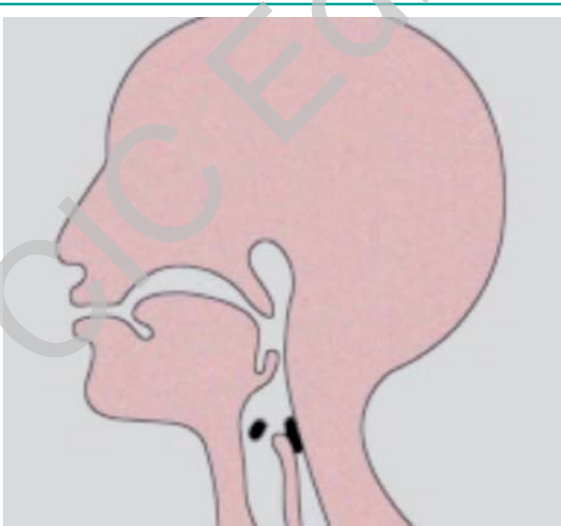
**Figure 8**  
Risk factors.



**Figure 9**  
Reduced control of capabilities.

During the assessment it will analyze first of all the patient eating habits, then we will proceed to a careful analysis of swallowing reflexes, if they are present and if they are delayed. Important is to assess the validity of this reflection, monitoring the amount of food reflux in the mouth after swallowing, which then could be perceived like foreign body and be aspirated (Figs. 9, 10).

In addition the physician should assess with test the



**Figure 10**  
Delayed or absent pharyngeal reflex stimulation.

### clinical evaluation

**observation and analysis of general prerequisites**

**observation and analysis of functions related to swallowing**

**Figure 11**  
Clinical evaluation.

### instrumental investigation

**all the swallowing stages must be studied in real time**

**divisions of each stage dynamics**

**morphological, pressure and electrical myography assessment**

**Figure 12**  
Instrumental investigations.



**Figure 13**  
Fiberoptic endoscopic evaluation of swallowing.

responsiveness, the ability to control posture in the various plans of the area, if the patient is able to effectively monitor the movement of head and especially the ability to produce a voluntary effective cough.

The main diagnostic tests are the pHmetry in 24h, ultrasound, esophagography, videofluoroscopy, endoscopic examination and scintigraphy. Through the FEES (Fiberoptic Endoscopic Evaluation of Swallowing) we can then identify the time of swallowing deficit (13) (Figs. 11-12-13).



## Conclusion

Early diagnosis of Dysphagia Syndrome is important to improve living condition and survival of patients. To this diagnosis and its treatment have to attend many professional figures, ranging from Basic Physician to Neurologist, speech Therapist, nose and throat Specialist and even the Dentist, who should cooperate in the service of screening for these diseases.



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