

# *Evolution of Patients with Oropharyngeal Dysphasia in Hospital Environment*

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## **SUMMARY**

- Introduction:** Neurogenic etiology oropharyngeal dysphagia may lead to clinical malnutrition, laryngotracheal damage, and result in aspirative bronchopneumonia. This condition is present in the evaluations routine of the phonoaudiologist who works in hospitals with post CVA (cerebral vascular accident) patients.
- Objective:** The objective of this study is to evaluate the evolution of neurogenic oropharyngeal dysphagia patients after CVA, during interment period until hospital discharge, and to analyze the dysphagia degree before treatment; diagnostic tools; phonoaudiologic routines; state of the patients upon discharge.
- Method:** Thirty-nine (39) patients were studied from December 2003 through June 2004 complaining of deglutition disorder, that indicates dysphagia. A standardized protocol was prepared for collection of clinical data.
- Conclusion:** The results allowed to conclude that there was moderate degree dysphagia, followed of light and severe degrees; in the instrumental diagnosis there was a prevalence of laryngeal aspiration, followed of a change in the oropharyngeal phase, laryngeal penetration, change in the deglutition oral phase; in the phonoaudiological procedures, the food manipulation presented excellent results followed of postural and protective maneuvers; upon hospital discharge there was a prevalence of individuals who had a good level clinical state and were eating orally with some postural and/or food consistency modifications without the use of probe, followed by those who presented a regular level beginning the oral diet with the use of probe, but able to be discharged between 30 to 60 days after the hospital period.
- Keywords:** dysphagia, dysphagic patient, hospital phonoaudiology, state of the patient upon hospital discharge.

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## INTRODUCTION

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Feeling the flavor that stimulates the senses, tasting a dish prepared with special cares is one of the highest pleasures of mankind and ensures the maintenance of life. However, this pleasure may be broken due to a deglutition disorder as a consequence of pathologies arising out from mechanic, neurogenic, medication, psychogenic origin called dysphagia. Dysphagia changes the foods progression through the digestive tract (from the mouth to the stomach) and may result in nutritional and hydration deficits to the individual, as well as affection of his or her pulmonary state that may result in aspirative bronchopneumonia.

Out of the neurogenic changes, studies associate the cerebral vascular accident (CVA) as one of the most common causes for deglutition disorder, and it may be the main cause of morbidity relating to breathing affections and malnutrition. Dysphagia may be present in all forms of CVA, with a bronchopneumonia incidence three times higher than in other sick patients, due to several consequent conditions such as: the possibility of silent aspiration (without reflex coughing) or microaspiration; the pharynx motor dysfunction; the delay in the deglutition start; stasis in pharyngeal recesses (valecule and/or piriform sinuses) and of changes in the laryngeal closing mechanism (more common in the post-CVA of encephalic trunk) which requires an alternative passage for nutrition and hydration.

In the course of the post-CVA dysphagia in data published by Hospital Albert Einstein in 2004 and updated in 2007, it was confirmed that dysphagia manifests specially during the first days, is present in about 51% of the patients on the 2 first days, and reduces its incidence to 27% of the patients in the next seven days; and most deglutition difficulties will be cured after six months, but about 8% of the patients will still maintain the oropharyngeal dysphagia picture with bronchoaspiration risk. According to the research carried out by SCHELP, COLA, GATTO, SILVA and CARVALHO (2004) out 102 patients evaluated clinically by phonoaudiology, at least after six days from the occurrence, 76.5% presented with dysphagia upon evaluation and in the videofluoroscopic analysis increased the incidence to values over 90%. For PACIARONI, MAZZOTTA, COREA et al. (2004), the oropharyngeal dysphagia is common in patients with CVA and occurs in 45-65% of the cases.

It's remarkable that the patient clinically affected by dysphagia, even in hospital environment, needs to be attended by a multidisciplinary team formed by phonoaudiologist, doctors of different specialties, physiotherapist, nutritionist, nurse, occupational therapist and psychologist. This team minimizes, as early as possible,

the risks of complications in the post-event acute period, and starts the preparation for rehabilitation of after-effects of the disease through specific procedures.

The early phonoaudiological intervention (twenty-four to forty-eight hour after the event and patient clinically stable) in hospital environment aims at the prompt identification of dysphagia and prevention of clinical complications resulting from it, which will enable the reduction of interment duration. According to LUIZ (2004), the phonoaudiologist must be aware that the type, location, extension and severity of the cerebral lesion are determining factors of the deadline for preparation of the rehabilitation plan.

Aware that the earlier the detection of dysphagia and stimulating intervention the lower are the risks of a worsening of the clinical picture of the patient and the higher are the chances of a positive prognosis, the phonoaudiologist prepares rehabilitation programs with (active and/or passive) specific techniques to reestablish the functioning of the structures involved in the deglutition process until self-feeding when possible, and prevents and decreases the incidence of aspirative bronchopneumonia.

Currently, the literature brings a considerable quantity of materials on strategies and procedures that may be carried out for the dysphagic patients, but it doesn't inform suitably about the evolution reality of patients with oropharyngeal dysphagia, and doesn't either clarify the clinical conditions relating to the dysphagia upon hospital discharge.

Aiming at completing this gap, this study was prepared to demonstrate the benefits of early phonoaudiological stimulation in the evolution of patients with post-CVA oropharyngeal dysphagia during the interment period until the hospital discharge, and it analyzes the following aspects:

1. Degree of dysphagia in the pretreatment;
2. Result of the objective evaluation of the deglutition dynamics;
3. Phonoaudiological procedures;
4. Clinical condition of hospital discharge.

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## METHOD

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The study was approved at the Ethics Committee in Research (CEP) of the Universidade Tuiuti do Paraná. Of.CEP-UTP no. 17/2004 approval protocol.

39 patients were studied, and they were 24 men and 15 women, in the age range from 35 to 90 years, (average of 66 years old), coming from the Hospital Nossa

Senhora das Graças, in Curitiba/PR, and forwarded to the Phonoaudiology service of this hospital.

The inclusion criteria in this study are as follows: patients of both sexes; age above 30 years; complaint of deglutition difficulty compatible with dysphagia, CVA diagnosis; stable clinical state; and cognitive in alert state (responding to simple verbal commands).

They were forwarded by Neurosurgery and Neurology clinics, after the relatives and/or responsible having signed the free and clarified authorization term.

### **Collection of clinical data**

We used the hospital phonoaudiology service protocol for phonoaudiological clinical assessment, prepared a standardized protocol with 19 questions, completed during the patient assistance period and analysis of the medical reports that comprised:

1. Anamnesis data;
2. Clinical medical diagnosis;
3. Cognitive aspects observation;
4. Phonoaudiological procedures and therapy;
5. Forwarding between hospital services;
6. Result of the phonoaudiologic clinical evaluation (analysis of anatomic and functional features of the phonoarticulatory organs and stomatognathic functions);
7. Result of the deglutition dynamics objective evaluation (deglutition videofluoroscopy and/or endoscopic evaluation).

### **Deglutition data collection**

The deglutition dynamics objective evaluation included the performance of the deglutition endoscopic and/or videofluoroscopy study.

The deglutition endoscopic study we used an optic fiber endoscopic equipment, of nasopharyngolaryngoscopic type. The patient was fasting, was positioned sitting in order to enable a better performance to the deglutition and evaluation. The otorhinolaryngologist inserted the nasopharyngolaryngoscope via the nose (middle nasal meatus), without anesthesia for maintenance of the sensitivity of the whole aerodigestive passage. The appliance was positioned above the velopharyngeal sphincter following towards the pharynx and larynx, which allowed the viewing of the velopharyngeal sphincter using the vowels /i/ and /e/.

We took into account the appearance, symmetry, presence of lesions, basioglossus mobility, the lateral and

posterior pharyngeal walls; the presence or not of secretion in the valleculae, piriform sinuses, laryngeal vestibules, vocal cords and subglottic region and frequency of dry deglutitions. We tested the region's sensitivity with a light touch onto the aryepiglottic ligaments bilaterally.

The device was positioned between the rhinopharynx and oropharynx, at the level of the uvula. The foods consistencies (thick and pasty, thin and pasty, thickened and liquid and liquid (similar to water) with food blue colorant for a better view) were provided in volumes of 5, 10 and 15 ml, sequentially, initially in spoons and then in cups, which allowed the observation of occurrence of the bolus preparation in the oral phase (able to posterior escaping); passage of the bolus through the pharynx; presence of post-deglutition residues and that of laryngeal penetration or aspiration of foods.

For inquiry of the dysphagia by videofluoroscopy we used a telecommanded seriograph. The patients presented with for 4-hour fasting and keeping the dental prosthesis. They remained standing during the exam and those who used wheelchair remained sitting. Initially, the patient's evaluation was carried out in the lateral position, then in the antero-posterior position. The first step was the observation of cervical posture, lingual positioning and moving with its exteriorization. The velopalatal function was evaluated by requesting from the patient the emission of vowels /e/ and /i/, as well as the plosive syllables /pa/ , /ta/ and /ka/. The elevation of the hyoid-laryngeal complex was observed with dry deglutition.

The consistencies were offered in volumes of 5 ml and the patient was asked to keep them in the oral cavity for observation of preparation and transport to the pharyngeal phase, which enabled to verify the occurrence or not of posterior escape and, then, to swallow them. In the oropharyngeal phase, we observed the effectiveness of such transport and its safety, determined by the pharyngeal contraction, hyoid elevation, horizontal positioning of the epiglottis and laryngeal closure. We observed simultaneously the relaxing of the upper sphincter of the esophagus after the passage of the bolus. In the follow-up of the primary wave of deglutition, we confirmed or not the bolus penetration and laryngeal aspiration.

For obtainment of the suitable consistency of the food to be offered to the patient in the instrumental evaluation we used the instant food thickener Thick&Essy (Hormel Heath Labs. Swiss), composed by amid, and it presented as nutritional composition per 100g, 375 kcal, 100 g of carbohydrates and 125 mg of sodium.

By meeting the manufacturer's instruction, to obtain a pasty consistency, also considered pudding, we mixed

two soup spoons of amid for 100 ml of water. For the thin pasty consistency, or honey, we added one soup spoonful of amid for 100 ml of water. For the thickened liquid consistency, or syrup, we used one soup spoon of amid for 100 ml of water and finally for the liquid consistency we added 50 ml of barium for 50 ml of water.

The consistencies were mixed with barium sulfate ( $\text{BaSO}_4$ ) in suspension, Barospense® (Mallinkrodt, Inc. USA), in the concentration of 97%, without changing the abovementioned consistencies. The consistencies mix-up with the radiological contrast allowed for a better evaluation of the bolus transport in the deglutition phases.

### **Phonotherapeutic procedure**

Aiming at the promotion of an efficient and safe deglutition and according to the need of each patient the phonoaudiologic therapy consisted of: postural maneuvers; maneuvers for protection of the airways and foods manipulation, described by GONÇALVES and VIDIGAL (1999), FURIA (2003) and SILVA (2004) and practical instructions.

In the postural maneuvers, the patient was stimulated to eat with the head inclined with the chin downwards or with the head inclined to the non-affected side. Such positions aimed at protecting the lower airways and facilitated the transit and the oral ejection, with lower muscular effort.

In the respiratory airways protection maneuvers, the patient was stimulated to: supraglottic deglutition - instructed to retain breathing before and during deglutition, which provoked adduction of the vocal cords. In the super-supraglottic deglutition, he was instructed to retain breathing before and during deglutition, which leads the arytenoids ahead and closes the entry to the trachea, and to remain so before and during deglutition, then the patient must expel the air retained in the form of a coughing.

In the Mendelsohn maneuver, he was instructed to support and lift manually his larynx so that the upper esophageal sphincter is opened and favors the lifting of the larynx during deglutition.

The practical instruction was directed to the patient and caretaker and consisted of:

- Maintaining the patient in semi-sitting position during feeding;
- During the offering of the diet the caretaker must be at the same height as the patient at the side of his body that is affected;

- To offer the foods in the instructed consistency, with pleasurable appearance, scent and flavor and that enable pleasure;
- To offer little quantities in the spoon observing the acceptability, preparation and deglutition of the food;
- During the offering of the diet, to keep a calm environment to avoid dispersing the attention;
- To instruct him not to speak while he chews and eats the food;
- To offer liquids in small quantities and if necessary to offer in spoon.

### **Classification of the degree of dysphagia**

For the classification of the dysphagia, we used the criteria prepared by SILVA (1999), who classified the neurogenic dysphagias as: light, moderate and severe.

1. Light dysphagia - there are no signs of laryngeal penetration upon cervical auscultation; control and transport of the bolus delayed and slow.
2. Moderate dysphagia - there are no signs of laryngeal penetration upon cervical auscultation; risk of aspiration; control and transport of the bolus delayed and slow.
3. Severe dysphagia - presence of substantial aspiration with signs of breathing changes; absence or failure of the bolus complete deglutition.

### **Phonoaudiologic clinical classification of the patient's state upon hospital discharge**

For the inexistence of a nomenclature for classification of the patient's state upon hospital discharge after phonoaudiological intervention, the following criteria were defined and used by the author of the work:

1. Good level - when eating orally, with some postural modifications and/or of food consistency without the use of probe.
2. Regular level - when started with oral diet using gastric or enteral feeding probe, but with possibility of removal between 30 to 60 days from the hospital period.
3. Bad level - when in use of enteral feeding probe, gastric probe or parenteral diet without prognosis of return to oral diet before 60 days.

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## **RESULTS**

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### **Phonoaudiologic clinical evaluation upon pre-intervention**

Out of the thirty-nine participants of this study, fourteen (36%) presented with light degree dysphagia,

sixteen (41%) with moderate and nine (23%) with severe degree dysphagia.

### **Instrumental evaluation**

Thirty-one individuals (85%) were submitted to deglutition endoscopic evaluation, seven patients (10%) used the videofluoroscopy exam, from this total four (5%) achieved the two evaluation and only one (2%) didn't use either process for they were not in the required physical state.

As a result of the instrumental evaluation, thirteen individuals (33%) presented with laryngeal aspiration, eleven (28%) alteration in the oral phase of deglutition, six (15%) aspiration and oropharyngeal penetration, three (8%) aspiration and alteration in the pharyngeal phase, three (8%) aspiration and alteration in the oral phase, two (5%) laryngeal penetration and only one (1%) alteration in the deglutition oropharyngeal phase.

### **Phonoaudiological intervention**

Out of thirty-nine patients, fifteen (39%) were benefited with postural and protective maneuvers and foods manipulation, six patients (15%) received practical instructions that benefited them, six (15%) with foods manipulations and protective maneuvers, five (13%) with foods manipulations, four (10%) with postural and protective maneuvers, three (8%) with foods manipulation and postural maneuvers.

### **Phonoaudiologic clinical classification of the patient upon hospital discharge**

We consider to be of good level upon hospital discharge the twenty-three (59%) patients who presented with capacity of oral independent feeding for all foods consistencies; regular level the fourteen (36%) patients who left under condition for assisted feeding and with restriction to some consistencies, but with a good prognosis of returning to a safe oral nutrition and they were forwarded to phonotherapeutic service follow-up; and bad level only two (5%) patients who left without conditions for oral feeding.

In the analysis of the clinical state upon hospital discharge regarding the degree of dysphagia evaluated before the phonoaudiologic intervention, out of 23 patients who presented with a good phonoaudiologic clinical state upon hospital discharge, 11 were light level dysphagic, 9 of moderate level and three of severe level in the initial phonoaudiological evaluation.

Out of the 14 patients who presented a regular phonoaudiologic clinical state upon hospital discharge, two were dysphagic of light level, seven of moderate and five of severe level in the initial phonoaudiological evaluation.

From the two patients who presented with a bad phonoaudiologic clinical state upon hospital discharge, one was dysphagic of light level and one of severe level in the initial phonoaudiological evaluation.

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## **DISCUSSION**

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The neurogenic origin deglutition disorders are characterized according to the degree of functional affection that reaches the patient's physical and emotional integrity and quality of life.

Some procedures accomplished in the hospital environment to post-CVA patients during the emergency assistance that prioritize the reestablishment of his health such as prolonged endotracheal intubation; orotracheal secretion aspiration constant procedure; presence of tracheostomy cannula may bring dysphagia as a consequence. Such procedures must be taken into account by the phonoaudiologist in the clinical evaluation and in the phonotherapeutic plan preparation.

In the phonoaudiologic evaluations and therapies in patients with neurological lesion, the cognitive level is a factor to be considered attentively, because its disregard interferes with the promptness of reflex responses, and impairs an efficient deglutition. In this aspect, 100% of the individuals observed presented an alert state cognitive level (by responding to simple verbal command) and showing the possibility of receiving and learning the maneuvers suggested during the phonotherapy, that modify the deglutition pharyngeal phase physiology, and allow the functionality of the soft parts involved in the deglutition process and stimulation of the afferent ways to expel the deglutition efficient reflex.

This positive influence of the patient's state of alert confirms the findings of LOGEMANN (1990); NEWTON et al, (1994) and GOMES (2001), who state the preserved conscience level diminishes the risk of aspirative pneumonia, thus we consider it to be a protective variable that allows a better prognosis of communication and deglutition improvement.

In the deglutition endoscopic evaluation which thirty-one patients out of (85%) carried out, enabled a detailed and direct overview of the pharynx function, palate veil and larynx and allowed the application of protective maneuvers of the airways. This method described

by LANGMORE et al. (1988) was the most useful for being an exam to be made out of the radiology unit and enabling the access of the patients who were limited to bed or intensive care units.

In the suspicion of silent aspiration occurrence, 10% of the patients were submitted to a dynamic study of the deglutition by videofluoroscopy. In this procedure the structural movements were also evaluated (natural ones and with protective maneuvers of the airways), temporal coordination between movements, the course of the bolus along the aerodigestive tract which could lead the patient to bronchopneumonia pictures and increase the morbidity and mortality factor. From the total of patients who took part in the sample, 5% made both procedures which complimented each other in the desirable findings.

Due to its high sensitivity, the videofluoroscopic exam allowed to detect both lighter forms of dysphagia and changes of pharyngeal phase which are hard to view in other procedures, as described by LOGEMANN (1983), who stated that videofluoroscopy is the golden standard for dysphagia evaluation.

The instrumental evaluations (deglutition endoscopic evaluation and videofluoroscopy), diagnosed a frequency of abnormal findings for laryngeal aspiration (33%), alteration in the oral phase (28%), oropharyngeal aspiration and penetration (15%), aspiration and alteration in the pharyngeal phase (8%), aspiration and alteration in the oral phase (8%), laryngeal penetration (5%) and oropharyngeal phase alteration.

The presence of aspiration and penetration presented by the patients is opposed to BUCHHOLZ (1994), ANGELIS, MOURÃO and FURIA (2000), MANN, GRAEME and HANKEY (2001), when they state that cortical, subcortical lesions and/or lesions in the brain stem cause a weakness in the oropharyngeal musculature, lead to movements incoordination and failure of the oral and pharyngeal regions sensitivity, and provoke food penetration and aspiration, which is a manifestation of severity of the deglutition affection. LEDER and ESPINOSA (2002) remark that some patients present a spontaneous recovery from dysphagia some days after the CVA, but it is necessary to detect the risk of aspiration during the acute phase, to prevent pulmonary affections and allow specific therapeutic interventions that enable early and safe oral feeding.

FURKIM, BEHLAU and WECKX (2003) state that the detection and characterization of aspiration, that occurs in the pharyngeal phase, are crucial for the prognosis and rehabilitation.

It's worth noting that the phonoaudiological rehabilitation is a functional reeducation aiming at reestablishing the normal or compensatory function, through the management of the deglutition changes and direct intervention with the patient, and the earlier the intervention, the lower are the risks for aggravation of the clinical state of the patient and higher are the chances for the rehabilitation success.

Positive results were described by PROSIEGEL et al (2005) in studies carried out on the therapy efficacy with functional deglutition in 208 patients with neurogenic oropharyngeal dysphagia. The patients were divided into 3 groups according to different neurological etiologies, and Group 3 is composed only by CVA affected patients. After the deglutition functional therapy, in which 50% of the group 1 patients and 30% of the patients in group 2 still needed an alternative feeding way, 100% of group 3 patients recovered the fully oral feeding.

The patients remained for a short period until they reached the satisfactory clinical balance, which not always corresponded to the phonoaudiological discharge, and led them to think the recovery result could have been more efficient if the permanence time corresponded to the end of the phonoaudiological assistance. The hospital service time of the patients was very variable, and seven patients (17%) remained from one to five days, fifteen (30%) remained from five to ten days, two (5%) remained from ten to fifteen days and fifteen (39%) remained for longer than fifteen days.

The phonoaudiologic role, aimed at the establishment of a therapeutic program for early detection of dysphagia in hospital environment, is an important factor for mitigation of risks that involve the occurrence of aspirative bronchopneumonia and the patients' nutritional unbalance. The phonoaudiologic action seeks to offer the most efficient treatment to the patient for a return to his/her independence as soon as possible.

Out of the patients in bad, 95% had hospital discharge with oral feeding (good state) and a good prognosis for return to the oral feeding (regular state), which ensured a good quality of life, effectiveness and safety of such feeding, and nutritional and emotional support of the patient.

SILVA (1999) says it's not always possible to return to the patient his or her prior deglutition capacity, but enable him or her to have an efficient deglutition without risks for his health and his life.

In the dysphagic patient rehabilitation it's important to evaluate his alterations and their impacts on his social

life; since this symptom may prevent him from one of the greatest pleasures for a long period or even for an “undetermined time”, and it’s critical to prepare strategies that ensure his quality of life and enables him to the function return, not always close to the normal function, but that he may keep, within his limitations, the suitable nutrition and hydration and pulmonary health.

SILVA (2007) remarks the rehabilitation efficacy in oropharyngeal dysphagia may be proved when the patient eats orally in an efficient manner, gains weight or with the reduction of aspirative pneumonia occurrence.

It’s also important to emphasize that the earlier the intervention, the lower are the risks for aggravation of the patient’s clinical picture and the better will be the results and prognosis.

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## CONCLUSION

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Out of the patients attended, 95% had hospital discharge with oral feeding (good state) and a good prognosis for return to the oral feeding (regular state), which ensured a good quality of life, effectiveness and safety of such feeding, and nutritional and emotional support of the patient. Only 5% didn’t present with a satisfactory phonoaudiologic clinical state, and remained with gastric or enteral probe.

1. As for the initial dysphagia degree, there was prevalence of the moderate degree followed by the light degree.
2. In the clinical phonoaudiological diagnosis, 100% presented with a picture of dysphagia.
3. In the instrumental diagnosis there occurred the prevalence of laryngeal aspiration, followed of a change in the oral phase of deglutition.
4. In the phonoaudiological procedures, the simultaneous use of postural and protective maneuvers and foods manipulation presented excellent results.
5. Upon hospital discharge, the prevalence was of individuals who presented a good level clinical state, eating orally, with some postural modifications and/or changes of the foods consistency without the use of probe.

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