

# Clinical non-instrumental evaluation of dysphagia

## *La valutazione clinica non strumentale della disfagia*

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### SUMMARY

Clinical non-instrumental evaluation plays an important role in the assessment of the dysphagic patient. This evaluation, called "bedside examination", aims to establish whether dysphagia is present, evaluating severity, determining the alterations which cause it, planning rehabilitation, testing outcome of treatment. The assessment takes into consideration anamnesis regarding the swallowing problem, evaluation of the anatomy and functionality, of sensitivity and the reflexes, of the swallowing apparatus. Finally, the oral feeding test is performed, which evaluates the oral and pharyngeal phases of swallowing. The examination performed in the neurologic patient is different from that performed in the patient submitted to ENT or maxillo-facial surgery.

**KEY WORDS:** Deglutition • Dysphagia • Diagnosis • Bedside examination

### RIASSUNTO

*L'esame clinico non strumentale ha un importante ruolo nella valutazione del paziente disfagico. Tale valutazione, denominata "bedside examination", ha come scopi: stabilire se è presente disfagia, valutarne la severità, definire le alterazioni che la provocano, programmare la riabilitazione, valutare i risultati del trattamento. La valutazione prevede l'anamnesi riguardante il problema di deglutizione, la valutazione dell'anatomia e della funzionalità, della sensibilità e dei riflessi, dell'apparato deglutitorio. Infine si esegue il test di alimentazione orale, che valuta le fasi orale e faringea della deglutizione. L'esame del paziente neurologico è differente rispetto a quello eseguito nel paziente operato di chirurgia ORL o maxillo-facciale.*

**PAROLE CHIAVE:** Deglutizione • Disfagia • Diagnosi • Esame obiettivo

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Clinical non-instrumental evaluation plays an important role in the assessment of the dysphagic patient<sup>1-5</sup>. This evaluation, called "bedside examination"<sup>6</sup>, aims to:

- establish whether dysphagia is present;
- evaluate the severity;
- determine the alterations which cause it;
- plan rehabilitation;
- test the outcome of treatment.

Dysphagic patients can be divided into two different groups:

- neurologic patients<sup>7,8</sup>, when dysphagia is caused by stroke, cranial trauma, degenerative neurologic diseases, neurosurgical treatment;
- operated patients<sup>9,10</sup>, when dysphagia is caused by alterations in the anatomical structures involved in swallowing, after ENT or maxillo-facial surgery.

The first step in the assessment is the anamnesis, which includes:

- patient's generic data (age);
- general conditions (nutritional situation, breathing functionality);
- neurologic diagnosis (stable, recurrent or degenerative disease);
- description of the surgical procedure on the upper diges-

tive-airways, in the case of dysphagic patient after oncologic intervention of ENT or maxillo-facial surgery;

- breathing condition;
- vigilance level, neuropsychologic conditions (neurologic patient);
- communicative level (neurologic patient);
- feeding habit (preferences);
- quality of phonation and speech articulation;
- presence of hypersalivation;
- duration of the meal;
- social environment.

The schedule used for the detection of data regarding the patient's general conditions is shown in Table I.

The next step concerns the morphodynamic evaluation (Table II) regarding:

- lips (opening, closing, kissing, cheek sufflating);
- tongue (motility, protrusion and backwards pushing);
- jaw;
- soft palate (cheek sufflating, vocalize with an /a/);
- larynx (morphology and movements of the vocal folds, glottic closure, elevation of the larynx);
- muscular control of the head.

Sensitivity is then evaluated (Table III) of the peribuccal zone (superficial and deep), the lips, the mouth, the tongue

**Table I.** Schedule for general conditions of dysphagic patient.

Surname .....		Name .....		Date of Birth (dd/mm/yy) .....		In .....	
Date of Admission (day/month/year) .....				Diagnosis .....			
Appearance of Dysphagia .....							
<b>GENERAL CONDITIONS</b>							
<b>Neurological status:</b>	watchful <input type="checkbox"/>	less responsive <input type="checkbox"/>	coma <input type="checkbox"/>				
<b>Cognitive status:</b>	not evaluable <input type="checkbox"/>	simple orders <input type="checkbox"/>	complex orders <input type="checkbox"/>				
<b>Communication:</b>	absent <input type="checkbox"/>	Yes/No <input type="checkbox"/>	not verbal <input type="checkbox"/>	articulated answer <input type="checkbox"/>			
<b>Attentive status:</b>	not evaluable <input type="checkbox"/>	limited <input type="checkbox"/>	good <input type="checkbox"/>				
Status Cranial Nerves: .....							
Notes: .....							

<b>Tracheostomy:</b>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	Previous <input type="checkbox"/>		
<b>Tracheostomy tube (TT):</b>	LPC <input type="checkbox"/>	FEN <input type="checkbox"/>	CFS <input type="checkbox"/>		
	CFN <input type="checkbox"/>	LGT <input type="checkbox"/>			
<b>Oxygen therapy:</b>	No <input type="checkbox"/>	Yes <input type="checkbox"/>			
<b>Removal TT:</b>	No <input type="checkbox"/>	Yes <input type="checkbox"/>			
Duration of closure TT .....		Times per day .....			

**TYPE AND MODALITY OF FEEDING (ADMITTANCE)**

<b>Dysmetabolism</b> <input type="checkbox"/>	<b>Allergy</b> <input type="checkbox"/>	<b>Intolerance</b> <input type="checkbox"/>			
<b>Ab ingestis in the past</b>	No <input type="checkbox"/>	suspected <input type="checkbox"/>	Yes <input type="checkbox"/>	Date .....	
Weight..... Height .....	normohydrated <input type="checkbox"/>	dehydrated <input type="checkbox"/>	Oedema <input type="checkbox"/>		
<b>Feeding</b>					
<b>Parenteral</b> <input type="checkbox"/>					
<b>Enteral</b> <input type="checkbox"/>	NGT <input type="checkbox"/>	partially <input type="checkbox"/>	totally <input type="checkbox"/>		
	PEG <input type="checkbox"/>	partially <input type="checkbox"/>	totally <input type="checkbox"/>		
<b>Oral</b> (previous attempts)	partially <input type="checkbox"/>		totally <input type="checkbox"/>		
of:	liquid <input type="checkbox"/>	semi-liquid <input type="checkbox"/>	solid <input type="checkbox"/>	soft-solid <input type="checkbox"/>	pre-chewed solid <input type="checkbox"/>
	"natural" solid <input type="checkbox"/>	assisted <input type="checkbox"/>	under control <input type="checkbox"/>	autonomous <input type="checkbox"/>	
<b>Alimentary preferences</b> .....					
Date .....		Signature .....			

**Table II.** Schedule for morphologic evaluation of dysphagic patient (after Schindler <sup>1</sup>, modified).

**Morphologic evaluation of dysphagic patient**

Name.....

<b>Trunk control</b> ..... .....
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<b>Head and neck control</b> ..... .....
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Movements	Absent	Insufficient	Normal	Notes
Flexion				
Extension				
Rotation (right)				
Rotation (left)				
Tilt (right)				
Tilt (left)				

<b>Notes</b> ..... .....
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**Lips**  
(VII CN)

<b>At rest (with pathology)</b>
Amimic
Deviation
Atrophy
Hypotonia
Hypertonia
Contracture
Dyskinesia
Sialorrhoea

Movements	Absent	Insufficient	Normal	Notes
Open				
Extension/Smile				
Protrusion/Kiss				

Strength	Absent	Insufficient	Normal	Notes
Hold tongue depressor				
Counter-resistance				
Diadochokinesis				

<b>Notes</b> ..... .....
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**Evaluation of the patient with swallowing disorders  
Morphologic evaluation of dysphagic patient**

**Mandible at rest**

(V CN)

<b>At rest (pathology)</b>
Down
Lock-out

Movements	Absent	Insufficient	Normal	Notes
Lowering				
Lateralization				
Anteversión				

Teeth	Dentition					
	Edentulous <input type="checkbox"/>	partially <input type="checkbox"/>	totally <input type="checkbox"/>	Dentures <input type="checkbox"/>	without dentures <input type="checkbox"/>	

**Tongue**

(XII CN)

<b>At rest (pathology)</b>
Asymmetry
Hypotonia
Hypertonia
Tics
Deviation
Tremor
Enlarged
Retracted
Dyskinesia

Movements	Absent	Insufficient	Normal	Notes
Elevation				
Protrusion				
Lateralization				

Counter-resistance	Absent	Insufficient	Normal	Notes
Vertical				
Lateral (right)				
Lateral (left)				
Central				
Diadochokinesis				

**Soft Palate**

(XII CN)

<b>At rest (pathology)</b>
Asymmetry
Dyskinesia

Movements	Absent	Insufficient	Normal	Notes
Symmetry (during phonation)				
Tension (duration)				
Diadochokinesis				

Date..... Signature .....

**Table III.** Schedule for evaluation of sensitivity and reflexes in dysphagic patient.

Surname ..... Name .....

		R	L		R	L		R	L
<b>Face:</b>	soft touch	<input type="checkbox"/>	<input type="checkbox"/>	pressure	<input type="checkbox"/>	<input type="checkbox"/>	temperature	<input type="checkbox"/>	<input type="checkbox"/>
<b>Lips:</b>	soft touch	<input type="checkbox"/>	<input type="checkbox"/>	pressure	<input type="checkbox"/>	<input type="checkbox"/>	temperature	<input type="checkbox"/>	<input type="checkbox"/>
<b>Tongue:</b>	soft touch	<input type="checkbox"/>	<input type="checkbox"/>	pressure	<input type="checkbox"/>	<input type="checkbox"/>	temperature	<input type="checkbox"/>	<input type="checkbox"/>
<b>Palate:</b>	soft touch	<input type="checkbox"/>	<input type="checkbox"/>	pressure	<input type="checkbox"/>	<input type="checkbox"/>	temperature	<input type="checkbox"/>	v

**TASTE**

Salted                       Acid                       Bitter                       Sweet

**FUNCTIONS AND REFLEXES**

*Pathologic reflexes*

- Bite reflex.....
- Suction reflex .....
- Cardinal points' reflex .....

*Normal Reflexes*

- Palatal reflex .....
- Vomitus reflex.....
- Cough reflex.....
- Deglutition reflex.....

Cough:	absent <input type="checkbox"/>	inefficacious reflex <input type="checkbox"/>	efficacious reflex <input type="checkbox"/>
	absent <input type="checkbox"/>	voluntary inefficacious <input type="checkbox"/>	voluntary efficacious <input type="checkbox"/>
Raclage:	absent <input type="checkbox"/>	inefficacious reflex <input type="checkbox"/>	efficacious reflex <input type="checkbox"/>
	absent <input type="checkbox"/>	voluntary inefficacious <input type="checkbox"/>	voluntary efficacious <input type="checkbox"/>
Respiration:	apnoea <input type="checkbox"/>		
	coord. apnoea deglut. <input type="checkbox"/>		

<b>Water test</b>	dry voice <input type="checkbox"/>	wet voice <input type="checkbox"/>	gurgley voice <input type="checkbox"/>
	inhalation: Yes <input type="checkbox"/> No <input type="checkbox"/>		

**Tongue-mouth-facial movements**

Opening mouth       tongue protrusion       puff out       blow       cluck

**Communication deficit**

- Aphasia.....
- Anarthria .....
- Dysphonia.....
- Dysarthria .....

Date.....Signature .....

**Table IV.** Schedule for evaluation of gustative stimulations in dysphagic patient.

**CARD GUSTATIVE STIMULATIONS**

Name .....

Date	Food	Taste	Consistency	Temperature	Quantity	Modality

**REGISTRATION**

**Modification of swallowing** .....  
 (number, frequency, effectiveness, etc.) .....

**Attentive modifications, vigilance, interference on contact and manifestation of conscience** .....  
 .....  
 .....

and the soft palate (superficial, deep and thermic) and reflexes are evaluated (especially in neurologic patients):

- normal (gag reflex, cough reflex);
- pathologic (bite, cardinal points, suction, swallowing);
- water test <sup>11</sup>, which is very useful and practical; it evaluates the characteristics of the voice after drinking some water. A dry, humid or gurgling voice may be present and it is possible to evaluate whether a cough caused by inhalation is present.

Gustative function with specific stimulations is evaluated (Table IV).

Finally, the oral feeding test is performed (Table V) which evaluates the oral phases of swallowing (suction and chewing) and the pharyngeal phase of swallowing, using

liquids (thin pipe, spoon, glass) semi-liquids, semi-solids. The assessment is different in the neurologic patient compared to the operated patient. In the former, we perform a scrupulous examination of motricity and reflexes and an evaluation is made of coordination, communicative possibilities and collaboration ability.

In patients submitted to ENT or maxillo-facial surgery, an evaluation is made of the outcome of the surgical treatment on “oral-pharyngeal-oesophageal pulsive pump” function which is moved by the tongue, the pharynx and the oesophagus, which squeezes the bolus from the mouth to the stomach, crossing five unidirectional valves: lips, velum-pharyngeal sphincter, larynx; superior oesophageal sphincter, inferior oesophageal sphincter.

**References**

- <sup>1</sup> Schindler O. *Manuale operativo di fisiopatologia della deglutizione*. Torino: Ed. Omega; 1990.
- <sup>2</sup> Schindler O, Ruoppolo G, Schindler A. *Deglutologia*. Torino: Ed. Omega; 2001.
- <sup>3</sup> Ruoppolo G, Amitrano A, Virdia P, Romualdi P. *Semeiotica generale*. In: Schindler O, Ruoppolo G, Schindler A, editors. *Deglutologia*, Torino: Ed. Omega; 2001. p. 97-109.
- <sup>4</sup> Schindler O, Raimondo S. *Linee guida sulla gestione del paziente disfagico adulto in foniatria e logopedia*. Torino: Consensus Conference, 29 gennaio 2007. *Acta Phoniatria Latina* 2007;29:5-31.
- <sup>5</sup> Logemann JA. *Evaluation and treatment of swallowing disorders*. San Diego: College-Hill Press; 1983.
- <sup>6</sup> Lim SH, Lieu PK, Phua SY, Seshadri R, Uenketasubramanian N, Lee SH, et al. *Accuracy of bedside clinical methods compared with fiberoptic endoscopic examination of swallowing (FEES) in determining the risk of aspiration in acute stroke patients*. *Dysphagia* 2001;16:1-6.
- <sup>7</sup> Logemann JA. *Dysphagia: evaluation and treatment*. *Folia Phoniatria Logop* 1995;47:140-64.
- <sup>8</sup> Rago R, Perino C. *La riabilitazione nei trauma cranio encefalico nell'adulto*. Milano: Ed. Ghedini; 1981.
- <sup>9</sup> Piemonte M. *Fisiopatologia della deglutizione*. (Relazione Ufficiale XIV Giornate Italiane di Otoneurologia. Senigallia, 18 aprile 1997). Milano: Formenti Ed.; 1997.
- <sup>10</sup> Unnia L. *Trattamento logopedico del paziente disfagico adulto*. Torino: Ed. Omega; 1995.
- <sup>11</sup> De Pippo KL, Holas MA, Reding MJ. *Validation of the 3-oz water swallow test for aspiration following stroke*. *Arch Neurol* 1992;49:1259-61.

**Table V.** Schedule for oral feeding test in dysphagic patient.

Surname ..... Name .....

**Oral preparatory phase**

L	SL	S	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difficulty of food entry .....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difficulty in keeping food in mouth .....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difficulty in chewing .....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Persistence of food .....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difficulty in positioning of bolus.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Predeglutitory aspiration.....

**Oral phase**

L	SL	S	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alteration of bolus protrusion to the pharynx, repetitively ...
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Oral transit prolonged.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bolus fall down in hypopharynx before deglutition .....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aspiration post-deglutition .....

**Pharyngeal phase**

S	SL	S	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alteration of deglutition reflex: In late <input type="checkbox"/> Absent <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aspiration post-deglutition .....

Notes .....

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Legend: S = Solid (biscuit); L = Liquid (milk/bilberry juice); SL = Semi-liquid (yogurt/jelly)

Date.....Signature .....