Oropharyngeal Dysphagia: A Major Geriatric Syndrome

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State of art.

- **Dysphagia management in the elderly:**
  - *early* identification of patients.
  - to assess its **patophysiology** and the alterations in the **swallow response**.
  - **prevention and treatment of the complications** of dysphagia (malnutrition and aspiration pneumonia).
    - Today: Minimal-Massive Intervention.
    - Future: Pharmacological and biological treatments.

16,500.00 US / 30,000.0000 EU / 8,000.000 JPN citizens with OD.

- **Geriatric syndrome**?
Prevalence of OD in the elderly.

**Independently living**

- Study Population
  - N=253

  - O. Dysphagia / I. Efficacy 27%
  - Impaired Safety 15%
  - Aspiration 6%

  - Serra-Prat M. Clavé P. JAGS, 2011

**Nursing Homes**

- Study Population
  - N=1221

  - O. Dysphagia 51%
  - Tube-fed 29%

  - Lin LC. JAGS, 2002
**Screening / Assessment / Diagnosis / Follow Up**

**Clinical Screening**

**STEP 1**
Evaluate for swallowing difficulty: Identify dysphagia problems early in vulnerable patients. EAT-10

**Clinical Assessment**

**STEP 2**: Evaluate for oro-pharyngeal dysphagia: Identify aspiration risk & appropriate diet prescription. V-VST

**Instrumental Explorations**

**STEP 3**: Evaluate for pathophysiology of swallowing dysfunction: Identify appropriate therapeutic strategies. VFS.

**STEP 4**: Evaluate regularly: V-VST. Continue to assess, monitor, & adjust interventions accordingly.

**Vulnerable Patient**
Internal Medicine, Geriatrics, Neurology etc.

**Doctor/Nurse Responsible**
- Nursing procedures at admission

**Dietitian**
MALNUTRITION
Suspected impairment of deglutition
EFFICACY

**Speech-Swallow Therapist**
ASPIRATION AND/OR PNEUMONIA
Suspected SAFETY risk

**Clinical Bedside Exam**
VOLUME-VISCOSITY SWALLOW TEST (V-VST)

**Diagnostic Tests: Videofluoroscopy**
- Signs of SAFETY and EFFICACY
- Aspiration vs penetration
- Swallow response
- Treatment

**Follow Up**
- Repeat V-VST according to natural history of each disease.
1) Identification of Clinical signs.

• **Impaired Efficacy deglutition:**
  – Labial seal.
  – Oropharyngeal residue.
  – Piecemeal deglutition.

• **Impaired Safety:**
  – Wet voice.
  – Cough.
  – $\downarrow$ Oxygen Saturation (finger pulsi-Oxymeter >3%).

2) Selection of bolus volume/viscosity.
V-VST: CLINICAL SIGNS.

Impaired Efficacy: Residue  Impaired safety: Aspiration

40% patients with O. dysphagia  25-30% patients with O. dysphagia
BEDSIDE VOLUME-VISCOSITY TEST

BEDSIDE VOLUME-VISCOSITY TEST

Sensitivity >90\%-100\% / Specificity > 60\%.

48\% aspirations are silent (without cough)

VIDEOFLUOROSCOPY

Dynamic exploration of swallowing:

- X Ray-tube. Lateral plane.
- Hydro soluble contrast.

Viscosity: Liquid-nectar-pudding.
Volume: 5-10-20 ml

Healthy volunteer. 10 ml nectar.
Aims:

• Evaluate safety and efficacy of swallow.
• Identification of VFS signs.
• Effect of treatments.
• Measurements of swallow response
  – Pathophysiology of the disease
  – Effect of new neurostimulation strategies
Pharyngeal phase. Efficacy.

Vallecula.

Pyriform Sinus.

Unilateral residue in Right Pyriform Sinus.

Pharyngeal residue.
Pharyngeal phase. Safety.

Aspiration.

17-25% patients with dysphagia
VFS Signs. Elderly.
Timing of Swallow Response. Elderly.

- **Healthy Volunteers.**
  - GPJO-LVO = 760±23 ms
  - LVC = 157±13 ms
  - UESO = 200±11 ms

- **Elderly / Safe Swallow.**
  - GPJO-LVO = 931±39 ms
  - LVC = 243±56 ms
  - UESO = 347±35 ms

- **Elderly / Penetration-Aspiration.**
  - GPJO-LVO = 1013±53 ms
  - LVC = 476±48 ms
  - UESO = 403±45 ms

![Graph showing timing of swallow response for different conditions]
Propulsion Forces. Elderly.

Rofes L, Clavé P. Neurogastroenterology and Motility, 2011.
Pathophysiology.

- **Oropharyngeal dysphagia in the frail elderly:**
  - **Impaired Safety:** High prevalence of penetrations and aspirations.
  - **Impaired Efficacy:** High prevalence of oropharyngeal residue.

- **Pathophysiology:**
  - **Impaired safety** associated with:
    - Delayed LVC.
    - Delayed maximal anterior and vertical hyoid movement.
  - **Impaired efficacy** associated with weak bolus propulsion.
FRAIL / NEUROLOGIC / ELDERLY PATIENT

OROPHARYNGEAL BACTERIAL COLONIZATION

IMPAIRED SAFETY OF SWALLOW

FUNCTIONAL OROPHARYNGEAL DYSPHAGIA

IMPARED EFFICACY OF SWALLOW

IMPAIRED OROPHARYNGEAL CLEARANCE

UPPER RESPIRATORY TRACT INFECTION

ASPIRATION

MALNUTRITION

DEHYDRATION

SARCOPENIA

WEAK IMMUNE SYSTEM

IMPAIRED Wound HEALING

HIPOVOLEMIA
- RENAL
- CARDIOVASCULAR
- CONSCIENCE

FRAILTY, IMPAIRED FUNCTIONAL CAPACITY, PRESSUE ULCERS, IMMUNODEPRESSION, INTERCURRENT INFECTIONS, MORBILITY.
a) OD in Independently Older

Independently living → 1 Year Follow-Up

Study Population
N=253

Malnutrition (MNA<23.5)

13% 12% 21%

LRTI

O. Dysphagia / I. Efficacy 27%

27% 45%

Impaired Safety 15%

26% 43%

V-VST

Serra-Prat M. Clavé P. Age and Aging 2012
**b) OD in hospitalized elderly patients.**

**Geriatric Unit. Hospital de Mataró.**

Admissions. N = 1160. Age = 84

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<thead>
<tr>
<th></th>
<th>Dysphagia</th>
<th>NO Dysph.</th>
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<tbody>
<tr>
<td>Prevalence</td>
<td>44%</td>
<td>66%</td>
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<tr>
<td>Malnutrition (MNA&lt;17)</td>
<td>33.3 %*</td>
<td>16%</td>
</tr>
<tr>
<td>Grip Strength (Kg)</td>
<td>16.2*</td>
<td>19.9</td>
</tr>
<tr>
<td>Stage (days)</td>
<td>12.2*</td>
<td>10</td>
</tr>
<tr>
<td>Barthel at discharge</td>
<td>49.5*</td>
<td>67.2</td>
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<tr>
<td>1 yr Mortality</td>
<td>40.4 %*</td>
<td>30.6%</td>
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c) Nutritional Status in O. Dysphagia.

**Stroke.** 21-23- %.

**Neurodegenerative.** 16-24%.

**Elderly.** 66%.

**Malnutrition.**

### Annual incidence of readmissions (>70yr).
#### H. Mataró. Catalonia.

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<thead>
<tr>
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<th>readmissions/100 person-year</th>
<th>95% CI</th>
<th>Attributable risk</th>
<th>Relative risk</th>
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<tbody>
<tr>
<td><strong>For any cause</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>No dysphagia</td>
<td>39.2</td>
<td>37.0-41.5</td>
<td>9.5</td>
<td>1.24</td>
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<tr>
<td>Dysphagia</td>
<td>48.7</td>
<td>45.6-51.9</td>
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<tr>
<td><strong>For pneumonia</strong></td>
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</tr>
<tr>
<td>No dysphagia</td>
<td>2.8</td>
<td>2.2-3.4</td>
<td>5.1</td>
<td>2.84</td>
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<tr>
<td>Dysphagia</td>
<td>7.9</td>
<td>6.6-9.1</td>
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<tr>
<td><strong>For pneumonia or Low Respiratory Tract Infection (LRTI)</strong></td>
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</table>
RESULTS: OUTCOME 1-YEAR MORTALITY

Survival Function by Dysphagia and Malnutrition

- Dysphagia - Malnutrition
- No Dysphagia / No Malnutrition
- Dysphagia / No Malnutrition
- No Dysphagia / Malnutrition
- Dysphagia / Malnutrition

$p=0.008$

65.8% 1-year Mortality
Oropharyngeal dysphagia is a risk factor for community-acquired pneumonia in the elderly

Jordi Almirall‡**, Laia Rofes‡**, Mateu Serra-Prat‡, Roser Icart‡, Elisabet Palomera §, Viridiana Arreola § and Pere Clavé‡,‡

- Prevalence of oropharyngeal dysphagia in the case–control study was 91.7% in cases and 40.3% in controls (p = 0.001).
- Adjusting for functionality and comorbidities, dysphagia showed an independent effect on pneumonia (OR 11.9, 95% CI 3.03–46.9).

- *Streptococcus pneumoniae*
- *Staphylococcus aureus*
- *Haemophilus influenzae*
- *Pseudomonas aeruginosa*
- *Escherichia coli*
Prevalence and prognostic implications of dysphagia in elderly patients with pneumonia

Mateu Cabré, Mateu Serra-Prat, Elisabet Palomera, Jordi Almirall, Roman Pallares, Pere Clave

• 1-YEAR MORTALITY (>80 yr):
  – 55.4% Oropharyngeal dysphagia
  – 26.7% no dysphagia

• 1-YEAR MORTALITY (>70 yr):
  – 40% Oropharyngeal dysphagia
  – 7% no dysphagia
ASPIRATION PNEUMONIA

A) POOR ORAL HEALTH COLONIZATION BY RESPIRATORY PATHOGENS

B) O. DYSPHAGIA IMPAIRED SAFETY SWALLOW ASPIRATIONS IMPAIRED COUGH REFLEX

C) FRAIL / VULNERABLE PATIENT MALNUTRITION POOR IMMUNITY

ASPIRATION PNEUMONIA = A + B + C
Prevention and Treatment.

• **Today: Minimal-Massive Intervention ®**
  CSdM. Hospital de Mataró ©
  Systematic Screening OD and MN >70 yr
  Oral hygiene = Bass Technique.
  Adaptation of fluids (Thickeners) and solids (traditional alimentation).

• **Tomorrow: Pharmacology/Biology**
  Stimulants for swallow response
  Biological treatments for oral microbiota
  Integrated products for OD and MN
Effect of surface sensory and motor electrical stimulation on chronic poststroke oropharyngeal dysfunction

L. ROFES, * V. ARREOLA, † I. LÓPEZ, *, † A. MARTIN, † M. SEBASTIÁN, † A. CIURANA † & P. CLAVÉ *, †

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DOI 10.1007/s00535-013-0920-0

ORIGINAL ARTICLE—ALIMENTARY TRACT

Effect of oral piperine on the swallow response of patients with oropharyngeal dysphagia

Laia Rofes · Viridiana Arreola · Alberto Martin · Pere Clavé

ORIGINAL ARTICLE

Natural capsaicinoids improve swallow response in older patients with oropharyngeal dysphagia

Laia Rofes,¹ Viridiana Arreola,² Alberto Martin,² Pere Clavé¹,²
SUMMARY

• Up to
  – 55% of frail elderly patients presented alterations on safety of swallowing (liquids) due to slow pharyngeal response, and are at risk of aspiration pneumonia or respiratory complications.

• Up to
  – 70% of frail elderly patients presented alterations of efficacy of deglutition caused by impaired tongue propulsion and pharyngeal clearance leading to high prevalence of malnutrition.
CONCLUSION

• **Dysphagia in older patients:**
  – High prevalence of malnutrition and respiratory complications.
  – Major Geriatric Syndrome
Thank you

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