

Dysphagia Symptoms & Treatment

Patient presents with **SEVERITY TYPE** dysphagia characterized by **UNDERLYING CAUSE** resulting in **WHAT I SEE**.

Swallow Initiation (watch for hyoid movement) should be triggered when bolus head is rolling off back of tongue (LIQUIDS) or at vallecula (SOLIDS)

| ORAL STAGE | Underlying cause | What I see: | Try to compensate during meals with... |
|------------|---|--|---|
| | Weak/incomplete lips closure Tongue thrust | Anterior loss of bolus | |
| | Weak jaw movement Decreased rotary movement (munching) Decreased dentition, poor-fitting dentures | Bolus poorly chewed | |
| | Buccinator weakness | Residue collection/oral stasis in lateral sulcus (pocketing) | Head tilt → strong side Lingual sweep (w/finger prn) Place bolus on strong side |
| | Tongue weakness/incoordination Decreased sensation | Posterior escape of the bolus | Neck extension Place bolus on strong side |
| | Tongue weakness/incoordination | Residue collection on tongue | Modify bolus size |
| | Tongue weakness/incoordination | Difficulty a-p transit | Slurp and swallow |

| PHARYNGEAL STAGE | Neurosensory deficit | Swallow delay | Thermal stimulation |
|------------------|---|---------------------------------------|--|
| | Decreased sensation in the pharyngeal wall (neurosensory deficit) | Unable to initiate swallow | |
| | Poor tongue base retraction Incomplete epiglottal inversion | Residue in the vallecula | Head tilt → strong side Chin tuck |
| | Decreased laryngeal elevation Decreased PES opening | Residue in the pyriforms | Multiple swallows Valsalva maneuver (effortful swallow) |
| | Weak pharyngeal constrictors | Residue on postpharyngeal wall | Head turn → weak side |
| | Swallow delay/neurosensory deficits Posterior escape of the bolus | Penetration/aspiration B4 swallow | Chin tuck Supraglottic swallow Super-supraglottic swallow Vocal quality check |
| | Incomplete epiglottal inversion Timing issue with airway closure (e.g. d/t VF paralysis, arytenoids coming forward towards pedial of epiglottis) | Penetration/aspiration during swallow | |
| | Residue in the pyriforms or vallecula Backflow/Reflux | Penetration/aspiration during swallow | |
| | Reduced PES opening d/t reduced laryngeal elevation | Residue at the PES | Head turn → weak side Super-Supraglottic swallow Valsalva maneuver (effortful swallow) |

Compensatory Strategies (use during meal)

| | Strategy | Use for (generally) | Procedures | Rationale | Notes |
|---|---|---|---|--|---|
| Postural (take advantage of gravity) | General | Any self-feeding and swallowing | Sit upright (90 degrees), arms well supported and feet flat on floor, had aligned w/trunk | Provide best possible scenario for a safe, efficient swallow | Do all this when possible – all aspects may not be feasible |
| | | | Pelvis as far back in seat as possible | Slouching in posterior pelvic tilt limits hyoid elevation | |
| | Head tilt to strong side | Unilateral oral AND pharyngeal weakness | Tilt head after accepting bolus and during swallow (face stays forward) | Increased sensation/motor strength/coordination on strong side may facilitate improved oral control, and bolus formation/propulsion | |
| | Head turn to weak side | Unilateral pharyngeal weakness; decreased PES opening | Rotate head 90 degree after accepting bolus and during swallow (face moves) | Helps prevent bolus from traveling to weak side by reducing the size of this side's pharyngeal cavities; external pull may facilitate opening of PES | Pair w/chin tuck for potentially enhanced effects |
| | Chin tuck | Swallow delay w/pen-asp; decreased tongue base retraction; vallecular pooling | Tuck chin to chest before initiating swallow | May widen vallecular space, preventing bolus from entering airway; narrow entrance to airway; pushes tongue base backward toward pharyngeal wall; puts epiglottis in protective position | Greatest effects are in airway protection and tongue-base retraction; watch for bird-necking (CAN'T use w/poor lip closure or oral control) |
| | Side laying on strong side | Diffuse pharyngeal residue d/t reduced pharyngeal contraction | Lay on side throughout meal on fully or semi-reclined bed/chair | Lateral head/trunk position reduces gravitational force on residue left after swallow, allowing it to localize and gather until swallow purposefully (rather than aspirated) | Pair w/multiple swallows for max effect; adaptive equipment may help (swiveling spoon, straws) |
| Neck extension | Diminished a-p transit d/t lingual weak/incoordination' Early ALS or altered anatomy d/t cancer | Take deep breath, hold it, then bring chin up/lean head back | Utilizing gravity to propel bolus into pharynx | MUST have prompt, efficient swallow response (or else bolus could roll directly into airway); can decrease PES ability to relax if extended too far or for too long | |

Compensatory Strategies (use during meal)

| | | | | | |
|----------------------|---|--|--|--|---|
| Bolus Control | Lingual sweep | Decreased oral sensitivity; oral weakness; oral residue; pocketing | Use tongue to sweep entire oral cavity to clear oral residue following each swallow | Clears as much residue as possible to prevent buildup; redirect residue to tongue blade for bolus development | Use finger as needed (ex. lingual weakness) |
| | Cyclic ingestions/ Liquid wash | Bolus manipulation deficits, residue | Alternate solids and liquids throughout meal | Liquid will help clear oral cavity residue unable to be management by lingual sweep | |
| | Multiple swallows | Residue (anywhere in digestive tract) | Swallow more than once following each bolus until residue is cleared (# of times indicated in MBS) | Helps clear residue before consuming next bolus to prevent buildup of residue | Some pts may have hard time initiating a dry swallow; try using empty spoon and apply pressure down on tongue |
| | Thermal stimulation | Swallow delay | Apply cold and sour material to faucial arches or eat cold/sour bolus after mastication of primary bolus | Cold and sour material is most easily sensed and is most likely to trigger swallow if normal bolus does not | Often use spoonful of lemon ice or citric acid cyclically |
| | Bolus placement on strong side | Pocketing, poor lingual coordination; altered anatomy | Accept bolus directly onto strong side of mouth by angling utensil toward unimpaired side | Reduces need for tongue to transport bolus to molars and avoids weak side | |
| | Modification of bolus size | Poor bolus control, decreased sensation (swallow delay) | Accept smaller/larger bolus | Larger bolus is more easily sensed to trigger swallow; Smaller bolus may be easier to form and control | Dementia population often has decreased sensitivity and requires larger, more textured bolus |
| | Modification of intake rate | Impulsive patients | Increase time btwn accepting each bolus | Allows ample time to clear and swallow a bolus before ingesting another; acceptance of bolus too early can interfere with pressure buildup and/or laryngeal elevation, causing pen/asp | May need external control (ex, hold arm back until completion of each swallow, straw pinch, wrist weight, give 'shot size' amounts of liquids in cup) |
| | Slurp and swallow | Weak a-p bolus movement | Slurp or suck bolus towards pharynx | Leverages movement of intake air to assist in bolus propulsion; uses aerodynamic pressure instead of lingual control | Good for pts w/partial glossectomy or if unable to manage own secretions; DO NOT use if poor airway protection or pharyngeal stage deficits |

Compensatory Strategies (use during meal)

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| Maneuvers | Valsalva Maneuver | Decreased laryngeal elevation and/or pharyngeal contraction | Swallow hard | Designed to increase function of suprahyoid/pharyngeal musculature, resulting in increased tongue base retraction | Watch for bird-necking; CAUTION w/cardiac pts (can increase vascular pressure) |
| | Mendelson Maneuver | Decreased PES opening | Mid swallow hold: keep hyoid suspended for 2 secs | Increases duration of PES opening | |
| | Supraglottic swallow | Silent aspiration; delayed airway protection | Take deep breath and hold firmly during swallow; after swallow, cough before inhalation; repeat | Provides volitional airway protection | Requires a lot of coordination; DO NOT USE w/cardiac pts (can cause arrhythmias) |
| | Super-Supraglottic swallow | Impaired airway protection; diffuse pharyngeal weakness; pharyngeal carcinoma | Supraglottic swallow where swallow is 'hard' (as if to swallow larger pill) | | DO NOT USE w/cardiac pts |
| | Vocal quality check | Altered anatomy | Speak after each swallow; if voice is 'wet', dys/aphonic, cough/clear throat and swallow again | Wet vocal quality may be a useful indicator of those who have laryngeal dysfunction and are at risk of aspirating | |

Premature spillover/loss of bolus is not the same as **swallow delay**

Former is d/t **oral motor/neuromuscular** deficit (poor lingual strength/control), Latter is d/t **neurosensory** deficit (decreased sensation)

Aspiration Pneumonia: Caused by material you have swallowed (secretions, food, liquid) that causes pneumonia

VS

Aspiration Pneumonitis: Caused by material originating from the stomach, i.e. material that has already been swallowed (gastric contents, reflux, vomit) → Leads to inflammation in the lungs d/t acid!

Rehabilitation Exercises (use outside of meals to improve performance during meals)

| | Impact on Swallowing | Exercise | Procedure | Rationale/Notes |
|--------------------|--|---|--|--|
| Lips | Difficulty removing bolus from spoon | Cryotherapy (Hyper) | Ice lips then passively stretch, follow with icing after exercise to maintain therapeutic effect | Temporarily reduces spasticity/pain by reducing nerve conduction velocities |
| | Acceptance of bolus | Beckman Oral Stretching Protocols (Hyper) | Provide firm directed pressure to stretch lips, moving them into lateral, superior, and inferior positions | Slowly and progressively relieves spasm |
| | Anterior loss of bolus | Strengthen w/T.D. | Hold tongue depressor btwn lips parallel to floor for 60 secs | |
| | Decreased pressure generation for bolus propulsion | Life Savor resistance | Tie Life Savor to a piece of floss, place behind pts' lips (but in front of teeth), pull floss for resistance | |
| | | Strengthen w/Widget* | Close/open or hold closed using lips only | |
| Tongue | Difficulty forming bolus | IOPI (Iowa Oral Pressure Instrument) bulb | Pts holds bulb between tongue and palate to achieve target isometric pressure reading (reps or maintained hold for target # of secs) | Typical adult can achieve max pressure of 60 kiloPa; shown to improve lingual tone |
| | | Strengthen w/Widget * | Reps, holding; Hold up bottom to top w/tongue only, keeping jaw steady (and vice versa); Lateralization → push one side to the other, keep neck stationary | |
| | Difficulty transporting bolus | Increase ROM w/T.D. | Extend tongue to/through all planes, with tongue depressor resistance against tongue blade | |
| | Premature spillover/posterior escape | Dexterity w/Life Savor | Tie Life Savor to piece of floss, have pt move L → R | |
| | Decreased ability for lingual sweep | Beckman Oral Stretching Protocols (Hyper) | | |
| Buccinators | Decreased pressure generation for bolus propulsion | NMES/E-Stim (~6 tx of 1 hr each) | Apply stimulation pads to main branch of facial nerve; must using during functional swallowing exercises (ex, mastication) to effectively target muscles | DO NOT place over infected/cancerous area; beware cardiac/laryngospasm pts; Doesn't work on skin flaps taken from other part of body |
| | Decreased ability to clear stasis | | | |
| | Decreased sucking ability | Strengthen w/Widget* | Reps, holding btwn teeth and check | |

Rehabilitation Exercises (use outside of meals to improve performance during meals)

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|--------------------|---------------------------------|------------------------------|--|---|
| Masticators | Decreased mastication | Gum to promote rotary motion | Pt chews gum on a piece of floss, maintaining its shape in "ball" form | Munching mastication will result in elongated piece |
| | | Strengthen w/Widget* | Bite widget in reps or hold | |
| | Decreased jaw opening (trismus) | DynaSplint | Worn by pts for increasing amounts of time every day, multiple times a day; has custom mouth piece | Progressively stretches jaw |
| | | Thera-bite | Same as DynaSplint but not custom-made for each pt | |

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|-----------------|---|-----------------------------------|--|--|
| VP Close | Nasal regurgitation | Strengthen w/CPAP machine | Wear while producing various phonemes | Positive airway pressure provides resistance |
| | Decreased intraoral pressure for sucking and bolus propulsion | VCT (Velopharyngeal Closure Test) | Pt inhales deeply then exhale thru straw at constant pace for as long as possible against resistance of 12 cm water pressure | Straw at least 1 cm diameter; normal low limit is against 5 cm of water for 5 secs |
| | | EMST | (see below) | Enhances levator veli palatini |

| | | | | |
|-------------------|----------------------------------|-----------------|---|---|
| Pharyngeal | Decreased tongue base retraction | Masako Maneuver | Place tongue btwn teeth or on alveolar ridge and swallow (NOT with bolus); may need to pair with Valsalva for maximum benefit | Anteriorly stabilizing tongues allows for greater recruitment on pharyngeal constrictors, bringing them anteriorly to meet weakened tongue base |
| | Weak pharyngeal constrictors | | | |

*Widget: Not a technical term 😊 Tape 2 tongue depressors together (use medical/surgical tape, which is easily accessible) and insert desired number of other depressors to create resistance for when pt tries to close the ends

Example (using rubber bands, but tape work just as well):



Rehabilitation Exercises (use outside of meals to improve performance during meals)

| | | | | |
|------------------|--|--|---|---|
| Laryngeal | Decreased laryngeal elevation Pharyngeal residue Decreased epiglottic retroversion | Shaker (head-lifting) Exercises | Lay in supine position and lift head to look at toes; sustain for 1 minute, rest 1 minute, repeat (3 cycles total); also 30 reps of brief head-lifts (like a mini head sit-up) | Simple isometric exercise facilitates PES opening by increasing anterior/superior excursion of larynx (and possible decreased resistance of cricopharyngeus) |
| | Decreased approximation of arytenoids to epiglottis | Valsalva Maneuver | Effortful (hard) swallow | These compensatory strategies can be performed w/o bolus for long-term strengthening effects |
| | Decreased PES opening Penetration/aspiration | Mendelson Maneuver | Palpate hyoid/thyroid notch and hold larynx suspended for 2 secs (as if holding breath) | |
| | | EMST (Expiratory Muscle Strength Training) | Pt has 1) nose clip to eliminate nasal airflow; 2) mouthpiece with tight labial seal; 3) hand pressure on cheeks to eliminate pocketing air Maximum exhale into mouthpiece until air rush is heard, rest 30-60 secs btwn trials and 2 min btwn sets; 5 sets of 5 breaths, 5 days/wk If no fancy mouthpiece/device, use a balloon! | Increasing expiratory lung volume/force 1) increases hyolaryngeal displacement; 2) improves glottic closure; 3) creates higher airflow, which increases sensation of tongue/oropharynx; 4) increase afferent input to cough centers/adductors |
| | | Vocal adduction exercises | Link fingers at chest level and push hands together or pull upward on seat | Increase movement of weakened VF or facilitate adduction of functioning VF; Beware w/cardiac pts (may increase vascular pressure) |
| | | Vocal Function Exercises | Perform glides and sustained pitches as softly as possible w/slightly nasalized tone; push palms together to increase effortful closure | |
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