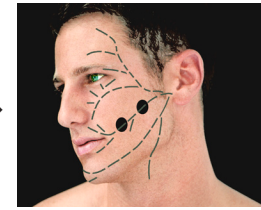


4a▶



4b▶



## Functional muscle actions

## Possible signs & symptoms

## Possible VitalStim electrode placements

### Oropharyngeal "sling"

- Orbicularis oris
- Buccinator
- Superior pharyngeal

- anterior spillage/leakage
- premature spillage, residuals
- pocketing, holding, stasis
- nasal regurgitation

- 4a ▶ maximum facilitation of synergists when electrodes applied bilaterally

### Tongue: bolus manipulation and tongue base retraction

- Intrinsic tongue
- Extrinsic tongue
- Superior pharyngeal constrictor

- ↓ AP transit
- premature spillage
- coating tongue base/post. pharynx
- delayed swallow trigger
- vallecular pooling

- 2a/b ▶ horizontal channel facilitates recruitment of muscles innervated by CN XII
- 4a ▶ increases sensory input - CN V and VII add bottom channel over CN XII to facilitate tongue muscle recruitment
- 3b ▶ bottom channel facilitates thyrohyoid recruitment

### Velopharyngeal seal

- Levator veli palatini
- Superior pharyngeal constrictor

- nasal regurgitation
- residuals
- delayed pharyngeal transit

- 4a ▶ maximum facilitation of synergists when electrodes applied bilaterally

### Hyolaryngeal Excursion

- Laryngeal extrinsics
- Suprahyoid muscles

- decreased hyolaryngeal excursion
- penetration, aspiration
- voice abnormalities
- decreased UES opening
- pooling residuals

- 2b ▶ good facilitation of geniohyoid, mylohyoid and thyrohyoid muscles
- 1 ▶ facilitation supra- and infrahyoid muscles
- 3a ▶ good facilitation of digastric and thyrohyoid muscles

### Pharyngeal constriction

- Superior, middle and inferior pharyngeal constrictors
- Pharyngeal shortening mm

- penetration, aspiration
- piecemeal deglutition
- residuals
- decreased pharyngeal transit time

- 3b ▶ electrode placements on attachments of middle (hyoid) and lower (thyroid) pharyngeal constrictors

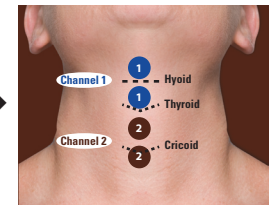
### UES seal opens and closes

- Cricopharyngeus
- Supra and infrahyoid mm
- Pharyngeal constrictors
- Pharyngeal shortening muscles

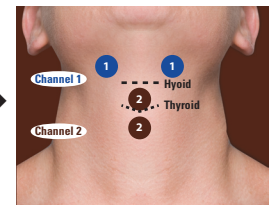
- delayed opening UES
- decreased opening UES, CP bar
- premature closure UES
- penetration, aspiration
- pyriform pooling, residuals

- 2b ▶ focus on hyolaryngeal excursion
- 1 ▶ focus on maximal sensory input
- 3a ▶ focus on hyolaryngeal excursion (TH)
- 3b ▶ focus on pharyngeal constriction

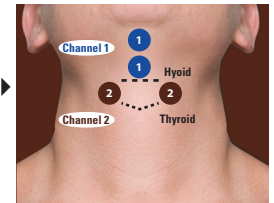
1▶



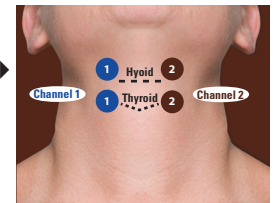
2a▶



2b▶



3a▶



3b▶

