Passy-Muir® Valve: Keeping it on and therapeutic steps to follow

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Disclosures

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  Disclosure: Financial - Received a speaking fee from Passy-Muir Inc. for this presentation.
  Nonfinancial - No relevant nonfinancial relationship exists.

Disclosure Statement

- Passy-Muir, Inc. has developed and patented a licensed technology trademarked as the Passy-Muir® Tracheostomy and Ventilator Swallowing and Speaking Valve. This presentation will focus primarily on the biased-closed position Passy-Muir Valve and will include little to no information on other speaking valves.

Objectives:

- List strategies used to problem solve common behavioral and medical barriers during Passy-Muir Valve initiation.
- Generate therapy activities to address oral sensory processing, voice production, and functional communication for pediatric tracheostomized patients.

Initial Trial

Choosing an effective approach

Approach Selection

- Signs of hesitation/fear
- Unanswered questions
- Environmental factors
- Medical implications

Educate! Jump In! SLOW Approach!
<table>
<thead>
<tr>
<th>Approach #1</th>
<th>Are there signs of anxiety?</th>
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<tbody>
<tr>
<td>Educate</td>
<td>- Assess nonverbal language</td>
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<tr>
<td></td>
<td>- Actively listen</td>
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<tr>
<td></td>
<td>- Don't anticipate noncompliance</td>
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<tr>
<td></td>
<td>- Age appropriate learning plan</td>
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<tr>
<td></td>
<td>- Support tools</td>
</tr>
<tr>
<td></td>
<td>- Language used</td>
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<tr>
<td></td>
<td>- Structured success (scaffolding)</td>
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<table>
<thead>
<tr>
<th>Draw the anatomy</th>
<th>Explain “Why” using props</th>
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<tbody>
<tr>
<td></td>
<td>- Secretion management</td>
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<tr>
<td></td>
<td>- Smell and taste</td>
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<tr>
<td></td>
<td>- Swallow</td>
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<tr>
<td></td>
<td>- Speech, voice, and cognitive communication</td>
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<td></td>
<td>- Assist in weaning from the ventilator</td>
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<table>
<thead>
<tr>
<th>Approach #2</th>
<th>Look at the whole picture</th>
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<tr>
<td>Jump in</td>
<td>- Anxiety may build</td>
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<tr>
<td></td>
<td>- Trial length</td>
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<td></td>
<td>- Multiple assessments</td>
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**Approach #3**
Tortoise vs. Hare

**Patient led sequence**
1. Suction
2. Observe patient
3. Play
4. Facilitate self calming
5. Discontinue
   - Beat fatigue
   - Avoid negative experiences

**Placement tactics**
- Practice/Model
- Parent placement
- Passy-Muir Valve “tap off”

**How to relax or distract**
- Deep breathing
- Distraction

**How to reinforce wear-time**
- Visual & Play-Based
  - Passy-Muir Valve on prior to each release of the car
  - ASL signs used to request
  - Pretend the car is missing
- Cause-and-Effect

**How to provide structure**
Used throughout each session!
How to provide MORE structure

Approach #4

Wait
- Allow tracheal lumen growth
- Projected downsizing
- Laryngoscopy & Bronchoscopy to rule out structural barriers

Assessment

General information gathering and strategies

Key points to consider

- Reason for referral?
- Medical history
- What makes this child and family unique?
- What areas should be assessed with Passy-Muir Valve in-line?

Neurodevelopment

- Prolonged hospitalization
  - Brain development
  - Endurance/stamina
  - Opportunities
  - Socialization
  - Caregiver expectations
- Baseline
  - Comorbidities

Oral Motor and Sensory Function

- Structures
- Sensory processing
- Maturity of oral-sensory-motor development
  - Feeding/swallowing
  - Speech
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Feeding and Swallowing

- Secretion Management
- Nonnutritive Assessment
- PO Trials

Transitions in Swallow

Instrumental Assessments

Modified Barium Swallow Studies (MBSS)

- Timing
- Preparation
- Compensatory strategies
- Interpretation
- Family training
- Collaboration

Teamwork

Outside referrals

Interdisciplinary Process

Interdisciplinary Process

Passy-Muir Valve Referral
1. MD Order
2. Pulmonary Clearance
3. SLP to assess & provide preliminary education
4. MD Order for SLP Assessment
5. MD order for MBSS with SLP
6. MBSS with floor nurse/RT and family present
7. MBSS with Passy-Muir Valve results to MD and family education
8. RD & MD to determine PO/enteral feed balance

Measurable Therapy Goals

Progress Monitoring and incentive
Wear-time + Speech Output

- **Short Term Goals (to be met in 2 weeks):**
  - Patient/family will return demonstrate the ability to place the Passy-Muir® Valve in-line, remove, maintenance procedures, and safety awareness during 5 out of 5 observed sessions.
  - Patient will voice on command with the Passy-Muir® Valve in-line during 4 out of 5 consecutive trials.

Wear-time + Swallowing

- **Short Term Goals (to be met in 2 weeks):**
  - Tolerate scant PO trials of puree texture to assess/promote differentiation during gustatory/olfactory stimulation with the Passy-Muir Valve inline with no clinical s/s of aspiration during 3 out of 3 consecutive trials
  - Participate in olfactory discrimination tasks and identify by smells/touch/taste stimuli using a select set of food items during 3 out of 3 consecutive trials.
  - Family will return verbalize and demonstrate 3 techniques for safe oral feeding.
- **Long Term Goals (to be met at discharge):**
  - Tolerate regular-for-age diet and take 25% of nutrition by mouth.
  - Patient and patient's caregivers independent with PO/nonnutritive home program as appropriate.

Case Study

**Assessment:** Excellent Wear-time Tolerance and PO Intake

Medical Implications

Prior to admission, patient was able to independently:

- Breathe
- Regular diet & self feed
- Produce voice

Current Status:

- Tracheostomy
- NG tube feeds
- PO trials with SLP only
- Limited intensity of voice, frequently misunderstood

Next Steps

- Nutrition Services—Oral NG feeds
- Diet change
- SLP follow-up
- Family education
- Increase Passy-Muir® Valve wear-time

Outcome Measures
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Case Study
Fair wear-time tolerance and minimal PO intake

Medical Implications

Progress in 12 sessions

- Wear-time
  - Increase Passy-Muir Valve wear time to all waking hours without overt s/s of respiratory distress over 5 consecutive days while in multiple environments. **GOAL MET**

- Saliva management
  - Demonstrate an increase saliva management with the Passy-Muir Valve in-line through decreased suction requirements per day. **GOAL MET**

Additional Steps...

- Discharge recommendations
- OT contacts SLP — 1 month r/p discharge
- SLP consultation and education
- "Oh, the bumps in the road"

Progress in 12 sessions

- Swallowing
  - Tolerate scant PO trials (puree texture) as authorized by MD with the Passy-Muir Valve inline with no s/a of aspiration during 5 out of 5 consecutive trials. **GOAL MET**

- Voicing
  - Sustain respiration during activities to promote oral motor functioning and voicing for 4 seconds across 3 consecutive trials. **GOAL MET**

Case Study
Assessment: Poor Wear-time Tolerance
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Medical Implications

**Pulmonary**
- Trachea at 2 months
- Chronic airway obstruction
- Effects of ventilation
- Micrognathia

**GI**
- G-tube and Nissen fundoplication
- External naso-bilious 2.4fr
- Severe oral aversion
- OT over 1 year at CHLA with marginal improvement (group & individual)

**Communication**
- Approximately 10 ABC signs report

Timeline of services

**Therapy**
- OT 1x/wk to prepare for MBSS participation

**Passy-Muir Valve**
- MD ordered

**MBSS**
- Instrumental assessment recommended

Integration of services

**SLP**
- Tolerated 44 seconds (T1) and 10 seconds (T2)

- Increased VC, oral, tongue, and velopharyngeal function
- Curing, swallowing, sensation, and compliance, interdependence to sell nerve and pain HME
- Patient and staff instruction in “in” and “out”
- Patient taught to maintain high “in” tolerance, daily input

**Intervention**
- Re-thinking diagnostic approach
- Database strategies: decision, at demand: single research, used of compiled top, bilateral search for objects and repeated testing
- Therapy management, 60% impedance reduced, increased 1 month with Passy-Muir valve alone
- Patient and staff: instruction regarding origin of related behavior and how to prevent it in future

**Barriers**
- Establish plan for therapy

- Start deep Passy-Muir peripheral coordination

Progress in 12 sessions

- Wear-time
  - Increase Passy-Muir Valve wear time to all waking hours without overt s/s of respiratory distress over 5 consecutive days while in multiple environments (home, community, and educational settings).
  - Patient/family will return demonstrate the ability to place the Passy-Muir Valve in-line, removal, maintenance procedures, and safety awareness during 5 out of 5 observed sessions.

- Saliva management
  - Demonstrate an increase in saliva management and efficiency of swallowing with the Passy-Muir Valve in-line through decreased suction requirements from 1-2x/hr to 2-3x per day.

- Swallowing
  - Tolerate scant, volume controlled PO trials with Passy-Muir Valve inline with no overt s/s of aspiration.

- Voicing
  - Voice on command at the CV, VC, and CVC level with the Passy-Muir Valve in-line during 4 out of 5 consecutive trials.

Outcome Measures

Therapy Methods
### Therapy Models

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<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>Individual/Family</td>
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<tr>
<td>Co-treatment</td>
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<tr>
<td>Peer Group Therapy</td>
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<td>Sibling Group Therapy</td>
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### Age Appropriate Activities

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<thead>
<tr>
<th>Activity</th>
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<tbody>
<tr>
<td>Applying Makeup</td>
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<tr>
<td>Tea Party with Dad</td>
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<tr>
<td>Play-Time without Expectations</td>
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<tr>
<td>Strategy Hide-and-Seek</td>
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<tr>
<td>Mr. Potato Head</td>
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<tr>
<td>Mealtime with Familiar Friends</td>
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### Oral Sensory Activities

- Trunk support activities
- Breath support activities
- Orofacial stimulation
- Gustatory differentiation
- Temperature and mixed textures
- Diet-texture hierarchy progression

### Oral Motor Activities

- Labial
- Lingual
- Jaw
- Tongue Base

### Nonnutritive Opportunities

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Tactile</td>
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<tr>
<td>Offactory</td>
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<tr>
<td>Gustatory</td>
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### 3-Step Graded Approach

Graded 3-step exposure modeled and reinforced using different nutritive stimuli and objects (smell, touch, kiss…)

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Is this a positive opportunity?
- Facial Expression
- Turning away from stimulus
- Noticing 'no'
- Mealtime structure with 'friends'

Readiness to progress?
- Self-initiated exploration
- Smiling/Observing
- Mealtime structure

Progression continuum
- Readiness
  - Suction management
  - Oral-motor-sensory system support
  - Opportunities when 'hungry'
- Safety
  - SLP/Caregiver monitoring
  - MBSS
- Transition
  - Establish mealtime routine
  - Balance enteral and oral feeds
  - GI and RD involvement to reduce gastric feeds

Eating

Drinking

Now that I can hear my child's voice
- Voice
  - Audible cry, sustained phonation, use of intonation, varied intensity, and improved quality
  - THERAPY FOCUS: Stabilize respiration and phonation
- Speech
  - Coarsening, babbling, word shapes and increased phonemes, repertoire, extended length of utterance, and tri-syllability
  - THERAPY FOCUS: Home program and collaboration
- Language
  - Exposure to individual vocal play and expansion
  - Functional communication assessment
  - THERAPY FOCUS: Use of nonverbal communication to support growth and minimize frustration

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5/21/2012
Facilitating speech & voice

Use of storybooks

- Candidates
- Content
- Application

What is this aqua thing?

Less suctioning

Introduction and airflow

Modified Barium Swallow Studies (MBSS)
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New beginnings

Measurable Therapy Goals
Progress Monitoring and incentive

Documentation

PASSY-MUIR® VALVE WEAR TIME

| Wear-time Trackers (Cont-)

Training Tools/Instructions

Sample Trackers
Resources


- Reason for tracheotomy
- Discuss placement
- Changes in sensation
- Describe voicing
- Describe secretion care
- Define diet progression
- Socialization

Articles

Children with Trachs: Facilitating Speech and Swallowing (December, 2010), Advance Magazine for Speech-Language Pathologists and Audiologists [Vol. 20, Issue 25, Pg. 5].

Additional Educational Opportunities

- Self-study webinars available on demand
  - Getting Started
  - Ventilator Application
  - Swallowing
  - Pediatric
  - Special Populations
- Live group webinars
- www.passy-muir.com
- Passy-Muir Inc. is an approved provider of continuing education through ASHA, AARC, CMSA and California Board of Nursing Credit