



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

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Disclosures

- Katy Peck, M.A., CCC-SLP, CBIS, CLE
 - 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


Assess Situation →

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





Educate!







Jump In!






SLOW Approach!






SLOW Approach!




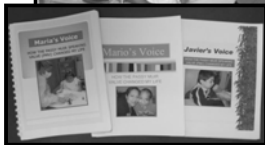
Approach #1

Educate



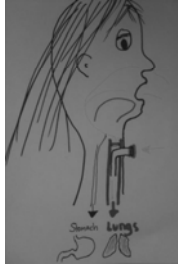



Are there signs of anxiety?





- Assess nonverbal language
- Actively listen
- Don't anticipate noncompliance
- Age appropriate learning plan
 - Support tools
 - Language used
- Structured success (scaffolding)

Draw the anatomy



Explain "Why" using props

- Secretion management
- Smell and taste
- Swallow
- Speech, voice, and cognitive communication
- Assist in weaning from the ventilator

Approach #2

Jump in

Look at the whole picture




- Anxiety may build
- Trial length
- Multiple assessments




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
 

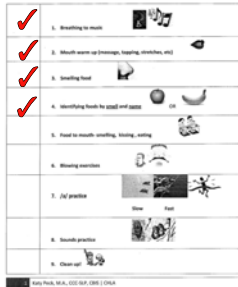

How to reinforce wear-time

- 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

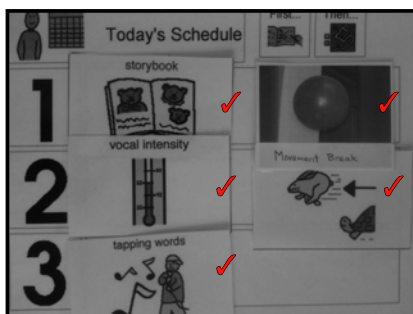


How to provide structure

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




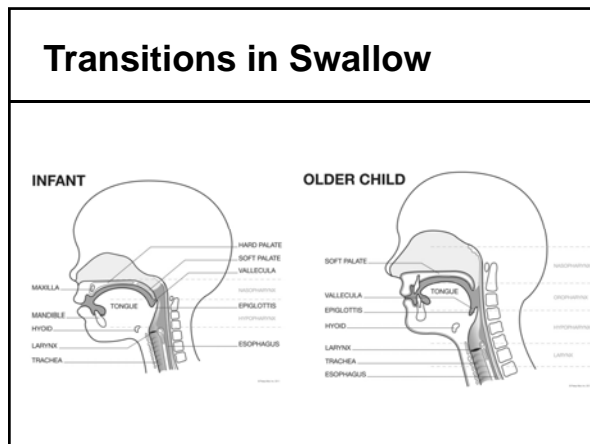
Oral Motor and Sensory Function

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




Feeding and Swallowing

- Secretion Management
- Nonnutritive Assessment
- PO Trials

Instrumental Assessments



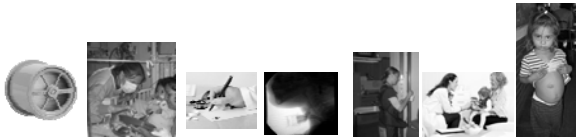
Modified Barium Swallow Studies (MBSS)

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

Teamwork

Outside referrals

Interdisciplinary Process



| | | | | | | |
|--|---|-----------------------------|----------------------------|---|---|--|
| Passy-Muir Valve Referral 1. MD Order 2. Pulmonary Clearance | SLP to assess & provide preliminary education | MD Order for SLP Assessment | MD order for MBSS with SLP | MBSS with floor nurse/RT and family present | MBSS with Passy-Muir Valve results to MD and family education | 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.
- 2. 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.



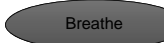
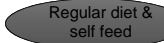
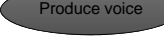
**Children's Hospital
LOS ANGELES**
We Treat Kids Better


Case Study

Assessment: Excellent Wear-time Tolerance and PO Intake




Medical Implications


| | |
|--|--|
| Prior to admission, patient was able to independently... | Current Status |
|  | Tracheostomy Mechanical ventilation |
|  | |
|  | |



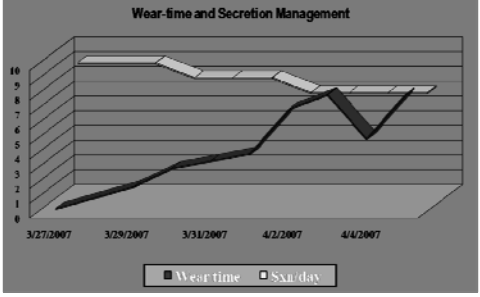
Next Steps




- 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



Pulmonary

- Trach at 1 year
- Oxygen (sleep)
- Respiratory therapy 4x/day


GI

- G-tube and Nissen Fundoplication
- Enteral feeds 5/day with 5mL yogurt 1x/day
- Disinterest in oral feeds

Communication


- Approximately 15-20 ASL signs report
- Pairing gestures and vocalizations
- Gaze aversion
- Self initiated play routines

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**

Progress in 12 sessions



- **Swallowing**
 - Tolerate scant PO trials (puree texture) as authorized by MD with the Passy-Muir Valve inline with no s/s 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**


Additional Steps...




Discharge recommendations

OT contacted SLP ~1 month s/p discharge

SLP consultation and education





Case Study

Assessment: Poor Wear-time Tolerance

Medical Implications

Pulmonary

- Trach at 2 months
- Chronic airway obstruction
- Nares occlusion
- Micrognathia

GI

- G-tube and Nissen Fundoplication
- Enteral feces bolus Q 4hrs
- Severe oral aversion
- OT over 1 year at CHLA with marginal improvement (group & individual)

Communication

- Approximately 40 ASL signs report

Timeline of services

Therapy OT 1x/wk to prepare for MBSS participation

- Increased congestion noted during TL trials
- Puffs and honey thix liquids (1oz), controlled tris thin liquid (TL)
- Exposure to fluoroscopy suite provided

Passy-Muir Valve MD ordered

- SLP authorization not received until September 2010
- >1 year after onset of intervention for feeding/swallowing

MBSS Instrumental assessment recommended

- MBSS (June 2007)- refused participation
- **Passy-Muir Valve not in-line during study
- MBSS (August 2008)- laryngeal penetration x1 with NTL and aspiration 1st swallow (UG observed) with thin liquids
- **Passy-Muir Valve not in-line during study; "patient refused to wear"

Integration of services

SLP Tolerated <4 seconds (T1) and 10 seconds (T2)

- Increased WOC, color change, secretions from L/R nares, coughing, and tachycardia noted
- Crying out, withdrawal behaviors, and avoidance. Attempts noted to self-remove and place HME
- Patient used ASL to communicate "no" and "all done"
- Patient's mother was forceful and placing high demands, visibly upset

Intervention Re-thinking diagnostic approach

- Behavioral strategies: choices, not demands. Tangible rewards, use of preferred toys, distraction (search for objects, and planned ignoring)
- Physiological approach: SLP expectation reduced, rewarding >1 breath cycle with Passy-Muir Valve in-line
- Psychosocial dynamic: Education to patient's mother regarding origin of refusal behaviors and how to proceed

Barriers Establish plan for therapy

- Upper airway patency concerns given craniofacial anomalies

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, remove, maintenance procedures, and safety awareness during 5 out of 5 observed sessions.
- Saliva management
 - Demonstrate an increase saliva management and efficiency of swallow with the Passy-Muir Valve in-line through decreased suction requirements from 1-2x/hr to 2-3 times per day.
- Swallowing
 - Tolerate scant, volume controlled PO trials with Passy-Muir Valve in-line 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

| | Wear-time | Family Education | Suction | Speech Production | Swallow Function |
|------------|---|---|---------|--|---|
| Assessment | <10 seconds | High expectations, anxiety and frustration | 60 hr | Nonverbal signs, no speech sounds were heard | patient not able to participate in PO trials with Passy-Muir Valve in-line given poor tolerance. Determined to be unsafe. |
| Discharge | Majority of waking hours and during PO sessions for removal reduced from 100% - minutes to 0% | 100% independent handling positive interaction during Passy-Muir Valve trials with consistent wear-time noted | 3-4/day | Vocalic VC, CV, VCV, and CVCV consist nature (with independent attempts) | No overt signs of aspiration. Food selectively. Mature oral skills in support feeding |


Therapy Methods





Therapy Models




Individual/Family



Co-treatment




Peer Group Therapy




Sibling Group Therapy


Age Appropriate Activities




Applying Makeup




Tea Party with Dad




Play-Time without Expectations



Strategic Hide-and-Seek







Mr. Potato Head



Mealtime with Familiar Friends




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

Tactile

Olfactory





Gustatory






3-Step Graded Approach


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


Is this a positive opportunity?




Facial Expression



Turning Away from Stimuli




Nodding "no"




Mealtime structure with "friends"

Readiness to progress?



Self Initiated Exploration



Smiling/Observing

Progression continuum

M

Readiness

- Secretion management
- Oral-motor-sensory system support
- Opportunities when "hungry"

V

Safety

- SLP/Caregiver monitoring
- MBSS

W



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  <p>THERAPY FOCUS: Sustain respiration and phonation</p> |
| Speech | Cooing, babbling, word shapes and increased phonemic repertoire, extended length of utterances, and intelligibility 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  |

Facilitating speech & voice

Use of storybooks

- ✓ Candidates
- ✓ Content
- ✓ Application

What is this aqua thing?

While recovering from my surgery a Speech Therapist named "Katy" came to see me. She had a small green thing that she called a Passy Muir Speaking Valve or PMV for short!

I heard Katy tell my mom that the PMV would help with my speech development. She said that sound play was an important skill to learn. Just like a bridge, I would play with sounds and then develop the ability to produce sounds to communicate my wants and needs.

Less suctioning

After I was able to catch my breath, Katy put the green PMV thing on a tube between my trach and the ventilator.

Introduction and airflow

Airflow with a Tracheostomy
 Since I have a hole in my trachea, all of the air I breathe in goes to my lungs and then out my trach tube. The PMV lets the air go out of my mouth and nose, so that I can blow bubbles finally!

Modified Barium Swallow Studies (MBSS)

Once the MBSS was complete, the doctor left the room. Katy explained to my family and I, that I could eat by mouth. She also trained us on how to look for signs of aspiration during meals.

New beginnings



Measurable Therapy Goals

Progress Monitoring and incentive

Documentation

PASSY-MUIR® VALVE WEAR TIME

THERAPY TRIAL DATA

| | Baseline | Discharge |
|-------------|----------------|------------|
| Sustain /a/ | 3 seconds | 10 seconds |
| Sustain /s/ | < 3 seconds | 8 seconds |
| Sustain /z/ | Not applicable | 8 seconds |

Assign data collectors
 Provide a system
 Graph progress

Training Tools/Instructions

Sample Trackers

Wear-time Trackers (Cont-)

Resources



Talk Muir- Pediatric Issue (Spring 2011).
Passy-Muir News, Events and Education,
Passy-Muir, Inc. Pg 1-3.



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

Articles

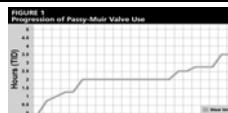
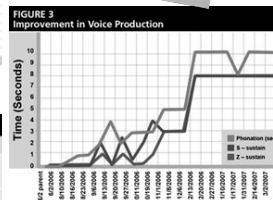


FIGURE 2
Speech Outcome Data for Sustained Phonation

| | Baseline | Discharge |
|-------------|-----------------|------------|
| Sustain /a/ | 3 seconds | 10 seconds |
| Sustain /u/ | < 1 second | 8 seconds |
| Sustain /z/ | Non-sustainable | 8 seconds |



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