Passy-Muir Special Event Webinar

Swallowing Series

Swallowing Management of the Tracheostomized Pediatric Patient

Case Presentations

Case Presentation 1

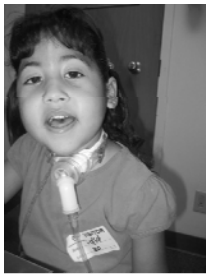
Katy Peck, MA, CCC-SLP, CBIS

Children's Hospital Los Angeles

Los Angeles, CA

Patient History

- 3 years 8 months of age
- Severe pulmonary hypoplasia secondary to congenital diaphragmatic hernia (CDH) s/p repair.
- GERD with history of Pyloric Stenosis s/p pyloramyotomy



Medical History- Pulmonary

- Age of cannulation- 2 months of age
- Patient required mechanical ventilation at that time given severe lung hypoplasia secondary to right CDH.
- Medical Procedures- Laryngoscope & Bronchoscopy and Tonsillectomy & Adenoidectomy

Medical History- Nutrition

- GJ-tube continuous drip over 20-hours.
- MBSS in 2005; study was discontinued due to emesis and inability to participate.
- Token PO trials during the 4 hours the pump was turned off at 2 years 7 months of age with limited tolerance reported.
- History of poor weight gain.
- History of disinterest in eating and oral sensory processing deficits, addressed by the *Regional Center*.

Medical History- Therapy

- Physical and Occupational Therapy was provided through the *Regional Center.*
- Patient received Speech Therapy at *CHLA* from May 2006 to October 2007.

Multidisciplinary Team Involvement

- Pulmonary MD
- ENT
- ENT nurse
- Nurse Case Manager
- Registered Dietician (RD)
- Speech Language Pathologist- referred by ENT nurse to initiate PMV use.

Diagnostic Assessments

Speech/Voice Assessment (*6/2/06)*

- Patient tolerated the Passy-Muir® Valve for a 15 minute trial x 2 with no overt signs or symptoms of respiratory distress.
- Patient received supplemental Oxygen (1 lpm) via trach collar during assessment.
- Patient in the process of weaning off mechanical ventilation with no ventilator use during waking hours indicated in patient's plan of care at the time of evaluation.

Assessment Observations

- Increased secretions observed with valve in-line.
- Productive cough noted with intermittent wet vocal quality.
- No increased work of breathing (WOB) or significant changes in baseline physiological status.
- Patient was very cooperative with no signs of anxiety.
- Patient's mother expressed fear related to valve use secondary to enlarged tonsils and concerns of possible increased WOB and desaturations during wear-time.

Recommendations

- Outpatient speech therapy 1x/week for 1-hour sessions over 3 months
- Increase wear time of Passy-Muir® Valve
- Complete caregiver training
- Optimize patient success using the valve in a variety of context/environments.

Speech Swallowing Assessment

- (2/14/07)- Passy-Muir® Valve In-line
- Patient appeared safe for all textures assessed (15mL/texture). No overt s/s of aspiration or changes in baseline respiratory status.
- Recommended volume controlled PO trials 1x/day (15cc)
- Use of compensatory strategies to increase efficiency and safety of swallow
  - lingual sweep, chin tuck, and dry swallows
- Given patients history and pulmonary implications, a *Modified Barium Swallow Study (MBSS)* was recommended

Feeding/Swallowing Goals

- Patient will tolerate non-nutritive stimulation (NNS) and a select set of 5 neuromuscular exercises in preparation for a MBSS with 80% accuracy.
- Patient will tolerate 30-60cc PO trials (puree and thickened liquids MBSS) with no s/s of aspiration during 4 out of 5 trials.
- Patient will tolerate Passy-Muir® Valve in-line placement during all PO trials (less than 20 min. and greater than 5 min) pending changes in respiratory status during 4 out of 5 trials.

MBSS Results and Recommendations

- MBSS Recording (3/8/07)
- Safe and efficient swallow with all consistencies/textures observed.
- Due to patient's complicated feeding history, recommended volume controlled trials with valve in-line across settings.

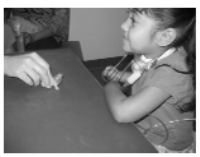
MBSS Results and Recommendations

- Consult with MD to discuss diet upgrade and current prescribed volume of enteral feeds.
- Speech therapy 1x/week x 6 months to address safe diet upgrade and optimize efficient use of the Passy-Muir® Valve.

Goals for Intervention

Voice and Speech Production

- Patient will increase 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 will voice on command with the valve in-line at the CV, VC, CVCV, and CVC level with 80% intelligibility.



Voice and Speech Production

- Family/caregivers 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.



Feeding and Swallowing- Revised s/p MBSS

- Patient will tolerate *regular-for-age diet* during volume controlled therapy trials while maintaining efficiency/safety of swallow with Passy-Muir® Valve in-line during 4 out of 5 trials with 80% accuracy.
- Patient will demonstrate increased saliva management and efficiency of swallow with the valve in-line through decreased suction requirements from every 15 minutes to 2-3 times per day.
- Patient will voice on command with the valve in-line at the multisyllabic and 2-3 word phrase level with 80% intelligibility.

Discharge Goals

- Family independent with non-nutritive and PO home program (pending s/s of aspiration).
- Outpatient speech and language therapy to continue at CHLA to increase PO intake using a diet texture hierarchy and close monitoring to assure efficiency and safety of swallow.
- Speech and language services provided by the school district, if indicated, to address developmental delay.

Treatment Techniques

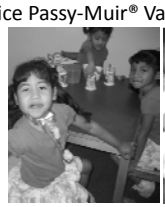
Controlled Passy-Muir® Valve Trials

Goal: Facilitate successful trials across settings

- Structured trials in medical setting
- Education to patient/family prior to valve placement
- Pulse oximeter to monitor physiological response

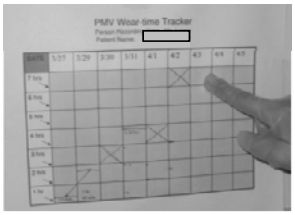

Trials- Techniques to Reduce Anxiety

- Relaxation with music to encourage diaphragmatic breathing and sustained wear-time.
- Play-based therapy techniques, planned distractions, and personalized storybooks developed.
- Practice Passy-Muir® Valve placement (dolls, sibling, etc.)



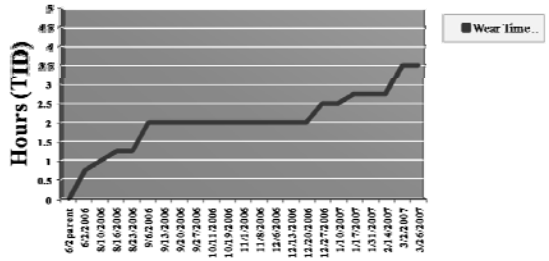

Trials- Documentation

Passy-Muir® Valve Wear time Tracker



- Patient's mother documented daily wear-time in the home and school environment.
- Documentation used to monitor success and reduce parent anxiety related to use of the valve outside the therapy setting.

Passy-Muir® Valve Wear-Time Progress



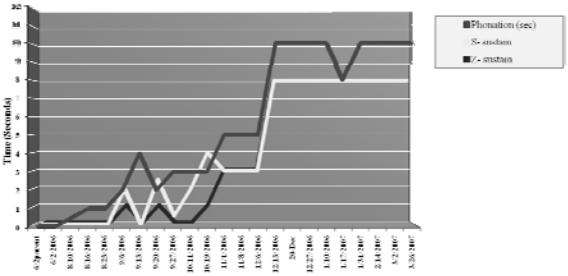
Respiration/Voice Production

- Blowing activities with visual feedback
- Diaphragmatic breathing
- Visual and tactile sensory feedback to elicit voice onset
- Simplified anatomy/physiology illustrations

Sustained Phonation & Respiration Data

	Baseline	*Discharge*
Sustain /a/	*3 seconds*	*10 seconds*
Sustain /s/	*< 1 second*	*8 seconds*
Sustain /z/	*Nonstimulable*	*8 seconds*

Sustained Respiration and Phonation Progress



Oral Sensory Processing

- Intraoral stimulation (touch/vibration, temperature, taste, etc) to increase sensory awareness provided.
- Progression on diet-texture hierarchy facilitated through:
  - Olfactory differentiation tasks
  - Graded exposure
  - Sibling modeling

Oral Preparation/Oral Phase

- Oral motor exercises
  - chew tubes
  - blow toys
  - straw progression
  - tongue depressor resistance exercises
- Compensatory techniques
  - alternate bite/sips,
  - lingual sweep
  - liquid wash
  - visual inspection s/p swallow
  - imposed rest breaks
  - bite size awareness

PO Intake: Volume

- Reinforcement of mealtime routines in the clinic, home, and community settings.
- Socialization and mealtime expectations modeled.
- Increase sensation of "hunger." Collaboration between:
  - SLP
  - RD
  - medical team
- Emesis with increased PO

Secretion Management

- Parent education to reduce frequency of endotracheal suctioning
- Verbal cueing to increase awareness of anterior spillage of saliva
- Verbally cued dry swallows
- Intermittent vocal quality checks (wet vs. dry)

Feeding/Swallowing Progress

	Baseline	*Discharge*
PO intake	10-15cc yogurt drink at 1600 (1x/day)	9 oz solids and 9 oz liquid TID with PMV inline
Secretion Management	Every 15 minutes	7-10 times/day

Discharge Status

- Patient tolerating regular-for-age diet with reduced pocketing and oral sensory aversion noted.
- Progress monitored during CHLA Pulmonary Clinic visits.



Case Presentation 1
Christina Costa, MS, CCC-SLP

All Children's Hospital
Saint Petersburg, Florida

Jerry's History

- Jerry is a 6 year old previously healthy twin male with a history of asthma
- Timeline & Symptoms:
  - Asthma Exacerbation
  - Friday: Complained of being tired
  - Saturday: Fevers
  - Sunday: Complained of feet and hands hurting
  - Monday: Round raised lesions on his hands and feet; itching

Jerry's History

- One hour after his bath:
  - he was slumped over
  - unable to hold a drink
  - not managing his secretions
  - could not ambulate
- He was admitted to All Children's Hospital PICU

Medical Status

- Received a speech consult 1 month after admission
- Guillain–Barré Syndrome
- Paralysis
- G-Tube
- Tracheostomy
- Ventilator dependent

Passy-Muir® Valve Evaluation

- Current Communication: eyebrow raise for "yes" and slight shaking of head for "no"
- Tracheostomy tube - Bivona, Pediatric Size 5, water filled cuff
- Secretions: moderate drooling, required frequent oral suctioning
- Unable to cough
- *Slight* oral movements: opening mouth, protruding tongue, moving tongue side to side, attempted smile

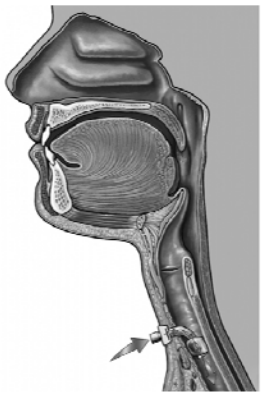
Passy-Muir® Valve Evaluation

- 1 trial attempted
- Cuff was deflated by the RT
- Passy-Muir® Valve was placed in-line with the ventilator using a Ballard 15mm- 22mm step down adaptor

Passy-Muir® Valve Evaluation

- Status Prior:
  - Position: Reclined at 40 degrees
  - Respiratory Rate: 23 BPM
  - Oxygen saturation: 98 %
  - Color: Pink
  - State: Calm
  - Voicing: aphonic
- Results:
  - 20 seconds tolerated
  - Respiratory Rate: 18 BPM
  - Desaturation to 91%
  - Color: Pink
  - State: Eyes widened, Panic
  - Voicing: Aphonic
  - *Backflow noted when valve was removed**

Backflow



Bedside Feeding Evaluation

- G-Tube feeds: 20cc Pediasure per hour
- Decreased strength and ROM of lips, tongue, jaw, and cheeks
- Not managing secretions
- Evaluation:
  - Flavored tongue depressors
  - Tactile stimulation
  - Verbal cues for swallowing
- One swallow noted during evaluation

Goals and Therapy

- Goals
  - Increase secretion management
  - Increase frequency of swallowing
  - Increase strength and ROM
- Therapy – Oral and Taste Stimulation
  - Non-food taste stimulation (flavored tongue depressors & sprays)
  - Thermal stimulation (ice chips, popsicle)
  - Taste stimulation (applesauce, pudding)
  - Tactile and verbal cues

OPMS 1 – Trial 1
Pedialyte Popsicle Dipped in Barium

Re-evaluation for Passy-Muir® Valve

- Tracheostomy tube: Bivona, Pediatric Size **5.5** with a water filled cuff (deflated by RT before trial)
- In line with the ventilator with 22mm-15mm step down adaptor
- Position: custom wheel chair at 80 degrees
- 1 trial attempted (15 minutes tolerated)
- Respiratory Rate: 18 BPM
- Oxygen saturation: 98-100 %
- Color: Pink
- State: Calm
- Voicing: Able to tell his mother "**I Love You**"

Outpatient Goals

- Tolerate oral motor exercises (OMEs) to lips, cheeks, tongue, and jaw with adversive reaction less than 2x
- Tolerate Passy-Muir® Valve trials for 15 minutes
- Generate "dry" swallow response using taste stimulation x 30
- Teaching oral exercise program to parents

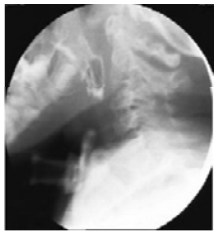
Outpatient Goals

- Intense flavors (sprays, ***Sip Stick Powders, Cheetos, Skittles***)
- Thermal Stimulation (Ice Chips, Popsicles)
- Techniques: Tactile and verbal cues, chin tuck
- Reward

Status Prior to OPMS 2

- Tolerates being off the ventilator for up to 10 minutes
- Wears the Passy-Muir® Valve (with cuff deflated) for average of 4 hours per day with longest time being 7 1/2 hours
- G-Tube feeds: Pediasure 240 cc *bolused* 3x per day and continuous feed at night over 7 hours at rate of 70cc per hour
- Scared to swallow
- Expectorating all saliva

OPMS 2 - 5 Trials



Outpatient Goals

- Patient will expectorate saliva less than 10x then 5x
- Achieve abdominal/thorasic breathing pattern x10 (with no associated clavicular movement)
- Generate "dry" swallow response using taste stimulation x 30
- Produce audible voice when using Passy-Muir® Valve x10
- Patient will drink 10 sips of liquid containing barium without gagging/grimacing

Outpatient Therapy

- Liquids: Chilled Sprite & juice
- Purees: Pudding & mixed texture pudding
- Solids: Skittles, candies
- Techniques: verbal cues, chin tuck, small sips and bites

Status Prior to OPMS 3

- Bivona 5.5 water cuffed Tracheostomy tube
- Off ventilator for the past month
- Wears the Passy-Muir® Valve (with cuff deflated) during all waking hours
- ***Swallowing His Secretions****

OPMS 3 – 4 Trials

Passed his OPMS!

Capped

Decannulation of Jerry and Toby

Questions?

Questions and Conclusion

- Thank you for attending the webinar.
- ***Please complete your course evaluation for CEU credit.***

For additional questions, email:

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- Christina Costa costacmh@gmail.com