Pediatric Voiding Dysfunction

What is wrong with Kids??

Pediatric Urology divided into
- The Lower Urinary Tract – bladder, urethra
- The Upper Urinary Tract- kidneys and ureters

The Lower Urinary Tract
Storage Symptoms
- Increased or decreased voiding frequency
- Daytime Incontinence
- Enuresis
- Urgency
- Nocturia

Voiding symptoms
- Hesitancy
- Straining
- Weak stream
- Intermittency
- Dysuria

Other symptoms
- Holding maneuvers
- Feeling of incomplete emptying
- Post-micturition dribble

Conditions/Diagnoses
- Enuresis
  - Monosymptomatic – nocturnal only
  - Non-monosymptomatic- daytime and nighttime leakage
  - Primary- 90%, not been dry for 6 months
  - Secondary- 10% dry 6 months then wet again

- Daytime Conditions look at the following:
  - Incontinence
  - Voiding frequency
  - Voiding urgency
  - Voided volumes
  - Fluid Intake
Manual Therapy Seminars

Pediatric Health

Visceral Manipulation Can Benefit:
- Torticollis & Colic
- Pelvic Region Pain
- Bowel Dysfunction
- Incontinence
- Dysmenorrhea
- Prenatal & Postpartum Musculoskeletal Pain

Stop by...
February 4, 2014
11am - 1pm

Poster Presentation
Neural & Visceral Manipulation for Infants with Torticollis

by Jean Anne Zollars, MA, PT, BI-D

Women's Health
Gail Wetzler, RPT, CVMI, BI-D, EDO
Presenter of Gynecologic Visceral Manipulation Courses

October 2-5, 2014
Bethlehem, PA

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Registration and complete schedule: 866-522-7725 or Barralinstitute.com
• Bowel & Bladder Dysfunction
• Overactive Bladder
• Voiding Postponement
• Underactive Bladder
• Dysfunctional Voiding
• Bladder Outlet Obstruction
• Stress Incontinence
• Vaginal reflux
• Giggle Incontinence
• Increased Daytime frequency
• Decreased Daytime frequency
  ▪ Neveus et.al. 2007

Upper Urinary Tract disorders
• Related to The kidneys and ureters
• Congenital Disorders
• Veiscoureteral Reflux
• Retrograde passage of urine from the bladder into the upper urinary tract.
  ▪ Most common due to incompetent or inadequate closure of the ureterovesical junction (UVJ), which contains a segment of the ureter within the bladder wall (intravesical ureter).
  ▪ Reflux is prevented during bladder contraction by fully compressing the intravesical ureter and sealing it off with the surrounding bladder muscles.
  ▪ Failure of this anti-reflux mechanism is due to the shortening of the intravesical ureter.
  ▪ The intravesical ureter length may be genetic
  ▪ There are 5 grades of reflux, Grade I is the most mild and Grade V is the most severe.
  ▪ Renal scarring associated with VUR
  ▪ Children with VUR may develop
    ▪ Dysfunctional voiding patterns
    ▪ Urinary retention
      McLorie, G., Herrin, J.T. 2013 Up to Date

Dysfunctional Voiding
• Etiology multifactorial – ascribed to
  ▪ Delay of maturation
  ▪ Prolongation of infantile bladder behavior
  ▪ Aberrations of acquired toilet training habits
  ▪ Learned behavior
  ▪ Congenital/genetic factors to a lesser extent
    Hellerstein, Linebarger, 2003, Chase et al 2010
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Habitual contraction of the urethral sphincter during voiding, as observed by uroflow measurements

Cannot be applied unless repeated uroflow measurements have shown curves with a staccato pattern or with invasive urodynamic investigation

Denotes malfunction during voiding phase only not storage phase

Neurologically normal

Childs voiding pattern that is abnormal for his or her age.

Caused by functional obstruction of the bladder outlet during the voiding phase of micturition cycle

Described in literature as:
- Hinman Syndrome
- Nonneurogenic neurogenic bladder
- Occult neuropathic bladder
- Psychogenic voiding dysfunction
- Detrusor sphincter dyssynergia

Allen, 1977, Hinman, 1986

Development of Dysfunctional Voiding
- Voiding Pattern is vulnerable when control depends on isolated action of the external sphincter

Forceful closure of external sphincter during detrusor contraction increases intravesical pressure leads to Vesicoureteral Reflux (VUR)- back up of urine from the bladder into the ureters

Early sphincter contraction or poor coordination between bladder and sphincter leads to retention and PVR resulting in UTI or overflow incontinence

Voiding occurs upon relaxation of the PFM

Allen & Bright, 1978, De Paepe et al., 2002)

Pelvic Floor Dysfunctions in Bowel Bladder disorders
- Diaphragm/ PFM dysynnergia
- High tone PFM- very functionally based
- Marked incoordination dysfunction
- Constipation is the number 1 cause of DI
- Children with DI who use posturing maneuvers to avoid incontinence are at high risk for UTI's Hellerstein S, et al, 2003
- 66% of children with increased PVR improved with resolution of constipation. Dohil. Et al. 1994
- 89% resolved daytime wetting with resolution of constipation.
- 63% resolved enuresis and prevention of UTI with resolution of constipation. Loening-Baucke. 1997
- Interdependent but share same embryologic origin, pelvic location, innervation and passage through the levator ani muscles
2014 CONTINUING EDUCATION COURSES

The Section on Women’s Health is proud to announce the course schedule for 2014. We hope you will be able to take advantage of the variety of course options and locations throughout the country.

Registration for 2014 educational courses and the 2014 Fall Conference is now open on our website:

www.womenshealthapta.org/education/regional_courses/index.cfm

For updates on courses and registration openings, please follow the Section’s Twitter and Facebook pages.

**Pelvic Physical Therapy 1**
January 17-18, 2014 (Fri-Sat)
Speakers: Lori Mize, PT, DPT, WCS
Carina Siracusa Majzun, PT, DPT
Greenville, SC
March 21-22, 2014 (Fri-Sat)
Speaker: Lori Mize, PT, DPT, WCS
Houston, TX
June 20-21, 2014 (Fri-Sat)
Speaker: Lori Mize, PT, DPT, WCS
Baton Rouge, LA
July 11-12, 2014 (Fri-Sat)
Speakers: Lori Mize, PT, DPT, WCS
Barb Settles-Huge, PT
Des Moines, IA
October 14-15, 2014 (Fri-Sat)
Speaker: Barb Settles Huge, PT
Boca Raton, FL

**Pelvic Physical Therapy 2**
February 28-March 1, 2014 (Fri-Sat)
Speaker: MJ Straughn, PT, BCB-PMD
Portland, OR
April 26-27, 2014 (Fri-Sat)
Speaker: Barb Settles Huge, PT
Madison, WI
August 1-3, 2014 (Fri-Sat)
Speakers: Carina Siracusa Majzun, PT, DPT
Towson, MD

**Pelvic Physical Therapy 3**
June 27-29, 2014 (Fri-Sat)
Speakers: MJ Straughn, PT, BCB-PMD
Carina Siracusa Majzun, PT, DPT
Rochester, NY
September 12-14, 2014 (Fri-Sat)
Speaker: MJ Straughn, PT, BCB-PMD
Portland, OR
November 7-9, 2014 (Fri-Sat)
Speaker: MJ Straughn, PT, BCB-PMD
Madison, WI

**Fundamental Topics in Pregnancy and Postpartum Physical Therapy**
March 28-30, 2014 (Fri-Sat)
Speakers: Suzanne Badillo, PT, WCS
Susan Giglio, PT, RYT
Baton Rouge, LA
May 16-18, 2014 (Fri-Sat)
Speakers: Karen Litos, PT, MPT
Valerie Babbs, PT, MPT, WCS, ATC
East Lansing, MI
July 25-27, 2014 (Fri-Sat)
Speaker: Suzanne Badillo, PT, WCS
Edina, MN
August 22-24, 2014 (Fri-Sat)
Speakers: Susan Giglio, PT, RYT
Karen Litos, PT, MPT
Longmont, CO

**Advanced Topics in Pregnancy and Postpartum Physical Therapy**
February 21-23, 2014 (Fri-Sat)
Speaker: Susan Giglio, PT, RYT
St. Louis, MO
May 4-6, 2014 (Fri-Sat)
Speakers: Susan Giglio, PT, RYT
Susan Steffes, PT
Baltimore, MD

**The Physical Therapist in Labor & Delivery: Advanced Techniques in Labor Support**
October 14-16, 2014 (Fri-Sat)
Speaker: Susan Giglio, PT, CD (DONA)
Austin, TX

Check website for new courses throughout the year!

For more details on CAPP, go to http://www.womenshealthapta.org/capp.cfm
For more information on Section on Women’s Health sponsored courses go to http://www.womenshealthapta.org/education/education.cfm or contact the SOWH at sowh@apta.org, or 703-610-0224.
• BBD
  o Bladder over activity (urge)
  o Increased or decreased voiding frequency
  o Bladder underactivity
  o Constipation
  o No longer Dysfunctional Elimination Syndrome
• Constipation can result from PFM dysfunction.
• Rectal distension with constipated feces is known to increase the risk of colonization of the urethra and perineum with uropathogens, irritate the bladder and cause over activity of the detrusor, and increase the virulence of the fecal bacteria.  Reddy, Redman 2003

**No Time Or Money To Travel? Scrambling to Get Your CEU's?**

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For more information, go to the Section on Women's Health website at www.womenshealthapta.org or call 703-610-0224.

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**Enuresis**

- Affects 15% of girls and 22% of boys
- 5-7 Million US children
- Boys 50% more likely than girls
- 10% of 6 year olds continue to wet
- Spontaneous cure rate 15% per year thereafter
- 1-3% of 18 year olds wet their beds
- Less than 50% of all bedwetting children have monosymptomatic enuresis
- Causes of Enuresis
  o Nocturnal polyuria
- Anti-diuretic hormone
- Detrusor over activity
- Increased arousal threshold
  - enuresis can occur at any stage of sleep
  - may be immature sleep pattern allowing uninhibited reflex contraction of bladder
  - arousal from sleep improves with CNS maturation

- “In a sense, this condition is a normal variation of bladder control rather than a disease state” Dr. Barton Schmitt

- Active treatment at age 6
- Impact is mainly psychological and may be severe
- “treatment is not only justified but mandatory”
  ICCS Standardization document 2010

Psychological Considerations in BBD
- “Voiding function could be grossly disturbed through psychological malfunction”
- Voiding dysfunctions might cause psychological disturbances rather than the reverse being true. Hinman1986
- Elevated psychological test scores returned to normal after the urologic problem was cured.
- Emotionally stressful life events in childhood and the parents psychological status can influence childhood voiding patterns.

- Specific to type of dysfunction
  - Voiding Postponement
    - Externalizing disorders - oppositional defiant disorder (OOD)
  - Fecal Incontinence
    - Internalizing and externalizing disorders
  - Urge Incontinence
    - Internalizing symptoms predominate
  - Daytime Incontinence
    - More deviant
  - Enuresis
    - Typically Externalizing Disorders
    - Monosymptomatic - fewer behavioral problems
    - Non-monosymptomatic - more fear and anxieties
  - ADHD
    - found in 37% of daytime wetters compared to 3.4% of non-wetting children
    - Non-compliance is high especially if IQ is lower than 84.
Behavioral treatment of Pediatric PF disorders

- Internationally known as “Urotherapy”
  - Education of the child/care giver on
  - the specifics of the dysfunction
  - fluid intake spread throughout the day
  - timed voiding schedule
  - bowel schedule - aggressive management of constipation
  - hygiene issues - changing wet clothing, wiping, skin care
  - Rx expectations and timelines (bladder/bowel perception and bowel motility)
  - Has been shown to decrease UTI’s, constipation and need for intervention for patients with VUR
    Chase et al. 2010

Physical Therapy Treatment

- Bladder Diary assessment of bowel and bladder habits
- Dietary considerations
- PFM Assessment – external
- SEMG- NMR
- Transabdominal rehabilitative US
References


Loening-Baucke V: Urinary incontinence and urinary tract infection and their resolution with treatment of chronic constipation of childhood. Pediatrics 1997; 100:228


standarisation document from the international children’s continence society. J Urol 2010; 183: 441-447

McLorie, G; Herrin JT Presentation, diagnosis, and clinical course of vesicoureteral reflux


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