Bladder/bowel interrelationship/management of bowel dysfunction

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Functional constipation (FC) & lower urinary tract symptoms (LUTS) common problems in children

• Prevalence childhood constipation varies from 0.7% - 29.6% (median 12%) all children (Mugie et al. 2011).
• Prevalence faecal IC (1 or more week) 2.9% (British study)
• 1 or more LUTS symptoms present 26% school aged children
• 30% presenting to Paed Gastro tertiary hospitals have LUTS
• Up to 50% s/b Paed Urologist report symptoms constipation
• Both FC & LUTS have a sig impact on QoL affecting both physical & emotional well-being of child and family.
• Level of social & emotional problems is associated with symptom severity

Management of function bowel disorders in children Burgers et al
Constipation – the commonest dysfunction

• 3 - 5% paediatrician visits & 10 - 25% GE referrals (Milla, et al., 2002; Sondheimer, 2002; Villarreal, et al., 2001; Youssef, 2001).

• Positive family history: 28 - 50%

• Increases with age

• Higher prevalence in boys - ratio 3:1 (Catto-Smith, 2005).

• 30% condition persists into adolescence & adulthood (Proctor & Loader, 2003; van Ginkel, et al., 2003).

Rome III
Diagnostic Criteria for Functional Constipation

Must include 2 or more of the following in a child with a developmental age of at least 4 years with insufficient criteria for diagnosis of IBS:

1. 2 or fewer defeacations in the toilet per week
2. At least 1 episode of faecal incontinence per week
3. History of retentive posturing or excessive volitional stool retention
4. History of painful or hard bowel movements
5. Presence of a large faecal mass in the rectum
6. History of large diameter stools that may obstruct the toilet

*Criteria fulfilled at least once per week for at least 2 months before diagnosis

Rome III 2006
Diagnostic Criteria for Functional Constipation

• The term ‘functional constipation’ describes all children in whom constipation does not have an organic etiology.

• Because functional constipation and functional faecal retention often overlap, the 2 disorders were merged into 1 category.
Faecal incontinence

• Defined as involuntary passage of stool in the underwear.
• Reported in 75-90% of constipated children
• Functional non-retentive faecal incontinence (FNRFI)

Management of function bowel disorders in children Burgers et al

Not again!!!
Causes of Constipation

• Constipation can be 2nd to organic disorder in minority (5%) including:
  – Neurological: Tethered cord, cerebral palsy, muscular dystrophy
  – Hirschsprung’s disease
  – Anorectal malformations
  – Endocrine disorders: Hypothyroidism, diabetes
  – Cow milk intolerance (Iacono 1995)
  – Coeliac disease: Subtle clinical features

• In the majority of children (95%) functional constipation is the most common cause after the neonatal period

• History of painful defaecation in 63%
Functional Constipation

- Cycle ensues

**Secondary rectal distension -> rectal hyposensitivity**

**Faecal impaction -> overflow faecal incontinence**

- LARGE HARD STOOL
- LONG DELAY IN PASSAGE OF STOOLS
- STRETCH OF ANUS +/- TEAR
- CHILD AVOIDS DEFAECATION BY CONTRACTING ANAL SPHINCTER AND GLUTEALS
Current understanding of co-existing bladder and bowel symptoms

- Coexistence of functional constipation/urinary tract disorders, including UI, LUTD & UTI is well established
- Bladder Bowel dysfunction (BBD) describes children with combination functional bladder and bowel disturbances:
  - Bladder overactivity and underactivity
  - ↑ or ↓ voiding frequency
  - Constipation +/- faecal incontinence (FI)
- Close anatomical proximity bladder/urethra to rectum, if abnormality in one system then can effect the other
- Relaxation PFM/ striated sphincters necessary for normal micturition and defaecation
Several theories

1. Rectal distension puts direct pressure on post bladder wall and leads to bladder overactivity or mechanical compression of bladder with trigonal irritation, post bladder wall invagination, bladder neck & urethral obstruction or distension

2. Urethral & anal sphincter neural input is one functional unit with shared input to sacral reflexes from bowel, bladder & proximal urethra

3. Prolonged ext anal sphincter contraction with large stool ➔ inappropriate PFM contraction
Assessment of bowel dysfunction

HISTORY

• Past history  # pregnancy/birth -meconium
• Neonatal -including feeding  # Developmental /medical history
• School progress  # Bladder problems

SOILING

# primary/secondary.  # duration  # frequency of soiling episodes
# consistency, amount of soiled stool, # pre or post defaecation,
# time of day/night  # awareness of soiling
Assessment of bowel dysfunction

Toileting Pattern

- ? independent at toilet
- ? spontaneous defaecation
- urge to defaecate? where felt, decreased, none, response
- frequency of stool in toilet - type, size, diameter
- discomfort/pain/where/severity
- ? resistance to toilet

HYGIENE

- ? aware of soiling
- ? changing
- ? managing at school
- ?” clean up” routine - wiping or after accident
- UTI’s - how often, management, prevention
Objective assessment

• physical examination
• ultrasound examination
• abdominal X-ray
• bowel chart
• toilet posture
• pattern of straining
• abdominal action
• Sensory-motor awareness
Treatment of children with BBD

• Treat bowel condition first then day wetting then night wetting

• Education to child and parents re bowel A&P, demystify condition, remove guilt & discuss consequences of condition for family
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Education

- Child – re bowel function and dysfunction
- Normalise the subject matter
- Age appropriate
- Pictures, video colouring in
- Child – active participant
- Realistic time frame
Education

• Parents/family
• Time frame
• Written material
• Remove blame/guilt
• Explain child’s behaviour to parents
Faecal impaction

- Severe constipation with a large faecal mass in either rectum or abdomen, which is unlikely to be passed on demand
- Can be determined: rectal examination, abdominal palpation, abdominal radiograph, ultrasound

Faecal impaction

Impaction +/- faecal incontinence

- Oral disimpaction
  - Not effective
  - Further specialist referral

Constipation +/- faecal incontinence

- Effective
  - Maintenance laxatives
  - Toileting program
  - Duration > 6 months at least
Disimpaction

- Approx. 30% present with impaction
- 90% of this group have faecal incontinence
- One study showed successful disimpaction in 75-92% after 3-6 days, most effective dose PEG: 1 to 1.5 g/kg per day

Medications

- Rectal medication – avoid if possible
- Others used consistently and documented
- Not stopped abruptly
- Not stopped too soon
- Titrated and/or changed according to response
- Prescribed with the child’s likes/dislikes taken into account
- Maintenance needs
  - sufficient doses
  - sufficient time
  - laxative safety
Classes of laxatives

- Faecal softeners - paraffin, docusate sodium
- Stimulant laxatives - bisacodyl, sodium picosulphate, senna (sennosides a and b)
- Iso-osmotic laxatives - PEG 3350
- Osmotic laxatives eg lactulose
- Bulk-forming laxatives
  - Dietary fibre (bran)
  - Ispaghula husks, plantain and psyllium
- Glycerol suppositories
PEG 3350

• Non-absorbable compound
  Act by osmosis and volume expansion in the colon
  Not metabolized by colonic bacteria

• Effective for disimpaction, and safe

• For constipation
  Increased frequency defaecation
  Reduction in pain, hard stools and straining

Stimulant laxatives (bisacodyl suppository) → No RCT
  Dosage, duration, long-term side effects?

Enemas → No trials
  Frequency, duration, long-term side effects?

Review of laxative treatments and dietary measures

• Guidelines to the treatment of functional constipation in children are authority based, not evidence-based
• Insufficient evidence for an effect for any one laxative or dietary treatment of childhood constipation
• Well designed trials needed
• After f/u at 6 -12 months only 50% are completely symptoms-free and successfully taken off laxatives
• Goal is to prevent recurrent impaction and stool withholding
• See for at least 3-6 months

Pijpers MAM et al 2008 Arch Dis Child
### Fluid intake

#### Table 5. American dietary recommendations

<table>
<thead>
<tr>
<th>Age</th>
<th>Total water intake per day, including water contained in food</th>
<th>Water obtained from drinks per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants 0–6 months</td>
<td>700 ml assumed to be from breast milk</td>
<td></td>
</tr>
<tr>
<td>7–12 months</td>
<td>800 ml from milk and complementary foods and beverages</td>
<td>600 ml</td>
</tr>
<tr>
<td>1 - 3 yrs</td>
<td>1300 ml</td>
<td>900 ml</td>
</tr>
<tr>
<td>4 – 8 yrs</td>
<td>1700 ml</td>
<td>1200 ml</td>
</tr>
<tr>
<td>Boy 9 – 13 yrs</td>
<td>2400 ml</td>
<td>1800 ml</td>
</tr>
<tr>
<td>Girl 9 – 13 yrs</td>
<td>2100 ml</td>
<td>1600 ml</td>
</tr>
<tr>
<td>Boy 14 – 18 yrs</td>
<td>3300 ml</td>
<td>2600 ml</td>
</tr>
<tr>
<td>Girl 14 – 18 yrs</td>
<td>2300 ml</td>
<td>1800 ml</td>
</tr>
</tbody>
</table>

Fluid intake

Table 3. Suggested total daily intake of fluid from drinks for children & young people

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Sex</th>
<th>Total drink intake per day (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 - 8</td>
<td>Female</td>
<td>1000 – 1400</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1000 - 1400</td>
</tr>
<tr>
<td>9 - 13</td>
<td>Female</td>
<td>1200 – 2100</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1400 - 2300</td>
</tr>
<tr>
<td>14 - 18</td>
<td>Female</td>
<td>1400 – 2500</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>2100 - 3200</td>
</tr>
</tbody>
</table>

NICE Clinical Guidelines 111 page 10
Toileting programs - what is the evidence?

- When constipation is present, laxatives and a toileting program are more effective than a toileting program alone

- BFB cannot be recommended as first line treatment

Brazzelli, M., & Griffiths, P. V. (2009). Cochrane Database of Systematic Reviews
Toileting programme

• For defective rectal perception, no spontaneous bowel actions, incomplete bowel emptying
• Individually structured – symptoms, bowel chart
• To prevent rectal overdistension
• Maximise gastrocolic reflex – ‘sits’ after meals, 3-10 mins depending on age
• Avoid prolonged sitting and straining
• Age appropriate and achievable
• Ensure effective toilet posture
• More effective with laxatives
• Should be charted
Defaecation dynamics

• Refers to the co-ordination of the reflexes and voluntary efforts necessary for stool expulsion” Loening Baucke 1986

• A forward leaning sitting position lengthens the anal aperture and widens the anorectal angle

• Pelvic floor relaxation needs full leg support

• Squatting - lumbar spine posture –neutral

• Pelvic floor dyssynergia (previously anismus)
  – Inability to relax the pelvic floor when attempting to defaecate
  – Either lack of sphincteric relaxation or actual contraction during defaecation.

Tagart 1966 Dis Colon Rectum 9;449-452
10 year old boy

- Ref by CFA helpline via mothers physiotherapist
- Prev S/B GP, Paediatrician, Paediatric surgeon
- On autism spectrum – Asperger's
- On assessment: night wetting, day wetting, faecal incontinence - child reported this as ‘juice’
- Also describes a ‘lump’ coming out when he opens his bowels that he has to push back in after wiping.
- Poor fluid intake and adequate dietary fibre intake
- Medication:
  - Movicol 2 sachets daily for 3 yrs
  - Parachoc 5- 20 ml daily
  - Benefibre 1 tsp daily + LSA, Chia Seeds
Clinical findings
On examination

Squats on the toilet seat and pushes/strains at least 5-6 times a day for approx. 20 minutes each time.

Mother states he does this as he needs ‘imagination time ‘and child states he likes to use the toilet for this activity as it has the sound of the fan and the light and he feels comfortable there.
Check:

LUTS in children with bowel dysfunction

Bowel function in children with LUTS