Childhood Constipation when we refer to Ped.Gastroenterologist?

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Objectives:

- Why constipation?!!!
- Is it a burden & public health problem?!!
- Highlights
- Pathophysiology & clinical presentations?
- Management options?
- Complications & Sequaele?
- Why we fail in managing constipation?
- When shall we refer to Pediatric Gastroenterologist?!
- How we prevent constipation?.

Prevalence:

- Constipation is a common and distressing pediatric problem with a prevalence ranging from 0,7% to 30% of the world wide general population.
- 84 % of functional constipation (fecal incontinence).
- 30 % behavioral problem.
- 3% of general pediatric visits & 30% of referrals to the Ped.Gastroenterologists.

Molnar D et al Arch Dis Child ,58:257-261

- Common visits to OPD as RAP, to ER ? Acute abdomen

What is constipation?

- Lack of periodicity in defecating.
- Bulky stools and difficulty or pain during defecation.

Abrahmian FP et al J Ped Gastr Nutr , 3:460

- Delay or difficulty in the defecation present for two weeks or more. (NASPGHAN)

Rome IV Criteria :

Must include 2 or more of the following occurring at least once per week for a minimum of 1 month with insufficient criteria for a diagnosis of irritable bowel syndrome:

1-Two or fewer defecations in the toilet per week in a child with a developmental age of at least 4 year.

2- At least 1 episode of fecal 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 fecal mass in the rectum.

6- History of large diameter stools which may obstruct the toilet.

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Normal bowel movements:

- 94-99% of adults & preschool children: 3 BM/day to3 BM/week

Drossman DA et al Gastroenterology , 83:529-534
Weaver LT et al Arch Dis Child ,59:649-652

- *In Newborn & infants*

97% : 1-9 BM/day during 1st week of life

Nyhan WL Pediatrics ,10:414-425

93% : 1-7 BM/day (2-20 weeks of age)

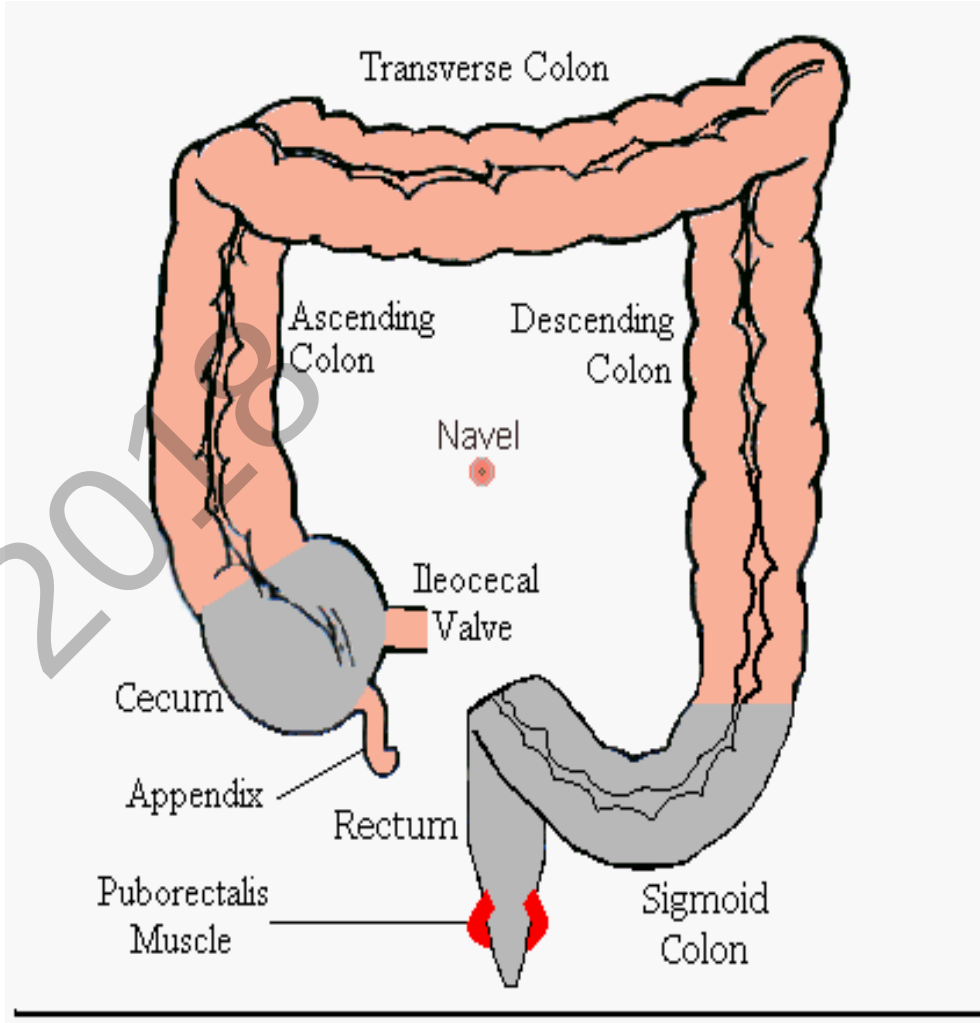
Weaver LT et al J Ped Gastr Nutr ,7:879-901

- Stool frequency was significantly higher in breastfed infants till 16 weeks of age.

- By 16 weeks & introduction of solid foods, there was no difference in bowel motion frequency in both groups.

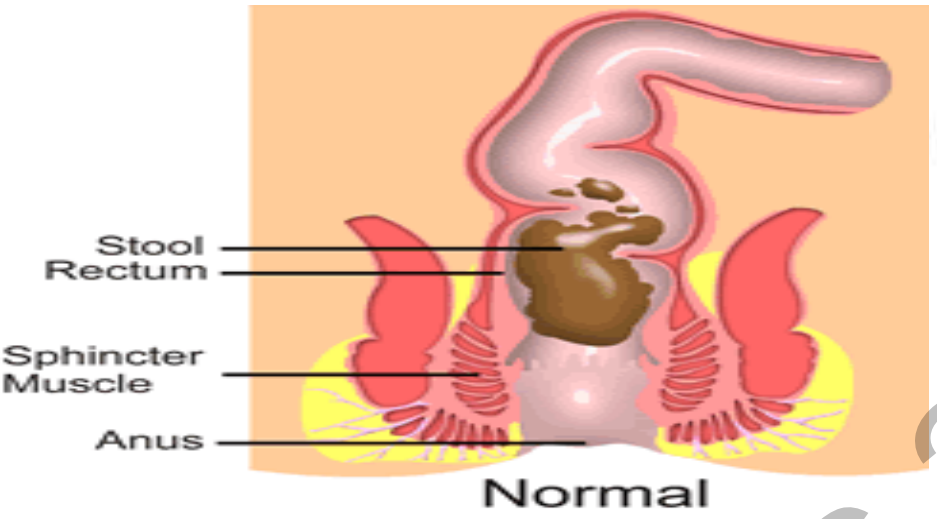
Bristol Stool Chart

Type 1	Separate hard lumps, like nuts (hard to pass)
Type 2	Sausage-shaped but lumpy
Type 3	Like a sausage but with cracks on its surface
Type 4	Like a sausage or snake, smooth and soft
Type 5	Soft blobs with clear-cut edges (passed easily)
Type 6	Fluffy pieces with ragged edges, a mushy stool
Type 7	Watery, no solid pieces. **Entirely Liquid**

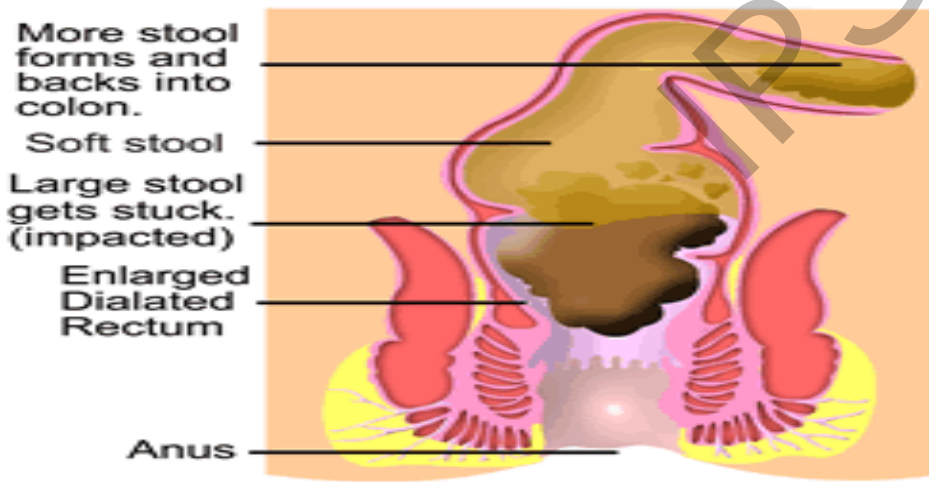


Anatomy of the colon

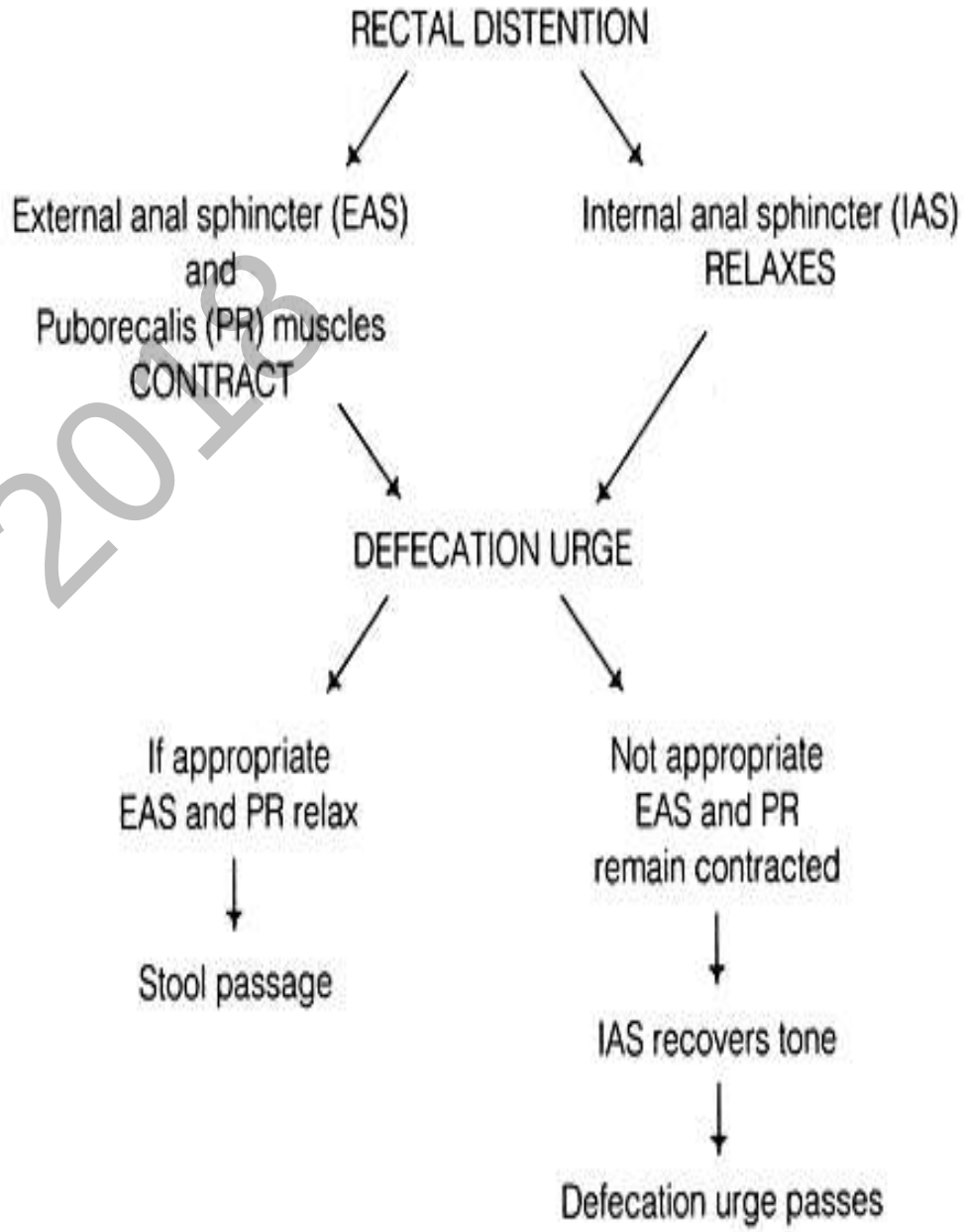
Pathophysiology:



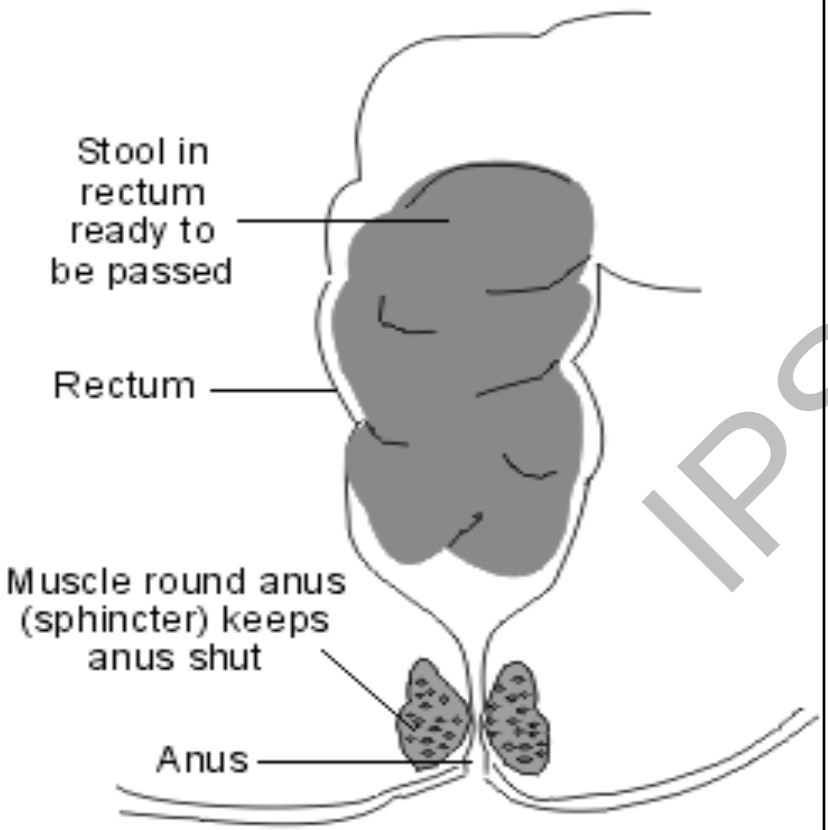
Normal



Chronic
Constipation



Pathophysiology:



Normal

Continence is maintained by involuntary and voluntary muscle contractions.

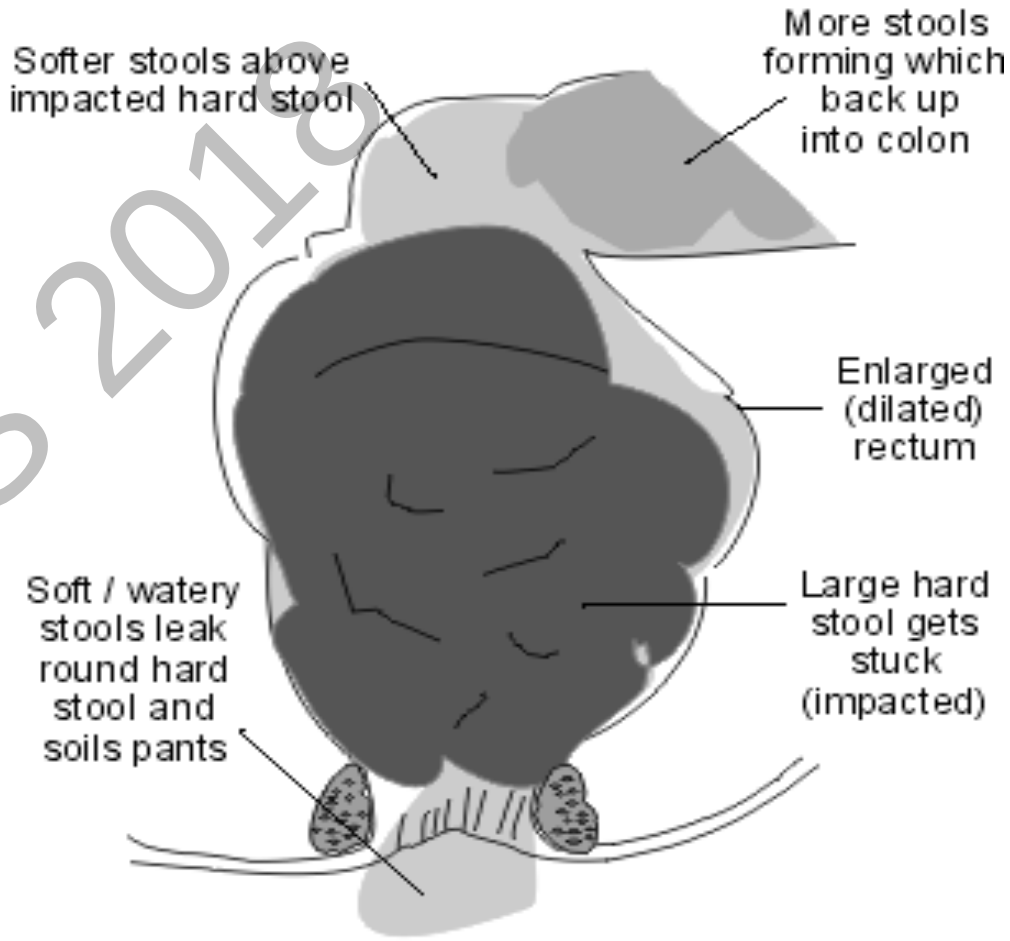
The internal anal sphincter has an involuntary resting tone that decreases when stool enters the rectum.

The external anal sphincter is under voluntary control.

The urge to defecate is triggered when stool comes into contact with the mucosa of the lower rectum.

Pathophysiology:

If a child does not wish to defecate, he or she tightens the external anal sphincter and squeezes the gluteal muscles. These actions can push feces higher in the rectal vault and reduce the urge to defecate. If a child frequently avoids defecating, the rectum eventually stretches to accommodate the retained fecal mass, and the propulsive power of the rectum is diminished.



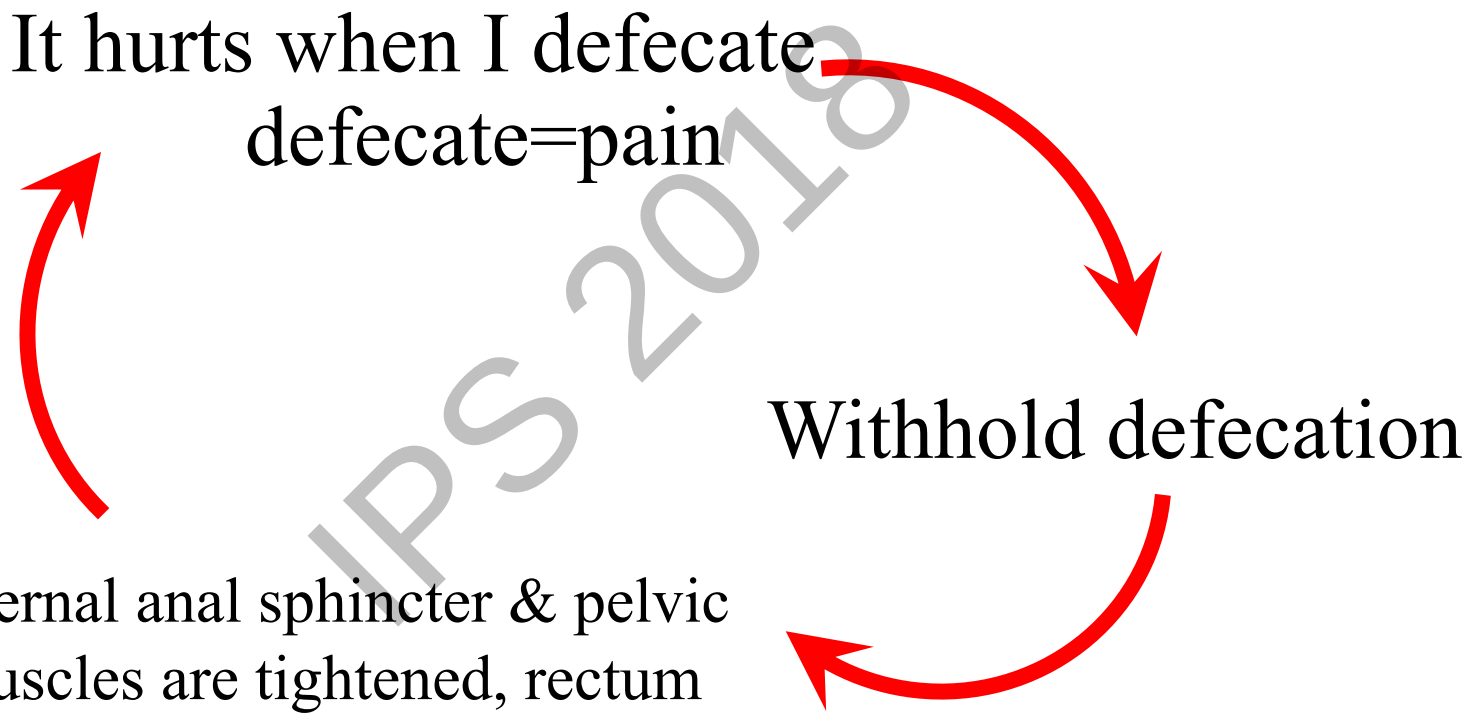
Chronic Constipation

Pathophysiology:

- Stool retention untreated for a prolonged period of time, rectal wall stretched and a mega rectum developed.

- Stool can be felt at the umbilicus and even at the sternum.

Pathophysiology: 'The vicious cycle'



The vicious cycle

Why?!

- *Developmental*

Cognitive Handicaps
Attention Deficit

- *Situational*

Excessive parental intervention
Coercivity toilet training
Toilet phobia
School bathroom avoidance
Difficulties of access to toilet facilities

- *Psychogenic*

Depression
Anorexia Nervosa

Why?!

- *Reduced volume & drying*

Low fiber diet

Dehydration

Malnutrition, underfeeding

Faulty diet, excessive milk

- *Structural*

Anal stenosis

Anterior displaced anus

- *Acquired inflammatory Strictures*

NEC

IBD

Why?!

- *Abdominal Pelvic Masses*

Anterior sacral meningomyelocele

Sacral teratoma

- *Aganglionosis and Abnormal Myenteric Plexus*

Hirschsprung's disease

Intestinal pseudo-obstruction

- *Abnormal abdominal musculature*

Prune belly

Gastroschisis

How they present?

- Abdominal pain
- Vomiting
- Poor appetite
- Poor weight gain
- Diarrhea
- Enuresis and/or Encorporesis (incontinence)

Investigations:

- Abdominal x ray.
- TFT
- ?Celiac markers
- Stool for occult blood
- Barium enema
- Colonic transit study.
- Anorectal manometry.

Management:

Aim of treatment:

- Clear fecal impaction
- Prevent recurrence of fecal impaction
- Promote regular bowel habit.

Management, cont:

5 steps:

- Disimpaction.
  - Phosphate enema
  - PEG 3350 (oral)
- Prevention of reaccumulation of stools:
  - Laxative
  - Dietary Fiber
  - Toilet training
- Education
  - Nature of the disease
  - Cut the cycle

Management, cont:

1-Disimpaction.

Hypertonic Phosphate enema:

60 ml for infant, 6ml/kg -135 ml for > 1 year.

S/E:

Vomiting, hypernatremia, hyperphosphatemia, hypocalcaemia, hypokalemia, dehydration.

?Normal Saline

?Taped water

Side effects:

- 4 y.o girl SMA & chronic constipation

Severe Hyperphosphatemia and Hypocalcemia Following the Rectal Administration of a Phosphate-Containing Fleet Pediatric Enema

Marraffa et al Pediatric Emergency Care: July 2004

12 y.o boy CP & chronic constipation

European Journal of Pediatrics

January 2009, Volume 168, Issue 1, pp 111-112

6 weeks old with severe hyperphosphatemia & hypocalcemia

Pediatrics. 2000 Sep;106(3):E37

Management, cont:

Disimpaction.

PEG 3350 w or w/out electrolytes:

Osmotic agent, increases water content and soften and expel the fecal impaction.

14-40 ml/kg/hr till clear fluid from anus.

1.5 g/kg

2-Prevention of reaccumulation of stools:

(3-6 Months)

Agents	Mechanism	Doses	Side Effects
Lactulose	Osmotic	1-3 ml/kg	Abdominal cramping, flatus
Mineral oil	Lubricant	1-3 ml/kg	Lipoid pneumonia leakage.
PEG 3350	Osmotic	1 g/kg (15ml/kg)	Taste
Milk of magnesia(mg hydroxide	Osmotic	1-3 ml/kg	Renal insufficiency, hypermagnesmia
Senna	Stimulant	2.5-7.5ml/kg	Diarrhea, hypokalemia, cramps

Prevent re accumulation of stool, cont:

RESEARCH ARTICLE Open Access

Efficacy and tolerability of peg-only laxative on faecal impaction and chronic constipation in children. A controlled double blind randomized study vs a standard peg-electrolyte laxative

Francesco Savino[1*], Serena Viola[1], Maiullari Erasmo[2], Giovanni Di Nardo[3], Salvatore Oliva[3] and Salvatore Cucchiara[3]

PEG 3350

This randomized comparative study suggests that the PEG-only laxative is effective and well tolerated for fecal impaction and chronic constipation in children and that it may be superior to the PEG-EL formulation

in terms of tolerability and ease of administration.

Further studies in children are needed to evaluate the efficacy, tolerability and compliance of PEG-only formulation in longer term studies.

Management, cont,

3-Dietary Fiber

Has bulk forming & hyper osmotic effect

Goal: grams/day = age (years) + 5

Sources

High fiber foods

Whole grains

Fruits & vegetables

Fiber supplement

- Dietary changes are commonly advised, particularly increased intake of fluids and absorbable and no absorbable carbohydrate, as a method to soften stool

Foods for Constipation:

- pears
- prunes
- peaches
- apples
- apricots
- spinach
- carrots
- cauliflower
- beets
- cabbage
- papaya
- sweet potato
- coconut
- figs
- flax seed

kidsloveacupuncture.com

Prospective Evaluation of Dietary Treatment in Childhood Constipation: High Dietary Fiber and Wheat Bran Intake Are Associated With Constipation Amelioration

*Helga Verena Leoni Maffei and †Andréa Pereira Vicentini

(JPGN 2011;52: 55–59)

Objectives: The aim of the study was to evaluate, over 24 months, the intake of dietary fiber (DF) and the bowel habit (BH) of constipated children advised a DF-rich diet containing wheat bran.

Patients and Methods: BH and dietary data of 28 children with functional constipation defined by the ‘‘Boston criteria’’ were obtained at visit 1 (V1,n=28) and at 4 follow-up visits (V2–V5, n=80).

At each visit the BH was rated:

Bad (worse/unaltered; improved but still complications) or

Recovery (improved, no complications; asymptomatic)

a food intake questionnaire was applied.

DF intake was calculated according to age (year)+5 to 10 g/day and bran intake according to international tables

Nonparametric statistics were used.

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Conclusion: a DF-rich diet containing bran is a feasible and cheap tool for treating constipated children in everyday clinical attendance.

However, frequent reinforcements to ensure adherence to the diet are necessary.

Bran acceptance significantly contributed to high DF intake and each significantly contributed to amelioration of constipation.

Management, cont:

4-Toilet training

is recommended in children older than 3 years of age and consists of encouraging the child to sit on the toilet for 5 to 10 minutes after meals, with proper foot support.


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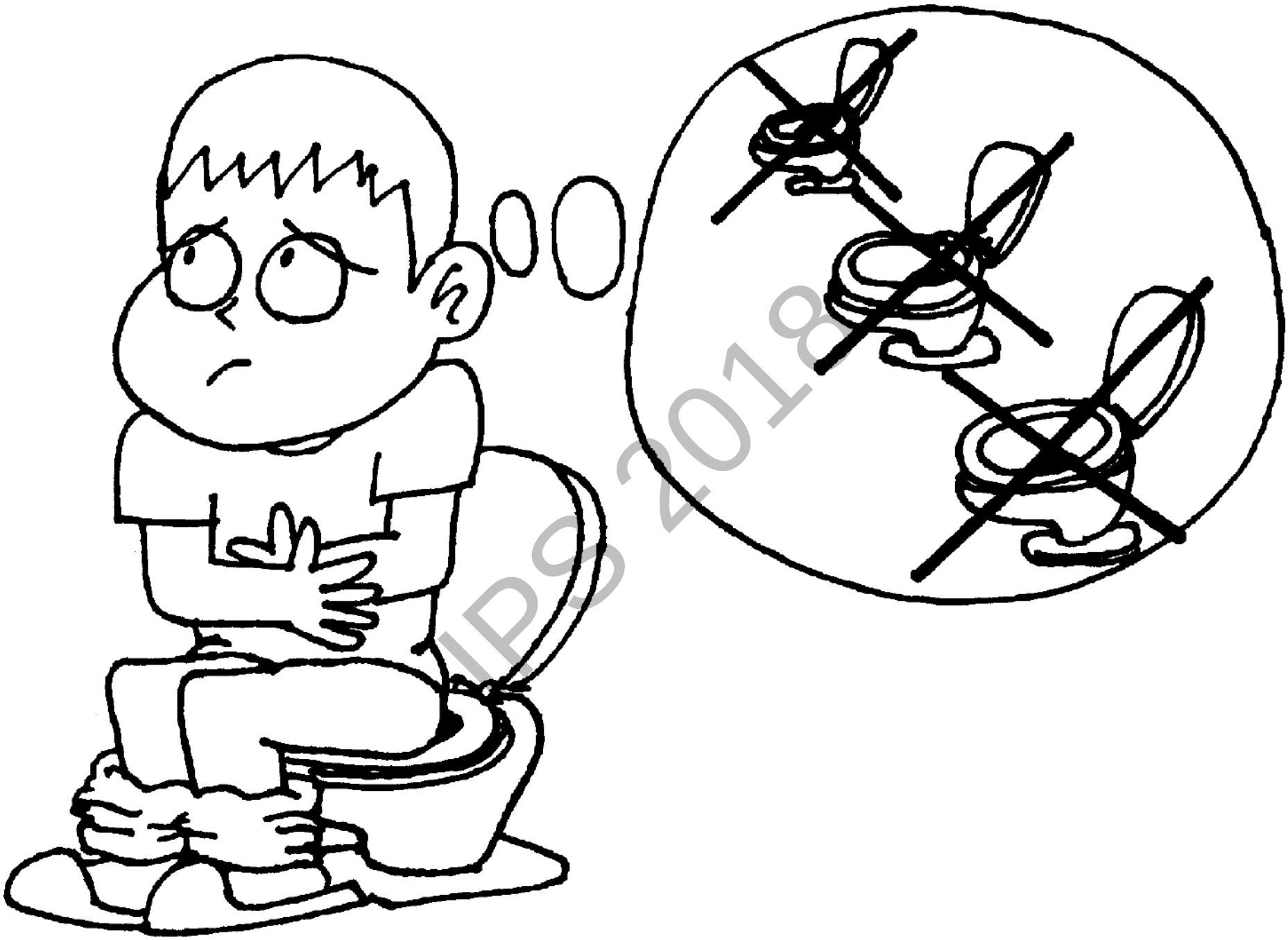

Management, cont,

5-Education: (Parents relation):

- Nature of the disease
- Cut the cycle
- Understand the complications
- Hand out for the family.
- Exercises help regulation of bowel movements.

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Complications & sequels :

- Encopresis
- Abdominal pain, anal pain.
- Anorexia.
- Day& night time urinary incontinence.
- UTI, VUR
- Quality of life.

Complications:

UTI

Significant correlation between the degree of radiological fecal loading and the number of UTI's has been noted

- *Blethyn AJ et al Arch Dis Child ,73:534-535*

Moderate and severe radiologic fecal loading was noted in > 50 % of the children who had > 5 UTI's

Daytime & Nocturnal enuresis

Majority improved after treating constipation

Why we fail in treating them?

- Understanding the problem
- Handout for the families
- Not appreciating the impact of the disease on the family
- Anticipating the chronicity of using the laxatives.

- Disimpaction (Non removing the fecal impaction).

Why we fail in treating them?

- Removing but failing in prescribing the laxatives, (Unavailability of the treatment).
- Giving too low dose.
- Stooping the laxative too soon
- Loss the follow up.
- Training of the toilet.

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When to refer to Ped. Gastroenterology?

- Early onset < 1 month
- Passage of meconium >48h
- Bloody stool with no fissure.
- FTT.
- Sacral dimple &/ or agenesis.
- Perianal fistula/ scar.

When to refer to Ped. Gastroenterology?

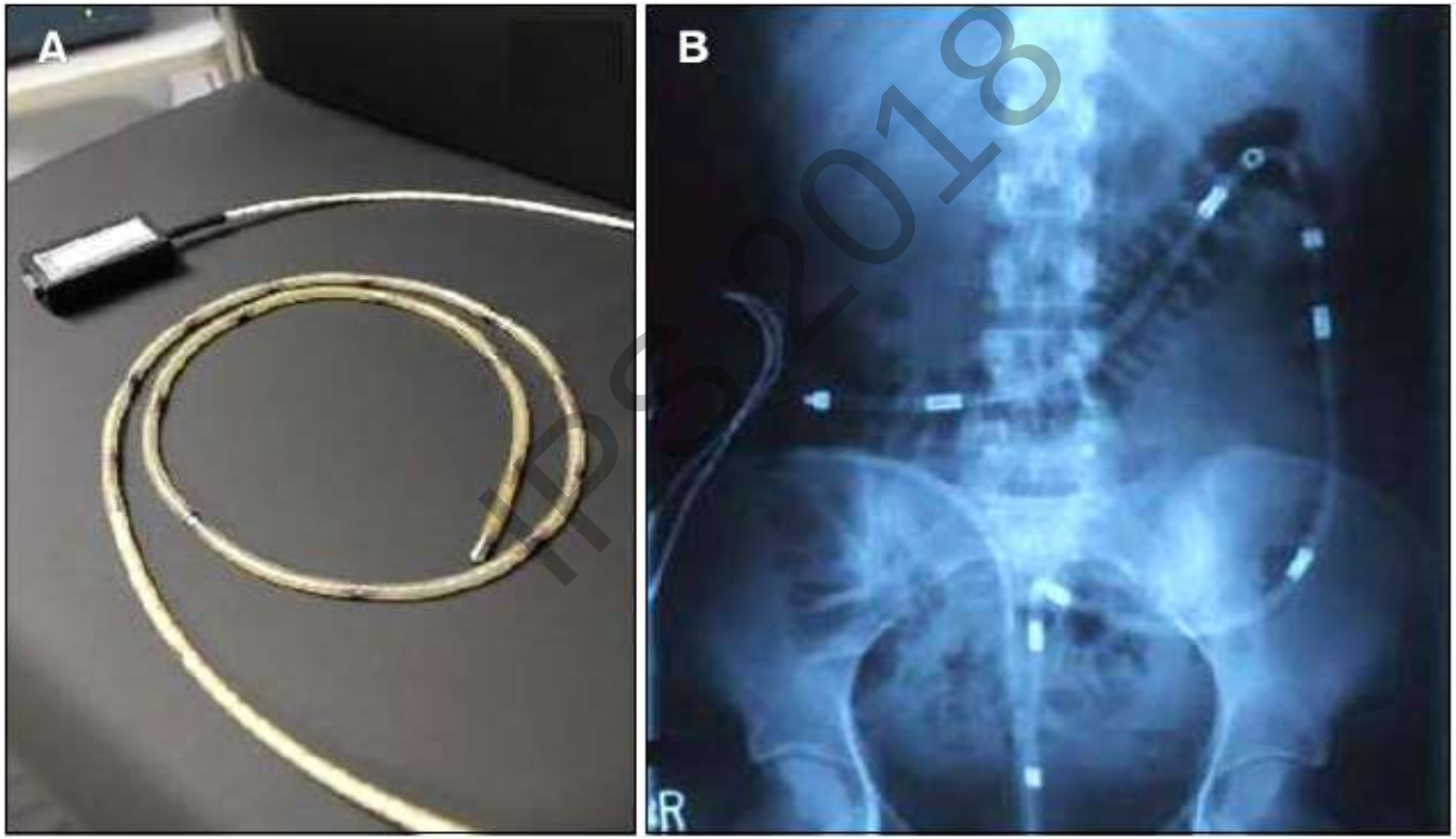
- Persistent abdominal pain.
- Failed treatment.
- Not convinced about the doses.
- Recurrent UTI
- Fecal incontinence.
- Family h/o Hirschsprung's disease.

When to refer to Ped. Gastroenterology?

Table 1. Indications for Colonic Manometry

Adults
Chronic slow transit constipation that is not responsive to medical therapy in the absence of an evacuation disorder
Chronic colonic pseudo-obstruction and megacolon or megarectum, with viscus diameter exceeding 10 and 15 cm respectively
Children
As above
Persistent symptoms after surgery for Hirschprung's disease to determine underlying pathophysiology
Evaluate function of a diverting colon before possible closure
Predict response to antegrade enemas via cecostomy

When to refer to Ped. Gastroenterology?



Why constipation?

Rapidly changing socio-cultural.

Urbanization.

Increasing levels of psychological stress.

Poor parenting skills.

Civil unrest and child maltreatment, have resulted in a large number of vulnerable children developing constipation.

Rajindrajith & Benninga MA. Defecation disorders in Children: Constipation and functional fecal incontinence. New York: Springer Science, 2015: Childhood constipation is threatening to become a major public health problem across the world.

Is it a burden & public health problem?!

Although it is not linked to mortality directly, constipation leads to poor health-related quality of life (HRQoL),

poor school performance and consequently to deficiencies in education.

Kovacic K, Di Lorenzo C, . Amulticenter study on childhood constipation and fecal incontinence effects on quality of life. *J Pediatr* 2015; **166**: 1482-1487.

Clinical care of these children is not optimal due to a lack of understanding regarding the underlying pathophysiological mechanisms and the selection of appropriate therapeutic options.

Is it a burden & public health problem?!

Children who are inadequately cared for are at a risk of developing both physical and psychological complications leading to a heavy burden on already overstretched health budgets.

All of these factors indicate that more attention should be focused on this important disease.

Despite these facts, public health authorities have not paid sufficient attention to childhood constipation.

In USA > 2 Billion US Dollar annually as impact of constipation

Research

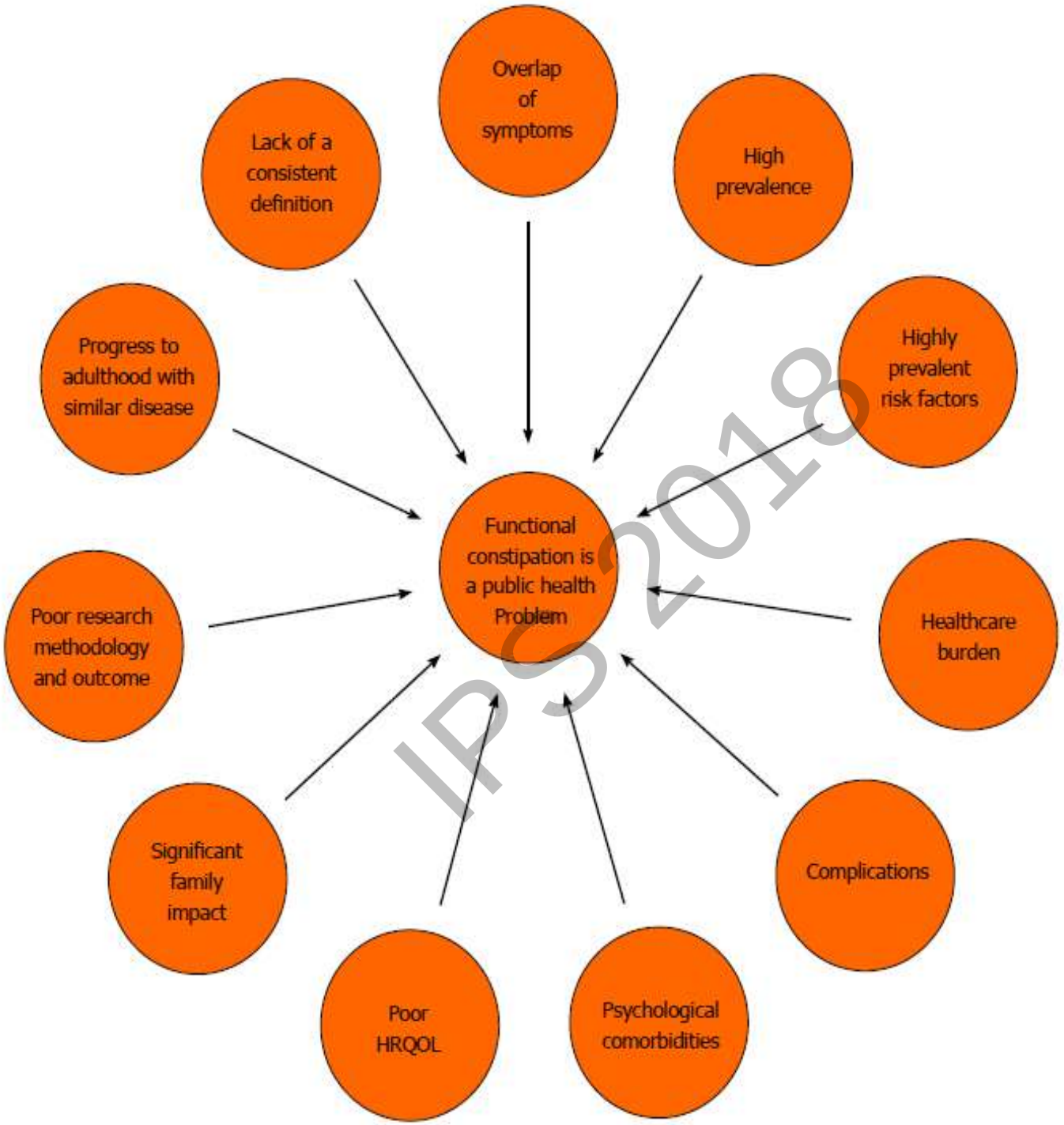
Open Access

Health-related quality of life in young adults with symptoms of constipation continuing from childhood into adulthood

Marloes EJ Bongers*[1], Marc A Benninga[1], Heleen Maurice-Stam[2] and Martha A Grootenhuis[2]

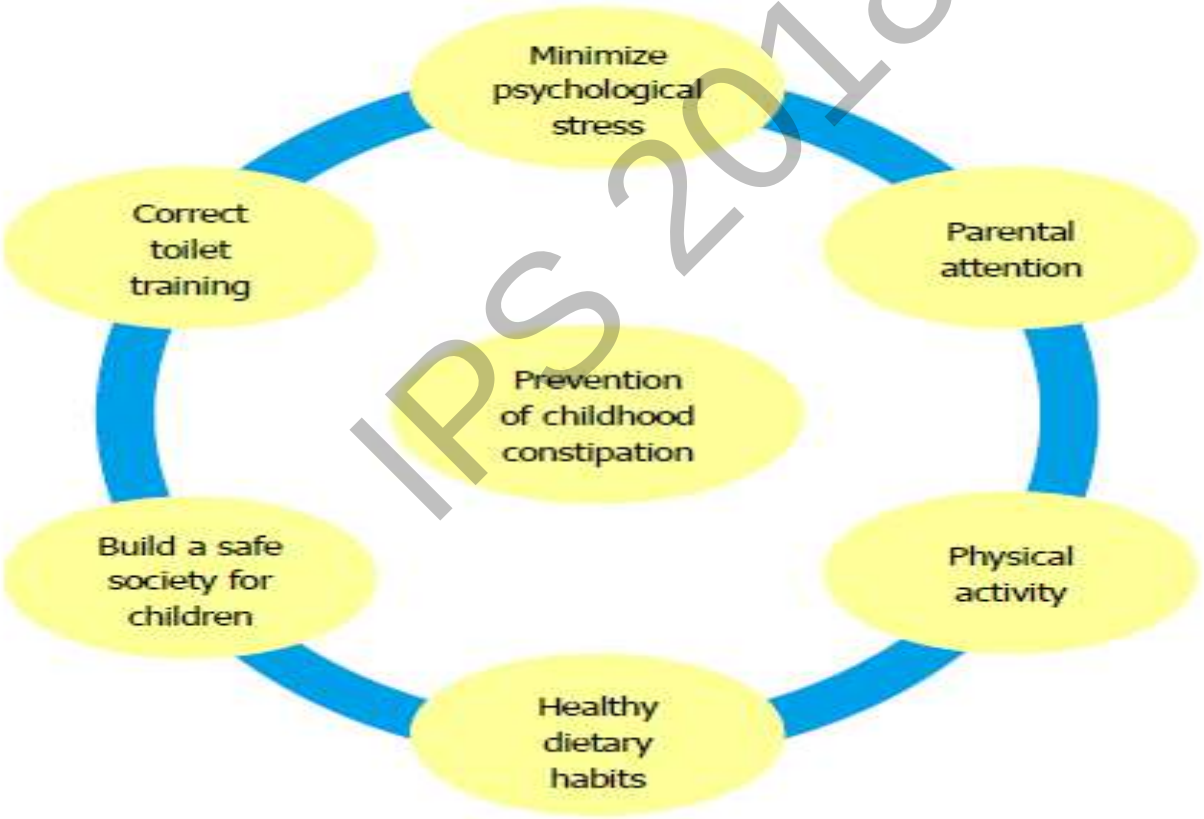
Conclusion:

Overall, young adults with constipation in childhood report a good quality of life, as HRQoL of adults with successful clinical outcome was comparable to that of their peers. However, when childhood constipation continues into adulthood, it influences HRQoL negatively with social consequences in 20% of these adults.



Is it public health problem ??!!

How we prevent constipation?



Saudi experience

ORIGINAL ARTICLE: GASTROENTEROLOGY

Knowledge and Practice Styles of Pediatricians in Saudi Arabia Regarding Childhood Constipation

*Mohammed Hasosah, †Abdulwahab Telmesani, ‡Ali Al-Binali, §Ahmed Sarkhi, ||Sharifah Alghamdi, ¶Khalid Alquair, #Moath Alturaiki, **Aziz Alanazi, *Ashraf Alsahafi, ††Abdullah Alzaben, and ‡‡Carlo Di Lorenzo

ABSTRACT

Objectives: The aim of the present study was to evaluate knowledge and practice styles among medical providers working in 5 regions of Saudi Arabia regarding their approach to childhood constipation.

Methods: A survey of 850 pediatric providers (PPs) conducted in 5 regions of Saudi Arabia. PPs included pediatric specialists (PSs), pediatric consultants (PCs), general practitioners (GPs), family physicians (FPs), and pediatric gastroenterologists (PGs). They were asked anonymously about definition, causes, diagnosis, and management of constipation. Information about family concerns regarding constipation and the source of constipation-related information was also collected.

constipation was caused by a stricture and 10% feared it was caused by a malignancy.

Conclusions: Significant differences in knowledge and practice patterns exist regarding the approach to pediatric constipation. Identification of knowledge gaps may be useful to develop educational materials to improve proper diagnosis and treatment of childhood constipation.

Key Words: chronic constipation, disimpaction, knowledge and practice styles, laxatives

(*JPGN* 2013;57: 85–92)

Conclusions:

- Childhood constipation is very common, rising prevalence (multifactorial).
- Most cases are functional.
- Early and aggressive treatment for adequate length of time prevents chronicity.
- Disimpaction at start of therapy is a must.

Conclusions:

- Titrate dose of laxative and use combination therapy to achieve desired response.
- Consider periodic bowel cleanout.
- Monitor progress and compliance.
- Employ behavioral strategies as appropriate.
- A success in treatment needs a proper approaches.

Conclusions:

- In the last decade, significant progress had been made in understanding the pathophysiology and treatment of childhood constipation.
- Focusing away from the traditional hospital based interventions, preventive studies using toilet training, training healthcare professionals to recognize the features of constipation early and encouraging correct dietary habits and lifestyle at the community level are needed to identify simpler and pragmatic approaches to prevent childhood constipation

Thank you for your attention