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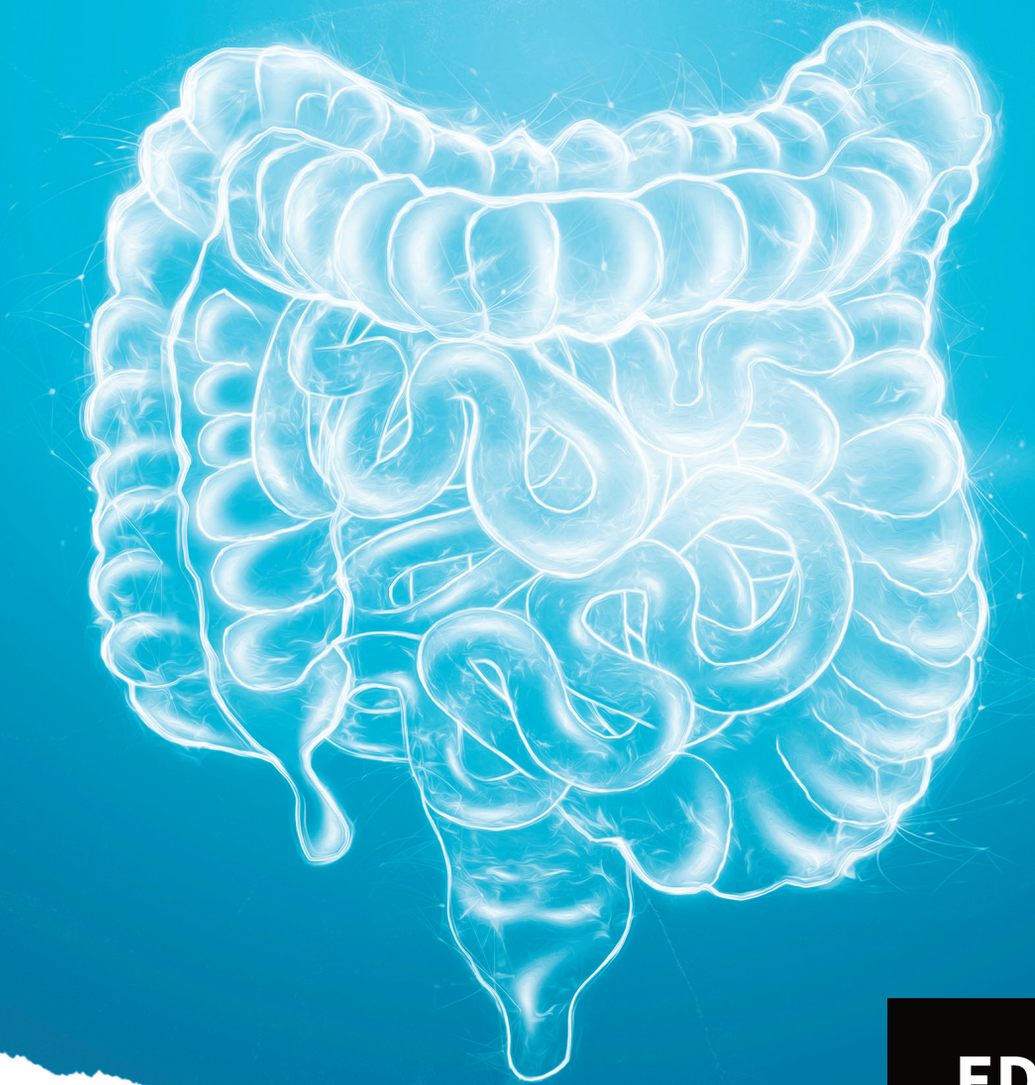

EDITION-9

MEDICAL INSIGHTS

Multiple intestinal perforations due to ingestion of magnet beads

Constipation in children

The Complete Healthcare Experience for Women and Children

Message From The Editor

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Dear friends,

The decreasing Covid pandemic gives us a ray of hope to normalize our lives once again.

In this edition, we bring to you two interesting GIT conditions. The first article is on constipation by Dr. Parijat Ram, Pediatric Gastroenterologist & Hepatologist at Ankura hospitals.
The incidence of onstipation is increasing rapidly in children. Hence it is a very important condition for practicing pediatricians to be aware of this condition. In the current scenario, constipation should be ruled out in any child with chronic abdomen pain.
The article explains in detail, various practical aspects of managing constipation in children.

The second article is a case report on “multiple intestinal perforation following ingestion of magnets in children”. This case was managed by our team (Dr. Krishna Chaitanya, PICU Consultant and Dr. Satyanarayana Ravula, Pediatric surgeon) at Ankura LB Nagar branch. They have clearly explained the complications that might arise from ingestion of magnets in children.

We hope these articles would be of help to your day-to-day practice.

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MULTIPLE INTESTINAL PERFORATIONS
DUE TO INGESTION OF MAGNET BEADS

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INTRODUCTION

Ingestion of magnets has become common in current generation kids due to their inclusion in toys. However most of the times they are either single and pass out naturally or if multiple, being removed via endoscopy. Here we present a case where multiple bead magnets ingestion caused perforations of small bowel and required surgical intervention.

CASE REPORT

A 7-year-old otherwise healthy, developmentally normal female had complaint of abdominal pain for 10 days. The pain was of severe in nature and not relieved with any medication. Repeated ultra sonogram examinations were normal. Hence, child was referred from peripheral health centre to our hospital for further assessment. Radiography revealed more than 15 adherent magnetic beads in small bowel *(Fig. 1)*. On further probing, child gave a history of swallowing magnet beads few weeks ago while playing. She had normal stool pattern.

Figure 1

On examination, vital signs were normal. Abdomen was tender and child was guarding on palpation. Because all beads could not be retrieved endoscopically, she was taken to surgery. Bowel loops were all found to be adherent. Pressure necrosis of intervening loops of small intestine was found causing perforation at multiple sites with out contamination of the abdomen. All of them were retrieved by performing enterotomy and resection & anastomosis *(Fig. 2)*. Following procedure an abdominal drain was placed. Postoperative period uneventful. Oral feeds escalated gradually after 72 hours and drain removed. Child is doing well on follow-up.

Figure 2

DISCUSSION

Ingestion of multiple magnets can cause attractive forces of up to 1300G, causing compression of the intervening bowel, subsequent bowel perforation and fistulisation. *(1,2)*. If unattended or missed out they can even lead to death. Recently, few such cases such have been reported worldwide.

CONCLUSION

Increasing the public awareness about the risk of these toys is the key to prevent such incidents. Physicians also need to be aware of the potential complications that these toys can cause. Authorities have a crucial role in prohibiting these hazardous toys from retail shelves.

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CONSTIPATION IN CHILDREN

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1. HOW COMMON IS CONSTIPATION IN CHILDREN?

Constipation is one of the most common problems faced by the children. Prevalence in general pediatric population is around 3% but it ranges from 1-30% in various studies *(1,2)*. As per practice guidelines of Indian Society of Pediatric Gastroenterology, Hepatology and Nutrition (ISPGHAN) functional constipation constitutes 30% of pediatric gastroenterology office practice, 4-5% of all referrals to pediatric gastroenterology tertiary care centers and 0.8-1% of all pediatric cases in medical colleges *(3)*.

2. WHAT IS THE DEFINITION OF CONSTIPATION?

Constipation is passage of infrequent or hard stools. As per Rome IV criteria functional constipation is defined as:

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. 2 or fewer defecations in the toilet per week in a child of a developmental age of at least 4 years
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 that can obstruct the toilet

After appropriate evaluation, the symptoms cannot be fully explained by another medical condition.

Table 1: ROME IV diagnostic criteria for functional constipation

There are differences in stooling pattern and diet of Indian children as compared to western countries. Considering these factors ISPGHAN has suggested another criteria for diagnosis of functional constipation for Indian children which is as follows *(3)*:

1. Duration of more than 4 weeks for all ages;
2. Presence of ≥2 of the following:
   (a). Defecation frequency ≤2 times per week,
   (b). Fecal incontinence≥1 times per week after the acquisition of toileting skills,
   (c). History of excessive stool retention,
   (d). History of painful or hard bowel movements,
   (e). Presence of a large mass in the rectum or on per abdomen examination,
   (f). History of large-diameter stools that may obstruct the toilet (This may not be elicitable for majority of Indian children who do not use the western type of toilet).

3. WHAT ARE THE COMMON CAUSES OF CONSTIPATION?

Functional constipation is by far the most common cause is children and constitutes >90% of all cases in children *(4)*. Other important causes in children are Hirschprung disease, drugs (like anticholinergics) and neurological problems (cerebral palsy). (Table 2)

FUNCTIONAL CONSTIPATION

ABNORMALITIES OF COLON AND RECTUM:
Anal stenosis, Anal or colonic stricture—post NEC or IBD, Ectopic anus

SPINAL CORD LESIONS:
Spina bifida, Meningomyelocele, Sacral agenesis, Diastematomyelia, Spinal cord tumors (lipomas, cysts, teratomas)

MOTILITY DISORDERS OF GASTROINTESTINAL TRACT:
Hirschsprung disease, Pseudo-obstruction, Intestinal neuronal dysplasia

SYSTEMIC DISORDERS:
Diabetes mellitus, Multiple endocrine neoplasia, Diabetes insipidus, Pheochromocytoma, Hypothyroidism, Amyotonia congenital, Panhypopituitarism, Neurofibromatosis, Hypocalcemia, Hypercalcemia, Prune-belly syndrome, Dermatomyositis, Scleroderma, Myotonic dystrophy, Cerebral palsy, Multiple sclerosis

DRUGS OTHERS:
Analgesics, Antacids, Anticholinergics, Bismuth, Iron, Cholestyramine, Psychotropics

OTHERS:
Celiac disease, Cystic fibrosis, Lead toxicity

Table 2: Causes of constipation in children

3. WHY DOES FUNCTIONAL CONSTIPATION DEVELOPS IN CHILDREN?

Development of functional constipation in children is multifactorial. Low fiber diet (eg. persistence with milk predominant diet beyond 6 months of age), improper, delayed or very early toilet training, change in environment or stress, avoidance to go to toilet (postponing defecation while playing or watching screen) all contribute to this. Due to any of the above reasons if child does not pass stool regularly it becomes gradually hard and defecation becomes painful which further leads to avoidance of defecation and retentive maneuvers. As this process sets in, stool becomes hard and very infrequent and characterized by withholding postures (Figure 1) and encopresis leading to significant distress to the child.

Figure 1: Typical withholding maneuver by a 4 year boy

4. HOW TO DIFFERENTIATE BETWEEN FUNCTIONAL CONSTIPATION AND ORGANIC CAUSES OF CONSTIPATION?

Functional constipation is a clinical diagnosis and usually does not need investigations. Hirschprung disease is an important differential diagnosis (Table 3)

Viral	Hirschprung disease	Functional Constipation
Age of presentation	Early neonatal or infancy	Late infancy to toddler
Passage of meconium	Delayed	Timely
Abdominal distension	Present	Absent (except for severe cases)
Growth failure	Usually present	Usually absent
Withholding	Absent	Present
Encopressis	Absent	Present
Palpable fecolith	Absent	Present
Per rectum examination	Empty	Loaded with firm-hard stool

Table 3: Clinical differentiation between Hirschprung disease and Functional constipation

In case of doubt, X-ray abdomen can be performed which may show colon loaded with stool and presence of fecoliths (Figure 2). Barium enema, anorectal manometry and full thickness rectal biopsy may be needed to in case of high suspicion of Hirschprung disease.

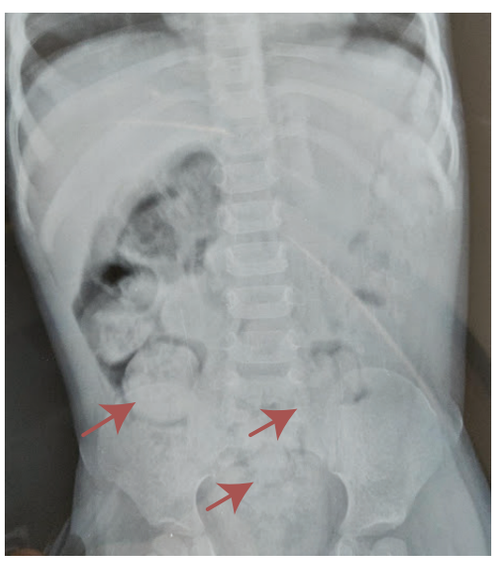

Figure 2: Fecoliths on X-ray erect abdomen

5. HOW TO MANAGE FUNCTIONAL CONSTIPATION?

There are 6 important steps for management of functional constipation in children.

1. Counseling of parents
2. Disimpaction
3. Maintenance with laxatives
4. High fibre diet
5. Toilet training
6. Regular follow-up

Before starting treatment parents should be clearly explained regarding problem, possible causes and need for adherence to all the steps of treatment. If fecal impaction is present then disimpaction is essential. Colon should be completely cleared so that no residual hard fecal matter is retained. After that maintenance laxatives are started to keep the stool soft and moving so that no further retention develops. Maintenance laxatives should be given for 2-3 months even after normal stool pattern is achieved. Simultaneously along with the drug therapy, high fibre diet and toilet training should be instituted. Regular follow-up to look for compliance with treatment and difficulties faced by parents, is important so that timely intervention or counseling can be done. If dietary habits are not changed and regular bowel habit is not developed then there are high chances of recurrence after stopping laxatives. Readers are advised to go through ISPGHAN guidelines for details of management.*(3)*

6. WHAT ARE OTHER INVESTIGATIVE AND MANAGEMENT MODALITIES FOR ORGANIC CAUSES OF CONSTIPATION?

If organic etiology is suspected, investigations has to individualized as per suspected etiology. Usual tests include thyroid profile, celiac screening, anorectal manometry, rectal biopsy and colonic transit time study.

7. WHAT IS SLOW TRANSIT CONSTIPATION?

Slow transit constipation is an organic disease where motility of colon is slow due to either nerve or muscle related pathology in large intestine. These patients may present with decreased frequency of stool but consistency is not hard. There are no retentive maneuvers or encopresis. Colonic transit study can diagnose slow transit constipation although etiological diagnosis may need full thickness colonic biopsy. Importantly, high fibre diet worsens symptoms in these children and they may need colonic prokinetics.

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