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# Acute Intestinal Obstruction Symptoms, Dynamic Intestinal Obstruction: Clinical Features And Treatment Principles

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**Annotation**
Acute intestinal obstruction (acute intestinal obstruction, ileus, acute ileus) is a condition that develops with impaired passage of intestinal contents. Among acute surgical diseases of the abdominal organs, acute intestinal obstruction accounts for 3.5–9%. Intestinal obstruction most often occurs between the ages of 20 and 40. It is more common in men than in women. During summer and autumn (July–October), the number of patients with acute intestinal obstruction is higher, since during this period plant foods contain more fiber, leading to increased intestinal strain.

**Keywords:** Acute intestinal obstruction, dynamic intestinal obstruction, mechanical intestinal obstruction, spastic intestinal obstruction, paralytic intestinal obstruction, obturation, strangulation, Val's symptom, Grekov's symptom, Mondor's symptom, Sklyarov (Hippocrates) symptom, Kivull's symptom, Lotheissen's symptom, Obukhov hospital symptom, Kloiber's cups, abdominal radiography, ultrasonography, proserin (Neostigmine), spasmolytics (Atropine, Papaverine, No-shpa), surgical intervention.

## Introduction

The development of dynamic intestinal obstruction can be caused by acute inflammatory processes in the abdominal cavity (appendicitis, cholecystitis, pancreatitis, peritonitis and others), inflammatory diseases of the retroperitoneal space (paranephritis), as well as injuries and various surgical interventions, and acute circulatory disorders in the abdominal organs (splenic infarction, mesenteric vessel thrombosis). In addition, metabolic disorders (diabetic, uremic coma) and intoxications (morphine, lead) can also lead to this condition.

## Symptoms of acute intestinal obstruction

- Val's symptom: Dilated, sharply demarcated intestinal loop visible through the abdominal wall. In ileum obstruction (umbilical region, mesogastrium), in distal colon obstruction, meteorism is observed on the lateral abdominal wall.
- Grekov's symptom: Visible intestinal peristalsis on the abdominal wall. It gives the impression of "overlapping waves or sudden protrusions that quickly disappear." Observed more often in obturational than in strangulation obstruction.

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- Partashnikov's symptom: On deep palpation, a springy resistance is felt in the intestines not yet paralyzed.
- Mondor's symptom: When the intestines are significantly distended and the anterior abdominal wall is slightly stretched, the examiner feels the abdominal wall tense and offering resistance.
- Sklyarov's (Hippocrates) symptom: "Splashing noise" heard when the abdominal wall is lightly shaken, due to excessive accumulation of fluid and gas in the intestines. Usually observed in the stage of intestinal paresis.
- Kivull's symptom: During percussion of the abdomen with simultaneous auscultation, a clear metallic resonant sound is sometimes detected. This occurs when the intestines are excessively filled with gas and balloon-like distended. More common in sigmoid volvulus.
- Lotheissen's symptom: Detected when the abdomen is severely distended. In this condition, breath sounds and heart tones, normally not heard through the abdomen, become audible. This sign is a severe prognostic indicator of impending death (L. A. Kirsner, 1936).
- Obukhov hospital symptom: Digital rectal examination is a mandatory procedure in diagnosing intestinal obstruction. In acute obstruction, the rectal ampulla is usually empty, and the anterior wall appears as a dome-shaped elastic structure. Grekov stated: "To recognize the onset of ileus, this single sign is sufficient."
- Kloiber's cups: Fluid levels with gas above, detected radiographically. In small bowel obstruction, the fluid levels are longer with lower height of the bright part, whereas in large bowel obstruction the opposite is observed.

**Dynamic intestinal obstruction is divided into spastic and paralytic types:**
1. Paralytic intestinal obstruction (sudden dilation of the stomach, intestinal paralysis)
2. Spastic intestinal obstruction
a) type caused by spasm
b) intestinal spasm caused by lead poisoning

**Spastic intestinal obstruction**
Spastic intestinal obstruction is a type of dynamic (functional) obstruction that develops as a result of severe spasm of the intestinal wall muscles, leading to cessation of the passage of food and gases.
Causes:

- Poisoning with heavy metal salts (lead, mercury, arsenic)
- Intestinal worms (ascariasis and other helminthiases)
- Nervous system disorders (neurosis, stress)
- Reflex effects (for example, in diseases of other internal organs)

Clinical features:
1. Abdominal pain – sudden in onset, colicky, severe. The patient runs around in bed, screams.
2. Abdominal distension – often localized; generalized bloating is rare.
3. Intestinal peristalsis – increased, "noisy peristalsis" is heard.

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4. Passage of stool and gas – difficult or completely stopped, but not observed in all patients.
5. Nausea and vomiting – may occur, but not as severe as in paralytic obstruction.

**Paralytic intestinal obstruction**
Paralytic intestinal obstruction is the most common type of dynamic (functional) obstruction. It develops as a result of intestinal muscle paresis or paralysis, leading to cessation of peristalsis and impaired passage of food and gases.

Causes:
- Surgical procedures (often after abdominal operations)
- Inflammation of abdominal organs: peritonitis, pancreatitis, appendicitis, cholecystitis
- Retroperitoneal hematomas, severe soft tissue injuries
- Severe intoxication and sepsis
- Neurogenic factors (spinal cord injuries, etc.)

Clinical features:
1. Abdominal pain – more constant, dull, diffuse; unlike the spastic type, there is no severe colicky pain.
2. Abdominal distension – generalized, diffuse, very severe bloating.
3. Intestinal peristalsis – completely reduced or absent ("silent abdomen").
4. Passage of stool and gas – completely absent.
5. Nausea and vomiting – rare, but common when accompanied by peritonitis.
6. General condition – severe: dehydration, intoxication, tachycardia, decreased blood pressure.

## Diagnosis of Dynamic (Functional) Intestinal Obstruction

The most important task in diagnosis is to differentiate it from mechanical intestinal obstruction.

1. History and clinical presentation
   - ❖ Onset: sudden and with severe colicky pain in mechanical obstruction; more gradual in dynamic obstruction.
   - ❖ Abdominal pain:

Spastic type – severe, colicky, periodic
Paralytic type – dull, constant, diffuse

   - ❖ Abdominal appearance:

Spastic type – localized distension may be present
Paralytic type – generalized, diffuse bloating, abdomen appears "ball-shaped"

   - ❖ Intestinal peristalsis:

Spastic – increased, noisy
Paralytic – completely diminished or absent ("silent abdomen")

   - ❖ Passage of stool and gas: difficult or absent
   - ❖ Vomiting: early and profuse in mechanical obstruction; secondary in dynamic obstruction

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2. Physical examination
- ❖ Auscultation:
  - Spastic type – loud "noisy peristalsis"
  - Paralytic type – absent peristaltic sounds
- ❖ Percussion: tympany throughout the abdomen (excess gas)
- ❖ Palpation: severe tenderness, distended intestinal loops may be detected

3. Instrumental investigations
- ❖ Abdominal X-ray:
  - Mechanical obstruction – multiple "Kloiber's cups" (air-fluid levels)
  - Dynamic obstruction – diffuse gas accumulation in the intestines, but no classical signs of mechanical blockage
- ❖ Ultrasound (US): limited due to intestinal gases, but useful in excluding mechanical obstruction
- ❖ CT (computed tomography): performed in doubtful cases to rule out mechanical causes

4. Laboratory tests
- ❖ Usually show no specific changes, but:
  - Leukocytosis – may indicate peritonitis or infection
  - Electrolyte disturbances – due to dehydration and vomiting

**Treatment of Spastic Intestinal Obstruction**

Spastic intestinal obstruction develops as a result of intestinal muscle spasm. Since there is no mechanical barrier, treatment is mainly aimed at relieving the spasm and normalizing intestinal motility. For this, the influence of the parasympathetic nerve on intestinal activity should be reduced.

**Principles of treatment:**

1. Relief of spasm with antispasmodics:
Atropine sulfate 0.1% – 1 ml intramuscularly, twice daily until the spasm subsides
Papaverine hydrochloride 2% – 2 ml intramuscularly or intravenously
No-shpa (drotaverine) 2% – 2 ml intramuscularly
2. Elimination of the cause:
In heavy metal poisoning – antidotes and detoxification therapy
In helminthiasis – anthelmintic drugs
3. Intestinal decompression:
Siphon enema
Gas-release tube
4. Sedative and symptomatic therapy:
Diazepam tablets 5 mg once daily before meals
5. Restoration of fluid and electrolyte balance:
5% glucose solution 500 ml + 4% KCl 5 ml, twice daily
0.9% sodium chloride 500 ml, twice daily

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6. Monitoring and observation:
If conservative therapy is ineffective or the patient's condition worsens → surgical consultation

⚠ **Important note:**
In spastic obstruction, the main treatment is relief of spasm.
If mechanical obstruction is excluded, conservative treatment is usually sufficient.
Unlike paralytic obstruction, drugs that enhance peristalsis (e.g., proserin) are not given, as they aggravate the spasm.

**Treatment of Paralytic Intestinal Obstruction**
The main therapeutic approach is aimed at eliminating the underlying cause and restoring intestinal motility. For this, the inhibitory effect of the sympathetic nervous system on the intestines is blocked by intramuscular administration of chlorpromazine solution (25 mg/ml – 2 ml) + 0.5% novocaine (5 ml). After 45 minutes, prokinetics that enhance parasympathetic stimulation of intestinal activity are administered, such as neostigmine methylsulfate (proserin) 0.05% – 1 ml intramuscularly. Following this, a cleansing enema is performed.

**Main treatment directions:**
1. Elimination of the underlying cause:
If peritonitis, pancreatitis, or appendicitis → surgical treatment
If postoperative paresis → conservative measures
2. Restoration of intestinal function:
Proserin (Neostigmine): 1 ml of 0.05% solution (0.5 mg), intramuscularly (i.m.) or subcutaneously (s.c.), 2–3 times/day
Calcium chloride 10% – 10 ml, intravenously (slow injection)
Vitamin B1 (thiamine) and B6 (pyridoxine) – strengthen neuromuscular transmission, administered intramuscularly as vitamin B complex
3. Intestinal decompression:
Nasogastric tube aspiration (decompression of stomach and intestines)
Siphon enema to empty the lower intestine
4. Infusion and symptomatic therapy:
Fluid and electrolyte correction: 0.9% NaCl, 5% glucose, Ringer's solution (1500–2500 ml/day)
Potassium supplements (KCl 4% – 10 ml)
Detoxification therapy: Hemodez, Reopoliglyukin, Reosorbilact
Antibiotics if peritonitis or infection is suspected
5. Additional measures:
Non-narcotic analgesics for pain
Abdominal massage, physiotherapy (electrostimulation)

⚠ **Important notes:**
In paralytic obstruction, the main drug is proserin (stimulates peristalsis).
Antispasmodics (atropine, no-shpa, papaverine) are not given, as they further inhibit motility.

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If conservative measures fail or mechanical obstruction is suspected → surgery is indicated.

**Discussion**

Acute intestinal obstruction is one of the most complex and life-threatening pathologies in surgery. Its pathogenesis is associated with both mechanical and dynamic (functional) factors, with clinical features, symptoms, and treatment approaches differing between them. Mechanical types (obstructive and strangulating) are caused by a physical barrier, whereas dynamic types are due to motility disorders, either spasm or paralysis.

Key clinical features include abdominal pain, bloating, absence of stool and gas passage, vomiting, and signs of systemic intoxication. Specific signs (Val, Sklyarov, Kloiber's cups, Lotheissen, etc.) are important for early diagnosis. Radiological and ultrasound studies are helpful for distinguishing between mechanical and dynamic obstruction.

A crucial point is that misdiagnosis between spastic and paralytic obstruction may lead to treatment errors: for instance, proserin worsens spasm in the spastic type but is essential in the paralytic type. Therefore, careful evaluation of clinical signs and the use of laboratory and instrumental methods are necessary.

**Conclusion**

Acute intestinal obstruction is a severe surgical condition with a high mortality rate, making early identification of its mechanical and dynamic types vital. In the spastic type, treatment is based on antispasmodics and symptomatic measures, while in the paralytic type, prokinetics and supportive therapies are essential. In mechanical obstruction, timely surgery is crucial, as delay may result in peritonitis, necrosis, and life-threatening complications. Thus, accurate diagnosis, determination of the type of obstruction, and appropriate treatment are the key to saving the patient's life.

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