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Intestinal Obstruction

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INTESTINAL OBSTRUCTION*

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Intestinal obstruction, in spite of advances in diagnosis and management, remains one of the most serious of abdominal complaints.

The incidence of obstruction is high, and the mortality rate everywhere remains too high.

Exclusive of the subspecialties, we had 11,590 major operations at the Los Angeles General Hospital from 1941 to 1945 inclusive, and 1,107 of these were for intestinal obstruction, a ratio of about one in ten. The mortality rate is comparable with that of similar large institutions. In 1940 McKittrick of the Massachusetts General Hospital reported a mortality of 18 per cent in operated cases. In 1946 Calihan of the Johns Hopkins group reported a mortality of 20 per cent. In our series of an identical group the mortality was 21 per cent. The University of Minnesota (Dennis) and the Cook County group (Griffin, Bartron, and Meyer) report a mortality of 40 per cent in volvulus of the sigmoid and in the Los Angeles General Hospital the mortality was 37.5 per cent.

TYPES OF OBSTRUCTION

There are essentially two types of intestinal obstruction—the so-called *simple* obstruction and the *strangulating* obstruction.

Simple obstruction is represented by those cases in which there is a blockage of the continuity of the bowel. In strangulating obstruction there is in addition a compromise of the blood supply. Common examples of simple obstruction are those caused by bands and adhesions (75 per cent); common examples of strangulating obstruction are strangulated hernias, volvulus, intussusception and 25 per cent of obstructions caused by bands and adhesions. In McKittrick's series, 32 per cent of obstructions caused by bands and adhesions were strangulated and in Dixon's group at Mayo Clinic 26 per cent were strangulated.

In the simple obstruction, death is caused by gaseous distension, fluid and electrolyte loss, and possible toxic absorption. In strangulating obstruction there is an additional factor of plasma and blood loss, shock, peritonitis, and actual necrosis of the bowel itself.

Hartwell has shown that death in the simple intestinal obstruction in the upper small bowel is due to electrolyte loss, particularly sodium and chloride, which can be controlled by intravenous saline solution.

Wangensteen has proved that the gaseous distension is almost wholly due to swallowed air, and on the basis of these findings he introduces the use of the indwelling gastric siphonage. Fluid and electrolyte replacement in combination with indwelling gastric siphonage have been accepted as the method of choice in treatment of simple obstruction, whereas early surgical interference is paramount in the strangulating lesion.

The differential diagnosis between a simple and a strangulating obstruction is not easy. Wangensteen has stated that a differential diagnosis can frequently be made by spot tenderness, the simple obstruction having no pain or tenderness between peristaltic waves, the strangulating obstruction, because of perito-

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neal irritation, having localized tenderness not associated with the peristaltic wave. In the differential diagnosis, however, other factors must be taken into consideration, as briefly outlined below.

Differential Diagnosis

SIMPLE AND STRANGULATING OBSTRUCTION

	Simple	*Strangulating*
PAIN:		
	1. Insidious or abrupt 2. Free intervals	1. Sudden severe most cases 2. Constant with intermittent exacerbations
VOMITING:		
	1. Present	1. Present more frequently
APPEARANCE OF PATIENT:		
	1. Early not ill 2. Painful expression only during colic 3. Legs not drawn up 4. Shock—never	1. Ill from start 2. Constant painful expression more during colic 3. Legs likely drawn up 4. Shock—fairly frequent
ABDOMINAL FINDINGS:		
	1. Distension 2. Tenderness absent 3. Rigidity absent 4. Mass absent 5. Hernia rings empty 6. Peristaltic sounds metallic or bubbling with peristaltic wave	1. Distension 2. Tenderness present 3. Rigidity sometimes present 4. Mass often present 5. Hernia rings? 6. Peristalsis may be absent or low pitched
X-RAY:		
	1. Indicates only obstruction	1. Indicates only obstruction in most cases
ABDOMINAL TAP:		
	1. Fluid never bloody	1. Bloody fluid always indicates strangulation

In differentiating between simple and strangulating obstruction, Finney recently made this statement: "One rule can be fairly definitely laid down. Namely, if colicky pains continue after decompression of the stomach and there has been time for even partial restoration of fluid balance, immediate surgical exploration is necessary."

LARGE BOWEL VERSUS SMALL BOWEL OBSTRUCTION

The question as to whether an obstruction is in the large or small bowel can frequently be determined by a careful history and physical examination. Obstruction of the rectosigmoid area is the most frequent cause for large bowel obstruction. There the colon is narrower and the lesion, usually carcinoma, is more constricting than the right-sided lesion. Small-bowel obstruction is characterized by early vomiting and late distension with X-ray findings of gas in the small bowel with no gas under tension in the empty colon. In the large-bowel obstruction distension occurs early, vomiting late, and the large bowel by X-ray is under gaseous tension. In the flat plate X-ray the mistake of interpreting a small bowel under tension as being large bowel is occasionally made. Although large bowel obstruction is primarily a closed loop affair, the ileocaecal valve is incompetent in probably 20 per cent of patients. In these, although obstruction be in the large bowel, gas may also have refluxed into the small bowel. If the least doubt exists, a barium enema should be made.

VOLVULUS

Patients suffering from a volvulus are likely to have a sudden onset. The patient appears ill from the onset and may be in shock, and the pain is more or less constant. Although when the patient is in shock, pain may not be apparent. There is early tenderness and often rigidity. These patients will often assume a position of lying either on the right or left side, with legs drawn up—the "position of relief" as recently described by Evans and Bigger. The abdomen may early be silent. A spinal needle introduced into the abdominal cavity is frequently a valuable aid. A bloody tinged return from abdominal tap indicates a strangulating lesion. The X-ray usually indi-

cates obstruction and is no aid in differentiating a strangulating lesion.

Volvulus of the large bowel occurs in a 3 to 1 proportion in the sigmoid. The history of previous acute attacks of short duration plus the inability to introduce 500 cc. of water by enema has been considered diagnostic in volvulus of the sigmoid by Wangensteen, Bartron, Meyer, and others.

INTUSSUSCEPTION

The diagnosis of intussusception in children, with its frequency of a mass and frequency of a bloody stool and the currant jelly on the rectal examining finger, should not be difficult.

HERNIA

Strangulating internal hernias are rare, and the exact diagnosis is infrequently made before surgery. An X-ray finding, however, of loop of small bowel under tension bunched primarily on one side or the other of the midline should make one suspect paraduodenal hernia. Pain down the inner thigh should make one suspect obturator hernia, particularly if by bimanual examination loops of bowel can be felt in either side of the pelvis.

Diagnosis of strangulating external hernia should be simple, and yet there are patients in whom the hernia is completely missed. This is particularly true in the small femoral hernia. The importance of the necessity of routinely palpating the inguinal and particularly the femoral areas cannot be overemphasized, as local pain and tenderness will be absent in at least 20 per cent of patients.

MANAGEMENT

The following steps are suggested in the early management of a suspected strangulating obstruction.

1. Do a careful history and physical examination, noting particularly the appearance of the patient. Note just how sick he is. Is he in constant pain? Are there peristaltic rushes with the pain? Is there early distension? Is there point tenderness between peristaltic waves? Is there a mass? Are the inguinal rings and femoral canals empty? Does a rectal examination reveal a mass or blood?

2. Insert immediate nasal indwelling gastric siphonage. The Miller-Abbott tube is frequently impractical because of the difficulty of introduction beyond the pylorus.

3. Start fluid electrolyte replacement immediately and do urine and obtain blood for count and typing.

4. While the first electrolyte fluid replacement is still running, the patient is taken to X-ray for a plate of the abdomen preceded by an enema. If in doubt between lower and upper bowel obstruction, a barium enema should be made.

5. If after electrolyte replacement is well going and if crampy pain persists after the stomach is decompressed, the patient should be taken to surgery immediately and blood and plasma started before the abdomen is opened in all cases.

6. Suction with indwelling tube should be considered an adjuvant in the diagnosis and treatment of intestinal obstruction, and should never be allowed to act as a sedative to the surgeon who may awaken too late to find that he has missed a strangulating intestinal obstruction.

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