

ACUTE INTESTINAL OBSTRUCTION

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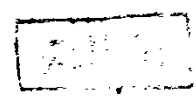
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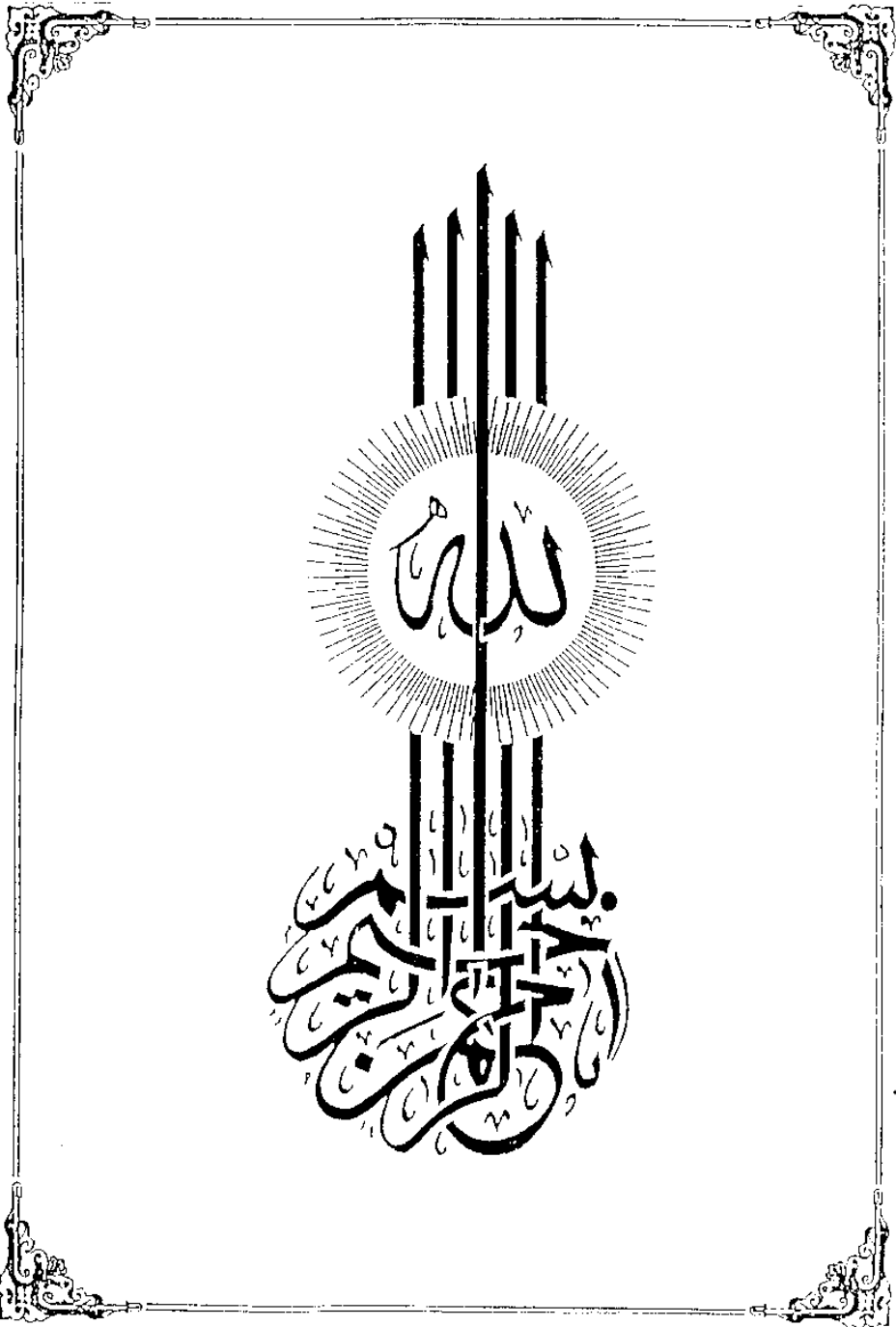
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To:

My Mother,
Father
and Wife ...

Mohamed



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CONTENTS

	<u>Page</u>
- Defenition and History	1
- Introduction and general consideration ...	2
- Anatomy	5
- Types of Intestinal Obstruction	9
- Aetiology of acute intestinal obstruction.	11
- Pathophysiology.....	16
- Clinical picture of acute intestinal obst- ruction	27
- Investigations	42
- Management of acute intestinal obstruction	54
- Special types of intestinal obstruction ..	
A. Strangulated external hernia	76
B. Adhesions and Bands	85
C. Volvulus	91
D. Intussusception	100
- Summary	106
- References	109
- Arabic Summary	

Acute Intestinal Obstruction

Definition:

Alimentary tract obstruction can best be defined as an intrinsic or Extrinsic failure of the normal caudal progression of the intraluminal contents (Bradley, 1977).

History :

Intestinal obstruction was observed and treated by Hippocrates. The earliest recorded operation for intestinal obstruction was probably performed by praxagoras (350 B.C.) who created an enterocutaneous fistula to relieve the obstruction. However, non operative treatment remained the general rule, including : reduction of hernias, opium for pain, orally administered mercury or lead shot in an endeavor to open the occluded bowel, electrical stimulation, and gastric lavage (Jones, 1981).

In the nineteenth century, surgery became used more frequently for intestinal obstruction. Most of the significant advances in the management of this disorder were made after the turn of the twentieth century. Hartwell and Hoguet observed in 1912 that

parenteral administration of saline solution prolongs the lives of dogs with intestinal obstruction, and this has become a cardinal principle of the management of intestinal obstruction today.

The second decade of the twentieth century saw the development of radiographic techniques in the diagnosis of intestinal obstruction.

In the 1930s nasogastric or intestinal tubes were employed to prevent or relieve intestinal distention in patients with intestinal obstruction. Antibiotics were added to the therapy of bowel obstruction in the 1940s and 1950s. Fluid replacement, intestinal decompression, antibiotics and improvement in surgical and anesthetic techniques have reduced the mortality rate in simple intestinal obstruction, however, the recognition and treatment of strangulating intestinal obstruction remain important problem for surgeons today (Jones, 1981).

Introduction and general consideration

Success in the treatment of a acute intestinal obstruction depends largely upon early diagnosis, skillfull management and an appreciation of the

importance of treating the pathological effects of the occlusion just as much as the cause it self.

Ellis, (1986). acute intestinal obstruction is divided into twomain types :

1. Mechanical and
2. neurogenic

In Mechanical obstruction the contents are prevented from passage along the bowel by an acute obstruction of the lumen of the gut.

Mechanical obstruction is subdivided into :

1. simple and
2. Strangulated

In the first, there is purely obstruction to the passage of intestinal contents, but in the second there is asuperadded obstruction of the blood supply of the involved segment of the gut (Ellis, 1986).

In neurogenic obstruction or ileus the intestinal contents do not traverse the bowel due to intestinal paralysis. (Ellis, 1986).

It may be an in active (a dynamic or paralytic ileus) or active (Dynamic ileus). (Ellis, 1974).

Intestinal obstruction remains a common and dangerous surgical emergency and because of its serious

nature it demands early diagnosis and speedy relief. (Ellis, 1982).

Perhaps the single most important factor that the surgeon must bear in mind when he deals with a case of intestinal obstruction is that no matter how well the patient may seem, and how relatively innocent the local and general signs may be, there are no clinical means or any accurate laboratory or radiological test will tell him whether a strangulated loop of intestine, with all its potential for destruction of his patient, is or is not present within the abdominal cavity. (Ellis, 1982).

If there be any condition in which early diagnosis and operative treatment and avoidance of attempts at purgation are necessary, it is intestinal obstruction (Cope, 1979).

Anatomy

The small intestine lies in coils which are found in all parts of the abdominal cavity below the liver and stomach, and which bear no fixed relationship to each other. The coils are covered to a varying extent by the greater omentum which hangs down in front of them. The jejunum begins at the duodeno-jejunal flexure at the left side of the body of the 2nd lumbar vertebra, and is about 2 metres in length. The ileum, which is three to four metres long, is continuous with the jejunum and ends in the right iliac fossa by joining the medial side of the caecum (RF Rintoul, 1980).

However, while the beginning of the jejunum may be distinguished from terminal ileum, the characteristics of the two portions blend imperceptibly with each other. Typically the jejunum is of greater caliber, has a thicker wall, its lymphoid tissue is diffuse and the jejunal arteries are closely packed and united by only one or two arcades as they approach the intestine. The ileum, on the other hand, is thinner walled, has well marked aggregations of lymphoid tissue at its antimesenteric border (Called Peyer's patches), and the more widely spaced ileal arteries are linked by multiple arcades (Hall Briggs, 1983).

The small intestine has a complete peritoneal covering, and, being attached by its mesentery to the posterior abdominal wall. The line of attachment to the posterior wall is no more than 15 cm. (6 inches) long; it extends obliquely downwards and to the right from the duodeno-jejunal flexure.

The large intestine is larger in caliber but it is considerably shorter in length than the small intestine. It begins in the right iliac fossa at the ileo cecal junction and terminates at the floor of the pelvic cavity at the anorectal junction. (Hall Craggs, 1965). The colon can be distinguished from small bowel by its sacculated structure, and by the presence of taenia coli and appendices epiploicae. (FR Rintoul, 1960).

The blood supply of the small and large intestine

The small and large intestine are supplied with blood by : the superior and inferior mesenteric arteries. These are both single midline branches of the abdominal aorta. The territory of the superior mesenteric artery extends from the distal half of the duodenum to the lateral third of the transverse colon. The intestine from this point to the upper

part of the anal canal is supplied by the inferior mesenteric artery. These two regions correspond to the embryological midgut and hindgut (Hall Craggs, 1985).

The superior Mesenteric Artery :

The superior mesenteric artery arises at an acute angle from the aorta just below the celiac trunk at the level of the first lumbar vertebra. It descends in the root of the mesentery of the small intestine toward the last part of the ileum where it forms an anastomotic arcade with an earlier branch, the ileocolic artery. Its first branch is the inferior pancreaticoduodenal artery whose anterior and posterior branches anastomose with the corresponding branches of the superior pancreaticoduodenal artery. During its course through the root of the mesentery many jejunal and ileal branches are given off from its left side. From its right side arise the ileocolic, right colic and middle colic arteries. The ileocolic artery gives off anterior and posterior cecal arteries. (Hall Craggs, 1985).

The Inferior Mesenteric artery:

It is the artery of the embryonic hind gut and supplies the remainder of the large intestine, including

the upper part of the anal canal. It arises from the aorta 3 or 4 cm above its bifurcation and descends beneath the peritoneum of the posterior abdominal wall. Its terminal branches are given off in a variable manner a left colic artery runs upward and to the left, supplying the last part of the transverse colon, splenic flexure and upper descending colon ; a descending branch of the left colic artery supplies the remainder of the descending colon. A series of sigmoid arteries supplies the sigmoid colon (Hall - Craggs, 1935).

The blood supply to the small intestine is abundant. That to the large intestine is less generous and greater care on the part of the surgeon is needed when choosing sites for excision and anastomosis. Some communication between the main vessels of supply is maintained near the mesenteric border of intestine by marginal artery. (Hall - Craggs, 1935).

Types of Intestinal Obstruction

When gastro intestinal luminal content is pathologically prevented from passing distally, intestinal obstruction exists. Intestinal obstruction may be caused by mechanical occlusion of the bowel lumen called mechanical obstruction or by paralysis of the intestinal muscle called paralytic ileus. (Jones, 1981).

Simple mechanical obstruction : is the result of occlusion of bowel lumen with out involvment of vascular supply, the source may be extrensic (adhesion, hernia), intramural (tumour, haematoma) or intraluminal (Polyp, fecal impaction).

Closed loop obstruction is valve obstruction to two level such that contents in the intervening loop of bowel can not progress distally or reflux backwards i.e. the loop is closed in both directions. (Gleysteen, and Condon, 1978). The commonest example of closed loop obstruction is the obstructed inguinal or femoral hernia, where the extruded segment usually part of the lower ileum, is occluded at two points. (Illingworth and Dick, 1979).

Strangulation obstruction : is an advanced stage of mechanical obstruction, usually due to bowel protrusion through a constricting ring of tissues or to torsion of the bowel on its vascular pedicle. In both cases venous occlusion develop, followed by arterial insufficiency with consequent gangrene of the bowel wall.

Paralytic ileus : (adynamic, neurogenic) is a functional obstruction due to ineffective or non propulsive peristalsis. Motor activity though diminished is never completely absent.

Intestinal vascular occlusive disease is neither a primary mechanical nor a functional obstruction of bowel but usually presents clinically as paralytic ileus (Gleysteen, and Condon, 1978).

According to its site intestinal obstruction is classified into high and low in small bowel or as large bowel obstruction.

The speed of onset determines whether the obstruction is acute, chronic or acute superimposed on chronic (Ellis, 1988). In acute intestinal obstruction onset is sudden obstruction is complete and there may be strangulation. (Evist, 1977).