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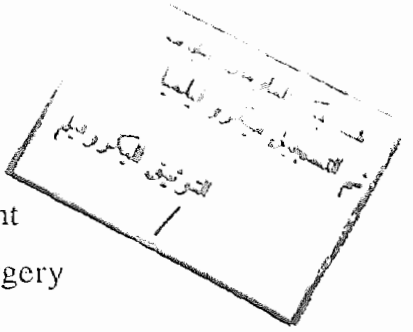

Protocol For An Essay

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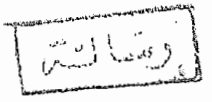

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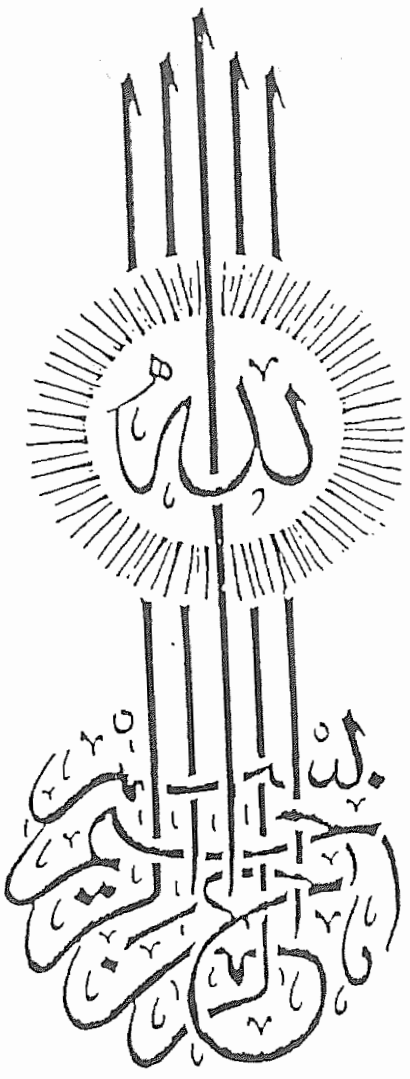

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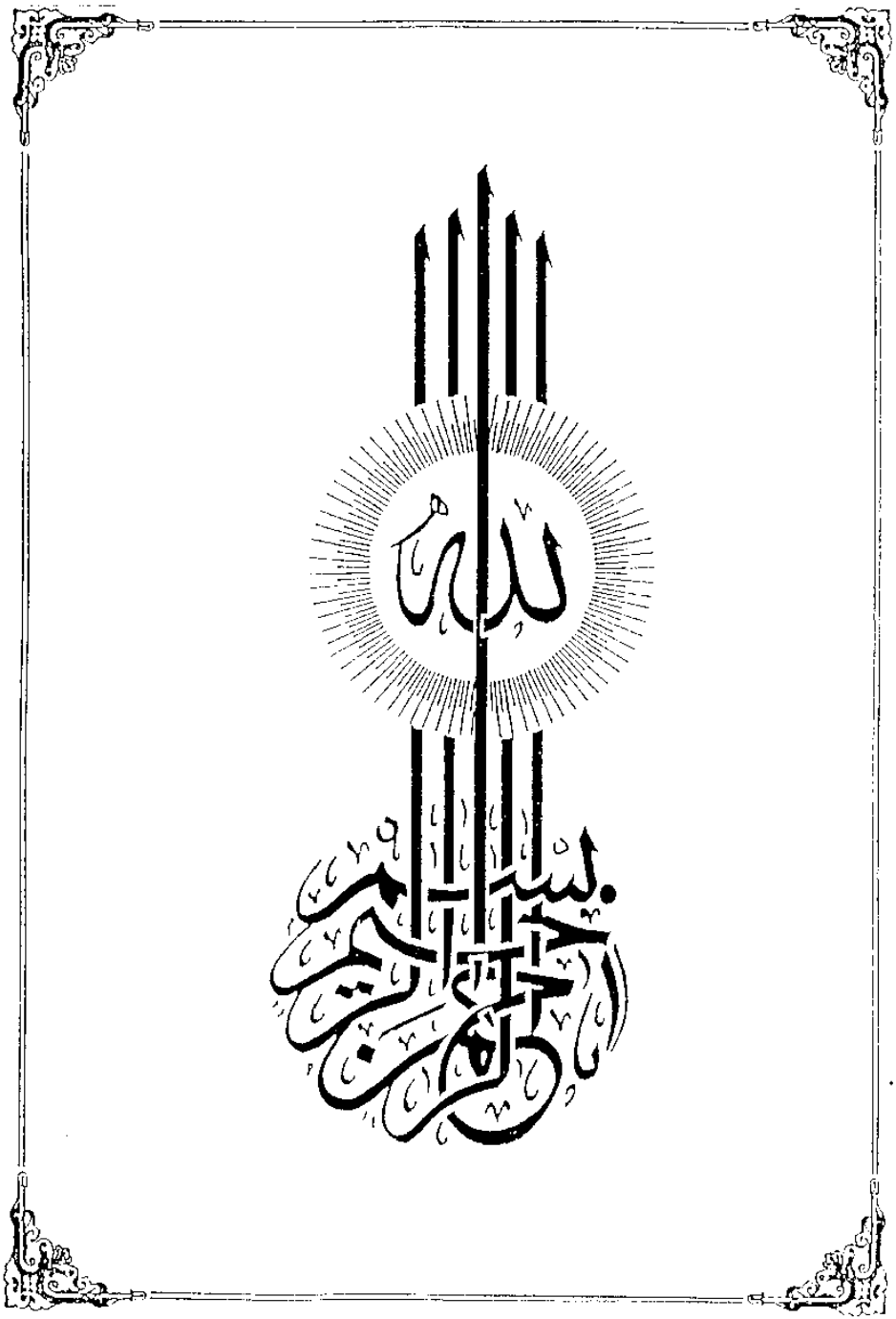

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Introduction

Intestinal obstruction refers to interference with normal passage of intestinal contents caused by partial or complete occlusion of the lumen, processes responsible for the obstruction are extrinsic or within the intestinal lumen. (John p. Welch 1990).

In the course of bowel obstruction, simple mechanical small bowel obstruction, electrolytes are lost externally through vomiting and tube suction and internally by drainage into the intestinal lumen and the intestinal wall or by transudation into peritoneal cavity. (Moore FD 1959).

But in mechanical colon obstruction frequently is not complicated by acid-base imbalance as the colon distends, intra luminal "Third space" fluid accumulation is usually not significant. However, if marked distention or closed loop obstruction occurs, hypovolemia, hypotension, and toxemia may appear. (Drucker WR 1969 Shnitka TK 1961).

Preoperative preparation of patients with acute obstruction is usually possible within a few hours once hydration is accomplished and satisfactory urinary output is reached. (Playforth RH 1970).

The principles of treatment are fluid and electrolyte therapy, decompression of the bowel, and timed surgical intervention. (Seymour. Schwartz 1988).

Aim of the Subject

Subject subserve knowledge of general consideration of bowel obstruction including pathophysiology (anatomic & physiology), clinical features, effect, complication and differential diagnosis.

Specific common aetiology with details, investigation and management.

General Consideration

Pathophysiology

Anatomy:

Small Bowel :-

The small bowel is divided in to three portions : The duodenum, jejunum and ileum. The duodenum, approximately 1 foot in length, is retroperitoneal in the second, third, and fourth portions. The jejunum begins at the ligament of Treitz, and the entire jejunum and ileum lie in an intraperitoneal position. The jejunum to have a larger lumen and athicker wall than the ileum, fat is seen on the ileum, but not on the jejunum. (Skandalakis JE, Gray SW, ROW Js. Jr). (1983).

The ileocecal valve lies at the junction of the small and large intestines. The mesentery of small bowel is attached to the posterior a abdominal wall, except in some congenital cases of limited fixation. The length of the small intestine is probably less than previously believed in the living patient; most early measurements were made in cadavers. (Skandalakis JE, Gray SW, ROW, Js Jr). (1983).

Colon :-

The colon is divided into several segments : The cecum, ascending colon, hepatic flexure, transverse colon, splenic flexure, descending colon, and sigmoid colon. Its length is

variable, and marked elongation sometimes occur. The junction of the colon and rectum is somewhat arbitrary. For convenience, the surgeon can note the transition to the intraperitoneal rectum (rectosigmoid) at the level where the sigmoid mesentery terminates (Near the level of third sacral vertebra) and extrapeitoneal rectum extends distally from the pouch of Douglas (Welch CE. 1958).

The ascending and descending segments lie fixed in a retroperitoneal position and must be mobilized anteriorly in the course of colonic resections. Frequently the cecum is mobile, predisposing to cecal volvulus. (Wolfer JA, Beaton LE, Anson BJ. 1942).

The different segments have characteristic appearances through the colonscope and the flexures are easily identified. The ileocecal valve is similar in appearance to the cerrvix. (Rosenberg, jc Di Dio.LJ. 1970).

Unlike the small bowel, the colon has three longitudinal muscle bands (the tenia), as wall as epiploic appendages (Small projecting masses of fat covered by peritoneum), and haustra (Sacculations) (Hardy JD 1983).

Blood Supply :-

The duodenum is supplied by the pancreaticoduodenal arteries, which are branches of the gastroduodenal and supreior mesenteric arteries. The superior mesenteric artery supplies reminder of the small intestine through a complex series of arcades. (Noer RJ, Derr JW, Johnston CG, 1971). The arcades give rise to a series of straight arteries that go directly throug the mesentery to the bowel wall.

The blood supply to the cecum, ascending colon, and transverse colon comes from ileocalic, right colic, and middle colic vessels, which are branches of the superior mesenteric artery. The right colic artery is sometimes absent (Steward JA. Rankin FW 1933).

The left transverse colon and descending colon are supplied by the left colic artery, and the sigmoid colon is supplied by the sigmoid branches, all these vessels originate in the inferior mesenteric artery (Welch CE. 1958).

The middle colic artery supplies the splenic flexure about one third of the time. (Steward. Rankin FW 1933).

The superior hemorrhoidal (rectal) artery (the terminal branch of the inferior mesenterse artery) supplies the

intraperitoneal rectum, while the middle hemorrhoidal (from the hypogestric artery) and inferior hemorrhoidal (from the internal pudendal artery) arteries supply the extra peritoneal rectum. The marginal artery of Drummond, an important vessel adjacent to the colon (1 to 8 cm from the wall) (Skandalakis JE, Gray SW, Rowe JS Jr, 1983) that tends to be constant, supplies blood aportion of colon if its arterial supply is ligated.

Veins generally parallel the corresponding arteries, al though veins of the right transverse colon and the hepatic flexure enter the gastroepiploic or the pancreaticoduodenal veins. (SkandalaKis JE, Gray SW, Rowe JS Jr, 1983). The superior and inferior mesenteric veins drain into portal vein.

Lymphatic Drainage :-

Lymph nodes supplying the small intestine are numerous and in close apposition, whil major (Primary) nodes of the colon lie adjacent to the major mesenteric vesseles. The paracolic nodes lie adjacent to the marginal artery and epiploic nodes (Very small) are next to the colon. (Skandalakis JE, Gray SW, Rowe JS Jr, 1983).

Innervation :-

The innervation of the gut comes from both sympathetic and the parasympathetic systems. The nerve supply of the small intestine and proximal colon is propably similar, the parasympathetic supply originating in the vagi and terminating in the myenteric (Auerbachs) and submcosal (meisseners) Plexuses. The sympathetic supply travels through the splanchnic nerves and preaortic ganglia to the intestine.

The parasympathetic supply of the distal colon is from the nerve erigentes. The parasympathetic stimulat peri-stalsis, while sympathetic inhibit it (John. Russell MD, John P. Weleh, MD 1990)

Physiology :-

Intestinal blood flow :-

Intestinal blood flow is at least partially independent of systemic perfusion. This so-called autoregulation of the intestinal circulation includes reactive hyperemia of the intestinal mucosa in response to hypertonic luminal contents. Experimantal evidance supports both myenteric and metabolic factors in the autoregulation of intestinal vascular perfusion. According to the myenteric theory,

intestinal arterioles automatically adjust to alterations in both transmural pressuer and capillary back pressure. (Parks, DA, Jacobson ED, 1985). They maintain an adequate arterial inflow pressure to perfuse the distal capillary beds.

The metabolic theory states that in the face of inadequate perfusion and tissue hypoxia, specific metabolic products (low PO_2, high PCO_2, Products of purine metabolism) exert a local hormonal effect, causing vasodilatation and subsequent increase in arterial perfusion. (Shepherd AP. Granger DN 1984).

Myenteric regulation may be most improtant in the regulation of perfusion of intestinal smooth muscle, while metabolic factors predominate in the control of mucosal perfusion. (PArks DA, Jacobson ED, 1985).

Myenteric factors maintain normal intestinal perfusion throughout the rhythmic contraction of the intestinal smooth muscle associated with normal peristalsis. Perfusion is decreased during high-pressure tonic contrations, however. (FOndacaro JD, 1984).

In the face of venous outflow obstruction, myenteric control of vasular perfusion predominates. (Sheperd AP. Granger DN, 1984).