ANAL FISTULA
AETIOLOGY CLASSIFICATION DIAGNOSIS AND DIFFERENT METHODS OF TREATMENT

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THESIS

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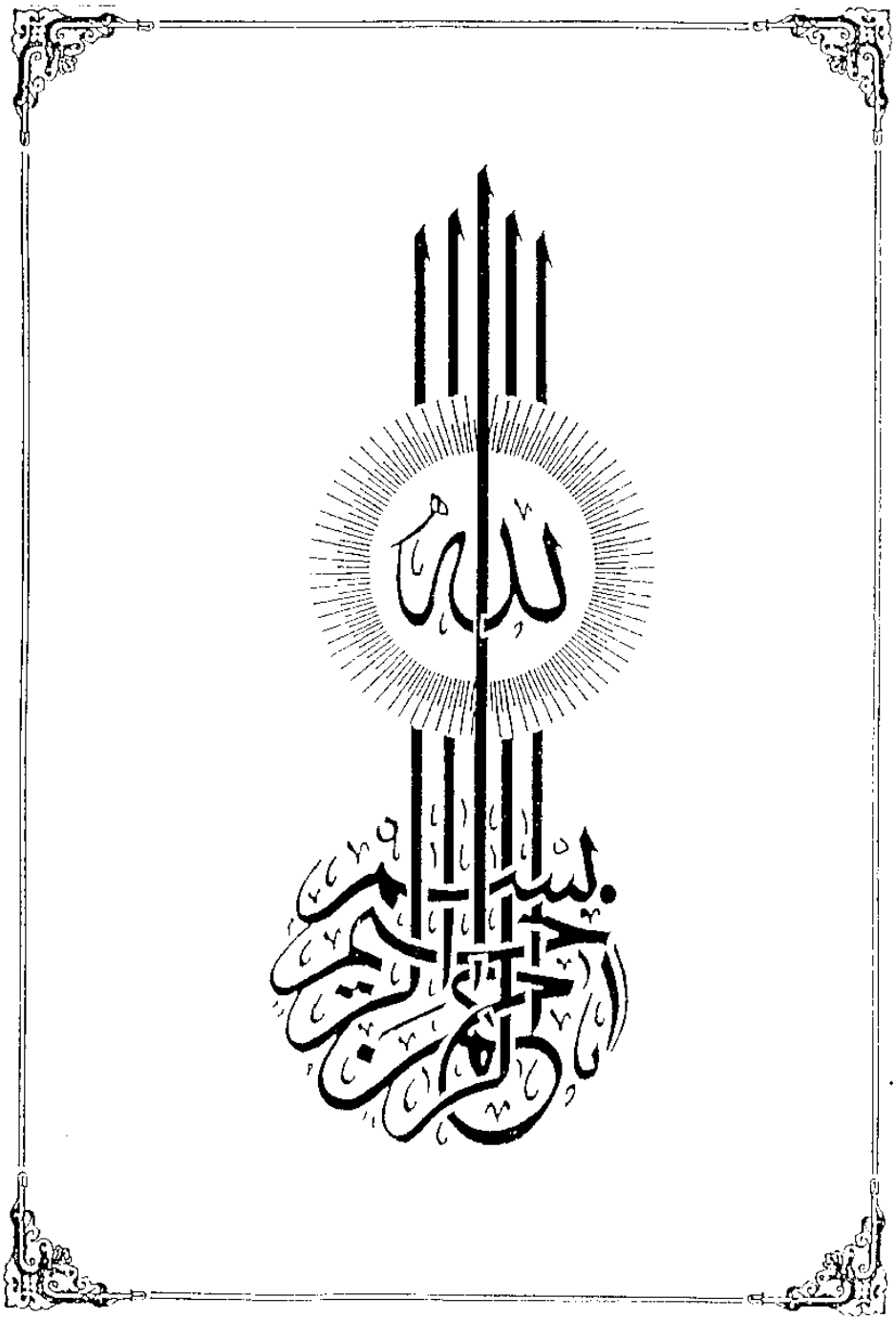

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INTRODUCTION

Anal fistula is a common proctologic problem which causes a great amount of suffering to the patient.

Anal fistula is suggested from the classical history of a perianal abscess which was neglected to burst spontaneously or was ill drained. However anal fistula may be due to some specific causes.

The various methods of classification of anal fistula are fully discussed in this thesis. The clinical and radiological methods of diagnosis of anal fistula are also mentioned;

This work also evaluates the various methods of treatment of anal fistula.

The different complications of the disease are also discussed.

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ANATOMY OF THE RECTUM

Anatomy of the Rectum:

The rectum is the direct continuation of the pelvic colon. It is about 12 cm in length. It begins opposite the third piece of the sacrum following the curvatures of the sacrum and coccyx. It ends 2.5 cm beyond the tip of the coccyx by bending sharply backwards to become the anal canal.

As the rectum descends, it exhibits three lateral curves. The uppermost and lowermost are convex to the right. The middle one is convex to the left.

The rectal mucosa shows three folds opposite these curvatures. These folds are called Houston's valves. There is thus an upper and lower valves on the left side and a middle one on the right side.

The part of the rectum below the right valve has a wider lumen and is dilated to form the ampulla of the rectum (Goligher, 1980).

Relations of Pelvic Peritoneum to the Rectum:

The relations of pelvic peritoneum to the rectum is of considerable surgical importance. The upper third

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of the rectum is covered with peritoneum anteriorly and on each side the middle third is covered only in front while the lower third is entirely devoid of peritoneal covering, since it is below the peritoneum of the pelvic floor (Rintoul, 1977).

Relations of the Rectum:

The upper two-thirds of the rectum is related anteriorly to the rectovesical pouch (or rectouterine pouch) which contains loops of the small gut and possibly the pelvic colon. This pouch separates the rectum from the upper parts of the seminal vesicles and urinary bladder in male and from the uterus and upper part of the vagina in female. Posteriorly, the rectum lies first on the sacrum and coccyx, and then on the raphe of the levator ani which converge on it from the side wall of the pelvis (Rintoul, 1977).

The Fascial Relations of the Rectum:

On either side of the rectum below the pelvic peritoneum, between it and the floor of the pelvis formed by the levator ani muscles, is a space filled with fibro-fatty tissue. The fibrous elements in this tissue are a part of the pelvic fascia. They connect the parietal pelvic fascia on the side wall of the pelvis with the

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rectum. They are known as the lateral ligaments of the rectum. They contain the middle rectal arteries. Posteriorly there is a thin layer of fascia covering the fat, vessels and lymph glands on the back of the rectum.

The sacrum and coccyx are also covered by a thickened part of the parietal fascia called the fascia of Waldeyer. Inbetween these two layers of fascia is a thin layer of connective tissue which is easily separated by blunt dissection . Traced inferiorly, the fascia of Waldeyer extends downwards and forwards on the upper aspect of the anococcgeal ligament to fuse with the fascial capsule of the rectum at the anorectal junction. Anteriorly the extraperitoneal part of the rectum is covered by a layer of visceral pelvic fascia called Denonvillier's fascia. It extends from the anterior peritoneal reflection above to the superior fascia of the urogenital diaphragm below. Laterally it becomes continous with the front of the lateral ligaments (Goligher, 1980).

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ANATOMY OF THE ANAL CANAL

The anal canal begins where the rectum passes through the pelvic diaphragm and ends at the anal verge. The anorectal junction is situated 2-3 cm. in front of and slightly below the tip of the coccyx. The lower end of the rectal ampulla suddenly narrows and passes downwards and backwards. The backward bend of the gut at the anorectal junction is termed the perineal flexure of the rectum. The anal canal is 3.8 cm in length in adults. In the empty condition its lumen has the form of an anteroposterior longitudinal slit (Warwick, 1975).

Relations of the Anal Canal:

The canal is related posteriorly to the coccyx wity a certain amount of fibrous, fatty and muscular tissue intervening. Laterally there is the ischiorectal fossa on either side. Anteriorly, in the male the canal is related to the central point of perineum, the bulb of the urethra and the posterior border of the urogenital diaphragm. In females the canal is related anteriorly to the peritoneal body and the lowest part of the posterior vaginal wall.

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The Mucocutaneous Lining:

The lining of the anal canal consists of upper mucosal and lower cutaneous parts. The junction of the two is marked by the line of the anal valves about 2 cm from the anal orifice. This level is also called the pectinate or dentate line.

Above the pectinate line, the mucosa is thrown into 8 to 14 longitudinal folds called the columns of Morgagni. Each column is connected below with the adjacent one by an anal valve at the pectinate line. The mucosa immediately above the valves consists of several layers of cuboidal cells for 0.5 to 1 cm. Then it becomes a single layer of columnar cells. The mucosa presents also colour changes. When followed from above the pectinate line for 1 cm it is deep purple in colour. At the anorectal ring it changes to the pink color of the rectal mucosa. Below the pectinate line the anal canal is lined with a modified skin devoid of hair and sebaceous and sweat glands and closely adherent to the underlying tissues. The colour of the mucosa below the valves is parchment and this passes to the pigmented skin of the anus (Goligher, 1980).

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Anal Intermuscular Glands:

These are four to eight glands present in the lower half of the anal canal. Each gland opens into an anal crypt. Sometimes two glands enter the base of one crypt. About half of the total number of crypts have no glands entering them.

Traced outwards from its crypt alopening the average gland has a short tubular portion in the submucosa. Then they branch immediately into a racemose structure of widely ramifying ducts. The ducts usually end blindly. In some cases small cystic dilatations of the terminal portion of a duct may be present. In such cases the cyst is 0.5 cm in diameter. Branches of one gland may extend over an area of about 1 cm square. The commonest direction of spread is outwards and downwards but never upwards above the level of the anal crypts.

Some glands appear to be confined entirely to the submucosa but in others the branches enter the internal sphincter. In one half of cases, branches cross this sphincter completely to reach the inter-sphincteric longitudinal layer. None of the glands proceed beyond the intersphincteric layer.

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it ends with a well defined edge 6-8 mm above the level of the anal orifice (Goligher, 1980).

Shafik,(1977) suggested that three groups of muscle bundles could be identified microscopically in the relaxed muscle. These are the upper, middle and lower groups. The upper group occupies the upper third of the muscle and its bundles are elliptical running internally and downwards. The middle group occupies the midportion of the muscle and its bundles are arranged horizontally around the rectal neck. The lower group occupies the lower bulky part of the muscle and its bundles incline upwards and medially.

The external anal sphincter is made up of a group of striated muscle fibres surrounding the anal canal. The descriptive subdivision of the external sphincter into three separate parts. Subcutaneous, superficial and deep was first made by Santorini, (1715). Goligher,(1980) suggested that the muscle is one continous sheet. However the lowermost or subcutaneous portion of it, which lies below the internal sphincter, does differ from the rest in that it is traversed by a fan-shaped expansion of the longitudinal muscle fibres of the anal canal. These fibres split it up into 8-12 discrete muscle bundles.

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At its upper end, the external sphincter fuses with the puborectalis part of levator ani. These could not be differentiated either morphologically or histologically.

The external sphincter is attached posteriorly to the skin of the perianal region. Slightly higher it is attached to the dorsal aspect of the coccyx through the anococcygeal raphe. Above this raphe it is devoid of posterior attachment up to the level of the upper raphe of the levator ani muscles. This angular defect is called Minor's triangle. Anteriorly the lower fibres are inserted into the perianal skin and the transverse perineal muscles. Above this level the peripheral fibres proceed forwards as puborectalis but the more centrally placed fibres join with fellow of the opposite side (Warwick, 1975).

Shafik,(1975) stated that the external anal sphincter is a triple loop system which consists of three U-shaped loops, the top, intermediate and base loops. The top loop is attached to the lower part of the symphysis pubis. It is formed by the puborectalis and the deep external sphincter. The intermediate loop arises from the dorsal aspect of the coccyx by a narrow median fibrous tendon. Its fibres pass

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