

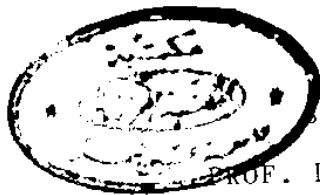
COMPLICATIONS AFTER HEMORRHOIDECTOMY

THESIS

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By

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INTRODUCTION AND AIM OF WORK

Hemorrhoids are dilated veins occurring in relation to the anus, and originating in the sub epithelial plexus formed by radicles of the superior, middle and inferior rectal veins. The common name is " piles ", Latin : Pilla = a ball, while the word hemorrhoids comes from Greek : haima = blood, rhoos = flowing.

Piles are certainly one of the commonest ailments that affect mankind. Clinical data suggest that many people of both sexes suffer from hemorrhoids but many of them don't complain or seek medical advice till a complication occurs or symptoms become annoying and disturbing normal daily life.

Ancient Greece and Rome practiced surgical treatment of piles (Parks,1955). The operation of hemorrhoidectomy carries a notorious reputation with regards to the severity of the post-operative pain so that many patients postpone seeking surgical treatment. Surgeons realized this fact and many alternative methods were evolved aiming to reduce discomfort experienced by the patient.

The most commonly practiced technique is ligation and excision operation. The aim of this study is to evaluate the operation and its complications and its management. The study is performed on twenty cases who were followed up for six months.

Chapter I

CHAPTER I

ANATOMY OF ANAL CANAL.

The anal canal begins at the lower end of the ampulla of the rectum, and passes downwards and backwards to end at the anus. It is $1\frac{1}{4}$ inches long and its surgical importance is due to its role in the mechanism of rectal continence and its liability to certain diseases. The anterior wall is shorter than the posterior one, the lumen, in the empty condition, has the form of an anteroposterior slit due to the tone of anal sphincters.

Posteriorly, it is related to coccyx, separated from it by fibrous, fatty and muscular tissues called the ano-coccygeal ligament. Laterally, there is ischio rectal fossa containing fat and traversed by inferior hemorrhoidal vessels and nerves to reach the wall of the canal. Anteriorly, in males, it is related to the central point of the perineum, urethral bulb and the posterior border of the urogenital diaphragm containing the membranous urethra. In females, the canal is related anteriorly to the perineal body and to the lowest part of the posterior vaginal wall. (figures 1 & 2)

The canal is lined by mucosa in its upper part, while its lower part is covered by modified skin. The two parts are marked by the dentate line at their junction, $\frac{3}{4}$ inch from the anal

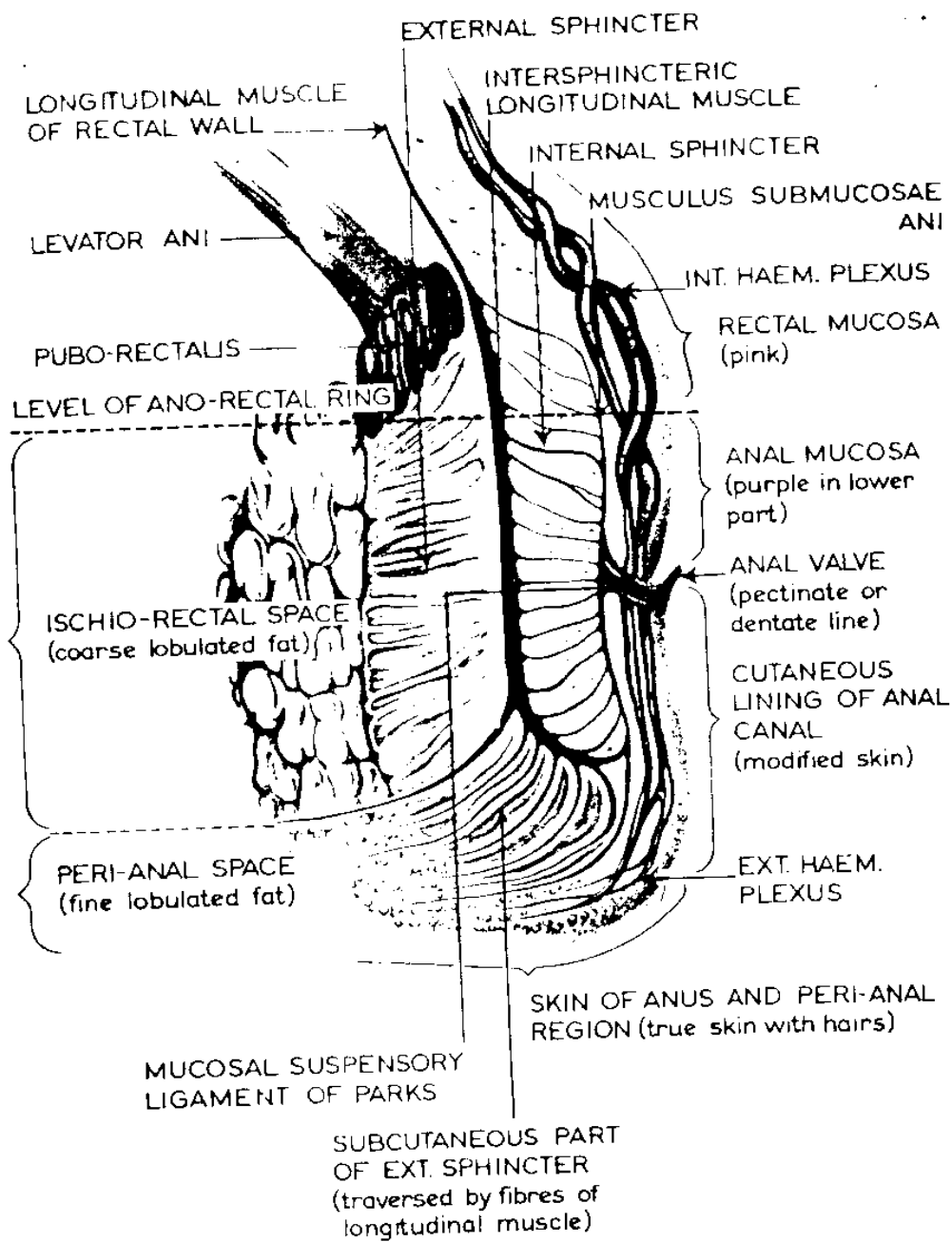


Fig. 1 Coronal section of the anal canal to demonstrate the modern conception of anal anatomy. (From Goligher 1959)

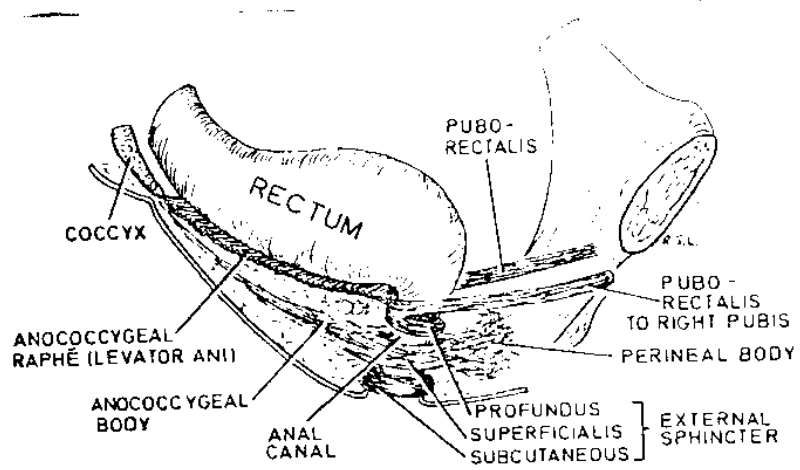


FIG. 2 THE PUBO-RECTAL SLING AND EXTERNAL ANAL SPHINCTER (lateral view).

orifice and opposite the junction of the middle and lower thirds of the internal sphincter. The valves at this dentate or pectinate line represent remnants of the proctodeal membrane. Above each anal valve there is a little pit or pocket known as anal sinus or crypt or sinus of Morgagni (G.B. Morgagni, 1723). Above the pectinate line the mucosa forms 8 - 14 longitudinal folds known as columns of Morgagni, each two adjacent columns being connected below at the pectinate line by an anal valve. Histologically, the mucosa immediately above the valves is lined by several layers of cuboidal cells which give way to a single layer of columnar cells $\frac{1}{4}$ - $\frac{1}{2}$ inch above the valves (Milligan and Morgan, 1937). The colour of mucosa is purple for $\frac{1}{2}$ inch or so above the pectinate line, but at the anorectal ring it becomes pink, the colour of rectal mucosa. Below the pectinate line, modified skin lines the anal canal, it is devoid of hair, sebaceous and sweat glands, closely adherent to the underlying tissues. The lining of this part of the canal for about $\frac{1}{4}$ inch below the valves is thin, smooth, pale and stretched, this area is known as the pecten (Stroud, 1896). Traced further inferiorly, the lining becomes thicker and acquires histological features of normal skin just outside the anal orifice (Goligher, 1972).

The anal inter muscular glands or ducts were recently studied by Parks (1961) with reference to their role in the pathogenesis of infections in the anal canal. He described that there

are 4 - 8 glands in the normal anal canal, each has a direct opening into the apex of the anal crypt and occasionally two glands open into the same crypt, about half of the crypts in any canal have no glands. The average canal, traced from its cryptal opening, has a short tubular portion in the submucosa which quickly branches to a racemose structure of widely ramifying ducts. Some glands appear to be confined to the submucosa but with two thirds of them; one or more branches enter the internal sphincter, and with one half; branches cross this sphincter completely to the inter sphincteric longitudinal layer, though some of the terminal loculi have been described as penetrating the external sphincter itself to reach ischio-rectal fossa. Parks (1961) found in his specimens no glands proceeding beyond the longitudinal intermuscular septum. The direction of extension of the gland is outwards and downwards but never upwards above the level of valves. The glands are lined by stratified columnar epithelium and surrounded by lymphocytes resembling lymphocytic follicles (Sharyock and Rebell, 1943).

The clinical importance of the anal glands lies in that they may provide an avenue of infection from the anal canal to the submucosa or the intersphincteric space. Also, they may be the site of origin of an adenocarcinoma (Dukes and Calvin, 1956).

Milligan and Morgan studied the anal musculature. Their description was widely accepted at one time, but their original

conception of the anatomy of this region has been shown to be incorrect regarding the division of the external anal sphincter into three parts and what they called the subcutaneous part is really the lowest part of the internal sphincter (Eisenhammer, 1951, 1953 ;Goligher, Leacock and Brossy, 1955; Parks, 1955; Morgan and Thompson ,1956).

Histological examination of anal canal revealed that the internal sphincter is continuous superiorly with the circular muscle coat of the rectum and inferiorly its rounded edge is $1/4 - 1/5$ inch above the anal orifice and $1/2 - 1/3$ inch below the anal valves. The sphincter is formed of plain muscle fibers grouped into discrete elliptical bundles, their upper part lies obliquely and their transverse axis runs internally and downwards. This obliquity becomes progressively less as the internal sphincter is traced downward so that the lower part of the muscle lies horizontally and some of the lower ones even incline slightly upwards.

The external anal sphincter extends lower than the internal sphincter and the lowermost portion curves medially to be below and slightly lateral to the rounded lower edge of the internal sphincter and close to the skin of the anal orifice. There is no histological evidence that external sphincter is divided into three parts, the muscle is one continuous sheet. However, the lower, subcutaneous, portion 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 fibers of the anal canal which split it up into 8 - 12 discrete muscle bundles. The external sphincters fuses superiorly with the puborectalis part of the levator ani muscle with no histological evidence of separation of both muscles, which, of course formed of stripped muscle fibers.

Between the internal and external sphincters lies the main layer of longitudinal fibers of the anal canal. This layer is formed of non-stripped muscle fibers and elastic tissue, continuous superiorly with the outer longitudinal muscle layer of rectal wall and is joined with by some stripped muscle fibers of the levator ani. It breaks up inferiorly opposite the lower border of the internal sphincter into a number of septa which diverge fanwise and pass radially through the lower most part of the external sphincter. Some of these diverging fibers are attached to the anal and perianal skin from a point a little below the internal sphincter to well beyond surrounding the lower part of the canal. Fine and Lawes (1940), first described an additional layer of longitudinal fibers lies on the inner aspect of the internal sphincter under anal mucosa and skin, they have named it the musculus submucosae ani, and would appear to be derived shiefly from strands of the main intersphincteric longitudinal layer which make their way inward and downward between the bundles of the internal sphincter.

Inferiorly, few of the fibers of the musculus submucosae and become continuous, around the lower border of the internal sphincter with the inner most fibers of the main intersphincteric longitudinal layer; but the majority continue downward and outward, superficial to the subcutaneous part of the external sphincter, to be attached to the skin of anal and perianal region. This extension constitutes the corrugator cutis ani of Ellis (1878) and Milligan (1942).

A strong band of longitudinal fibers passing directly from the inner aspect of the lower part of the internal sphincter, to the lining of the anal canal just below the anal valves, was described by Parks (1955) and he called it the mucosal suspensory ligament and he claims that the lining of the canal is firmly tethered to the underlying sphincter by this bundle, and this accounts for the well recognised interhemorrhoidal groove which appears on internal hemorrhoids when they are prolapsed or pulled down during hemorrhoidectomy. Goligher (1972) confessed that no trace of this suspensory ligament has been detected in any of his histological sections of this region.

The anal orifice is surrounded by the external anal sphincter which forms an elliptical cylinder muscle that extends upwards on lateral sides and becomes continuous with the puborectalis and pubococcygeus muscle. The cylinder is attached posteriorly

at the lowest level to the perianal skin in the midline, the external sphincter fibers at a higher level from the anococcygeal raphe which becomes attached to the dorsal aspect of coccyx. The external sphincter has no connection posteriorly above the raphe but forms a continuous muscle loop around the anal canal. The fibers of external sphincter can be grouped anteriorly into three levels, many of the lower fibers are inserted into the perianal skin in the midline and near it, higher, roughly at anococcygeal raphe level, the fibers merge into the transverse perianal muscles, above this level most of the fibers proceed forwards as the puborectalis but some central fibers join those of opposite side and encircle the anal canal in front up to the level of the anorectal ring.

The anorectal ring is a functionally important ring of muscle at the junction of rectum and anal canal. It is felt posteriorly on P.R. as a shelf. It is formed of upper borders of both internal and external sphincters, which completely encircle the junction, and on the posterior and lateral aspects the strong puborectalis sling. So, it is stronger posteriorly and laterally than anteriorly, and complete division results in rectal incontinence while its preservation inspite of sacrificing all the rest of the sphincter musculature will produce no gross lack of control but minor degrees of incontinence may result.

During defecation and anal canal operations as hemorrhoidectomy, both internal and external sphincters are capable of slight