Recent Trends In Management Of Perianal Fistula

An Essay

Submitted for Partial Fulfillment of Master Degree in General Surgery

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2014

Acknowledgement

First of all thanks to ***Allah*** *to whom I relate my success in my all life.*

No words can express my gratitude and thanks to ***Prof. Dr. Ashraf Farouk Abadeer*** *Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his valuable time, great help, and extreme patience. It is a great honour to work under his guidance and close supervision.*

I would like to express my deepest gratitude and thanks to ***Dr. Mohamed Ali Lasheen*** *Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, for his continuous support, great effort and valuable advices. Without his effort this work would not have appeared in this form.*

Lastly, I want to express my great thanks to my ***Mother*** *and my* ***Wife*** *for their support and encouragement throughout this work.*

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List of abbreviations

3 DEUS	Three dimensions endoanal ultrasound
AFP	Anal fistula plug
AIDS	Acquired immune deficiency syndrome
CT	Computerized tomography
EUS	Endoanal ultrasound
H_2O_2	Hydrogen peroxide
HIV	Human immune deficiency virus
IBD	Inflammatory bowel disease
MRI	Magnetic resonance imaging
RF	Radio frequency

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Introduction

Fistula in ano is defined as abnormal communication, lined granulation tissue between the anal canal and the exterior i.e. the skin, which causes a chronic inflammatory response. Most commonly these fistulae develop following an anal abscess, due to inadequate drainage or a spontaneous rupture of the abscess. Tuberculosis, inflammatory bowel diseases such as Crohn's disease and ulcerative colitis, and chronic anal fissure can also lead to development of anal fistulae ***(Adams et al., 2006)*.**

A perianal fistula is a common condition. It has an incidence of 5.6 per 100.000 in women and 12.3 per 100.000 in men. The disease occurs predominantly in the third and fourth decade of life. It is believed that infection of the intersphincteric glands is the initiating event in fistula in ano, in a process known as the 'cryptoglandular hypothesis' ***(Van Koperen et al., 2008)***.

Parks developed a classification system in which fistulae are divided into intersphincteric fistula, transsphincteric fistula, suprasphincteric fistula and extrasphincteric fistula. However the type of treatment depends not on the

location of the fistula tract but on the level of the internal opening in the anal canal ***(Parks et al., 1976).***

The role of preoperative imaging is to demonstrate clinically undetected sepsis, to serve as a guide at the time of the initial surgery, to determine the relationship of the fistula tract to the sphincter mechanism, and to reveal the site of sepsis in a recurrent fistula, all serving to decrease recurrence rates associated with fistula surgery. Imaging may take the form of fistulography, computed tomography (CT) scan, endoanal ultrasound, and magnetic resonance imaging (MRI) ***(Vasilevsky and Gordon, 2007).***

Magnetic resonance imaging depicts infectious foci in the perianal region better than any other investigation modality, including surgical exploration and it helps to reduce postoperative recurrence by 75% in patients with complex disease ***(Lima et al., 2010).***

The goal of treatment of fistula in ano is eradication of sepsis without sacrificing continence. Because fistulous tracks encircle variable amounts of the sphincter complex, surgical treatment is dictated by the location of the internal and external openings and the course of the fistula ***(Charles et al., 2010).***

The treatment of fistula has remained a challenging job for the surgeons. Different surgical techniques have been described in literature. These include fistulotomy, insertion of a seton, two staged fistulotomy, advancement mucosal flaps, repair of fistula using fibrin adhesive glue and rerouting the fistula ***(Qureshi et al., 2002)*.**

Aim of the work

This aims to discuss the etiology, classification, diagnosis and management of perianal fistula with special emphasis on most recent trends.

Anatomy of the Anal Canal and Sphincter

Embryology of rectum and anal canal

During the fourth week after fertilization, the primitive gut (fore, mid and hind gut) forms as the result of lateral folding of embryo and incorporation of the dorsal part of yolk sac, the terminal part of the hind gut is an endoderm-lined cavity (cloaca) in direct contact with surface ectoderm at the cloacal membrane ***(Nigel et al., 2002).***

The allantois opens into the ventral part of the cloaca, and forms the dorsal wall of it, the uro-rectal septum grows downwards, separating the cloaca into a dorsal part which becomes the rectum and a ventral part which becomes the urogenital sinus. The cloacal membrane now becomes the anal membrane below the rectum and urogenital membrane below the urogenital sinus ***(McMinn, 1999).***

The anal membrane becomes surrounded by mesenchymal swellings, so that at eighth week it is at the bottom of the proctodeum (anal pit). During the ninth week, the anal membrane ruptures allowing a communication between the rectum and the outsides. Thus the upper part of

the anal canal is derived from endoderm of the hind gut (cloaca) while the lower part is ectoderm in origin (proctodeum) **(*Nigel et al., 2002).***

Surgical anatomy of the anal canal

Two definitions are found describing the anal canal. The "anatomic" or "embryologic" anal canal is only 2.0cm long, extending from the anal verge to the dentate line, the level that corresponds to the proctodeal membrane. The "surgical" or "functional" anal canal is longer, extending for approximately 4.0 cm (in men) from the anal verge to the anorectal ring (levator ani). This "long anal canal" concept was first introduced by **Milligan and Morgan** (**1934)** and has been considered, despite not being proximally marked by any apparent epithelial or developmental boundary, useful both as a physiologic and a surgical parameter. The anorectal ring is at the level of the distal end of the ampullary part of the rectum and forms the anorectal angle, and the beginning of a region of higher intraluminal pressure. Therefore, this definition correlates with digital, manometric, and sonographic examinations ***(Jorge and Habr-Gama, 2007).***

Anatomic Relations of the Anal Canal

Posteriorly, the anal canal is related to the coccyx and anteriorly to the perineal body and the lowest part of the posterior vaginal wall in the female, and to the urethra in the male. The ischium and the ischiorectal fossa are situated on either side. The fossa ischiorectal contains fat and the inferior rectal vessels and nerves, which cross it to enter the wall of the anal canal ***(Jorge and Habr-Gama, 2007).***

Internal appearance of anal canal

The mucous membrane of the anal canal as seen on proctoscopy shows a circumferential wavy mucosal fold about half-way up the anal canal. This important landmark is referred to as the dentate line or pectinate line. The upper half of the anal canal (i.e. above the dentate line) presents a variable number of vertical mucosal ridges (8-10) termed anal columns or the columns of Morgagni. Running between the lower ends of adjacent columns are a series of curved folds of mucosa called anal valves. It is these anal valves circumferentially arranged that account for the dentate/pectinate line. Above each anal valve is a shallow mucosal pocket termed the anal sinus. Opening into each anal sinus are the ductules of a number of mucus-secreting anal glands. These glands are situated in the anal mucosa,

submucosa and even as deeply as in the internal sphincter of the anal canal. A good deal of perianal sepsis is thought to be the result of infection originating in these glands ***(Vishy Mahadevan, 2011).***

The epithelium above the dentate line is similar to the glandular epithelial lining of the rectal mucosa and is made up of columnar cells, crypts and goblet cells. It is relatively insensitive to pain. The anal canal distal to the pectinate line is, by sharp contrast, lined with non-keratinized, stratified squamous epithelium, and presents a smooth appearance and is very pain sensitive. Distally still, at the anal verge and just proximal to it, the anal canal is lined with sensitive, thick, hair-bearing skin ***(Vishy Mahadevan, 2011).***

Musculature of the anal canal and pelvic floor

In the musculature surrounding the anal canal three layers can be recognized: the internal anal sphincter, the conjoined longitudinal muscle and the external anal sphincter **(Fig.1).**

The internal anal sphincter

It is a thickened continuation of the circular coat of the rectum. This involuntary muscle commences where the rectum passes through the pelvic diaphragm and ends at the anal orifice, where its lower border can be felt.

The internal anal sphincter is 2.5 cm long and 2-5 mm thick when exposed during life, it's pearly white in colour and its individual transversely placed fibers can be seen clearly. Spasm and contracture of this muscle play a major part in pathophysiology of fissure and other anal affection ***(Russell et al., 2000).***