Comparison of Postoperative complications between Conventional Ferguson's Haemorrhoidectomy and Ligasure Haemorrhoidectomy

Thesis

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the Most Kind and Most Merciful.

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Ahmad Magdy

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INTRODUCTION

Hemorrhoids refers to the abnormal downward displacement of anal cushions which are prominences of anal mucosa formed by loose connective tissue, smooth muscle, and arterial and venous vessels.

Hemorrhoids develops during the course of life and is a very common anorectal disorder ***(Thomson, 1975).***

The most common symptom of hemorrhoids is painless rectal bleeding of bright red blood associated with bowel movement, and sometimes with prolapsing anal tissue. A precise history and thorough physical examination, including digital rectal examination and proctoscopy, are imperative for the diagnosis of hemorrhoids ***(Alonso-Coello et al., 2006).***

Hemorrhoids are generally classified by their location: internal (originates above the dentate line and covered by anal mucosa); external (originates below the dentate line and covered by anoderm); and mixed type ***(Lohsiriwat et al., 2011).***

The current pathophysiologies of hemorrhoids include the degenerative change of supportive tissue within the anal cushions, vascular hyperphlasia, and hyperperfusion of hemorrhoidal plexus ***(Lohsiriwat, 2012).***

Management of hemorrhoids varies from conservative treatment up to surgery which is actually indicated for patients with grade III and IV hemorrhoids ***(MacRae et al., 1995).***

The traditional Milligan-Morgan operation and the Ferguson one in United States are still the most used and effective approaches for patients with symptomatic haemorrhoids of III and IV degrees ***(MacRae et al., 1995).***

These two procedures have similar possible complications, such as blood loss and postoperative pain, which can cause a prolonged hospital stay: this can be considered as a "social" problem, since a fast wound healing would allow a quicker return to work habits and daily activities ***(Engel et al., 2000).***

Several papers looking for the optimal treatment of hemorrhoids have been published in recent years and new devices and procedures have been proposed to overcome hemorrhoidectomy complications: such tools as stapling hemorrhoidopexy and Doppler-guided hemorrhoidal vessel ligation are based on principles conceptually different from excisional surgery ***(Jayaraman et al., 2006)***

Among those new devices is the LigaSure^{TM}, which became a popular choice for hemorrhoidectomy. It is so effective in achieving haemostasis that it is described as a 'vessel sealing system'.

The energy is delivered only to the tissue grasped within the jaws of the hand piece with minimal spread of electrical or thermal energy to adjacent tissues ***(Palazzo et al., 2002).***

The main goal of some randomized trials was to evaluate the benefits of the system over traditional approaches ***(Thorbeck et al., 2002).***

Although an overall favourable trend exists toward LigaSure™, conclusions are not univocal and definitive; this creates some uncertainty, also considering the increasing cost for the use of the disposable device: thus, it is essential to keep on experimenting to determine whenever a true advantage exists ***(Franklin et al., 2003).***

According to the belief that a conventional hemorrhoidectomy is the only effective treatment in grade III and IV patients, this prospective study was designed to verify if the use of the LigaSure™ system can be proposed as a less painful, bloodless alternative and whether it is associated with lower rate of peri-anal fistulae occurrence.

AIM OF THE WORK

This study aims to compare prospectively between closed hemorrhoidectomy, Ferguson's method, and LigaSure™ hemorrhoidectomy as regards post-operative pain, bleeding and peri-anal fistulae occurrence.

Chapter 1

APPLIED ANATOMY OF ANAL CANAL AND HEMORRHOIDS

The anal canal is about 2.5–4 cm in length and encircled with anal sphincter complex. The sub-epithelial space of the anal canal is uneven. There are prominences of anal mucosa, known as "anal cushions" – formed by loose connective tissue, smooth muscle, arteriole, venule, and anorectal vascular plexus (hemorrhoidal plexus). The formation of anal cushions is evident since the late stage of fetal development ***(Morgado et al., 1988).*** (Fig. 1)

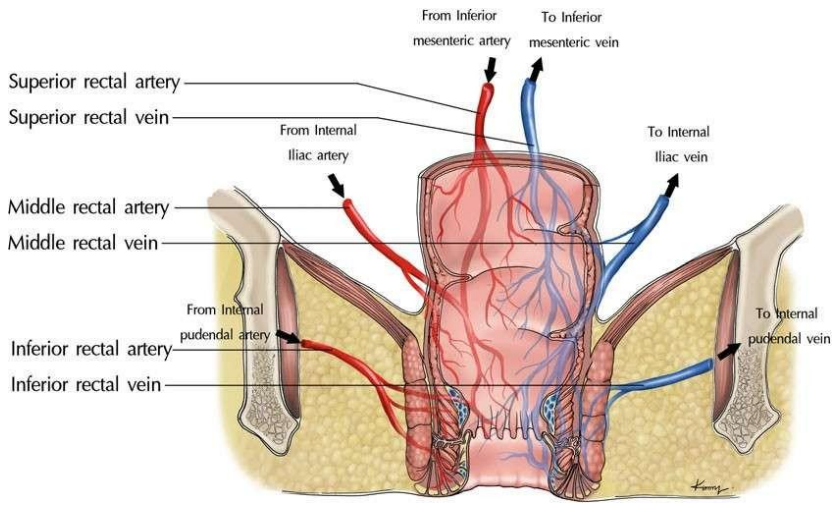

Figure (1): Anatomy of anorectal vasculature ***(Lohsiriwat, 2015).***

Typically, there are three major cushions located in right anterior, right posterior, and left lateral aspect of the anal canal. However, there could be a various number of minor anal cushions lying between them ***(Lohsiriwat, 2015)*** (Fig. 2).

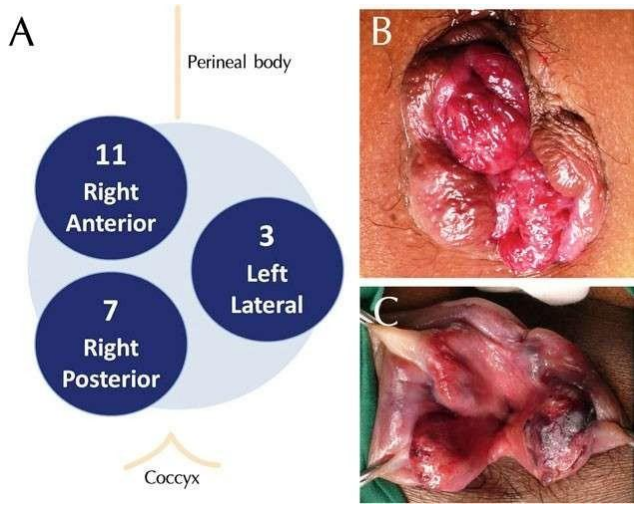

Figure (2): Diagram of common sites of major anal cushions (a) and internal hemorrhoids; (b) and (c) two examples of hemorrhoidal cushions locations ***(Lohsiriwat, 2015).***

In general, hemorrhoids are referred to abnormally congested anal cushions and/or downward displacement of anal cushions, the anal cushions of patients with hemorrhoids show significant pathologic changes including markedly dilated vascular channels, venous thrombosis, and fragmented subepithelial smooth muscle ***(Lohsiriwat, 2015),*** (Fig. 3).

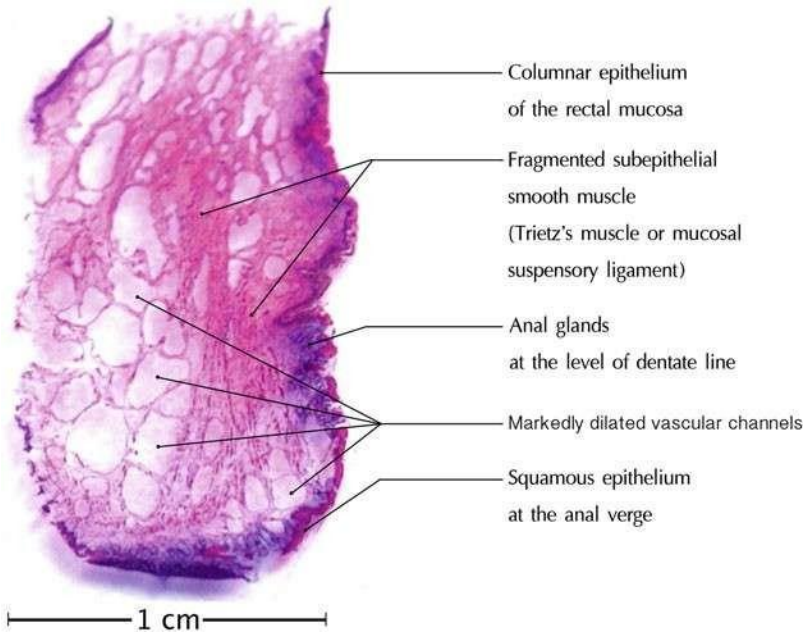

Figure (3): Histopathologic changes in advanced hemorrhoids ***(Lohsiriwat, 2015).***

Classified by their location, internal hemorrhoids originate from hemorrhoidal plexus lining above the dentate line and external hemorrhoid is formed by that lining below the dentate line. Since external hemorrhoid is covered by anoderm and perianal skin, it is somatically innervated and sensitive to pain stimulus ***(Lohsiriwat, 2012).***

Chapter 2

PATHOPHYSIOLOGY OF HEMORRHOIDS

Although the exact pathophysiology of hemorrhoids remains unknown, it is considered that hemorrhoids primarily result from abnormally congested and descended anal cushions ***(Goenka et al., 1991).***

Since the development of hemorrhoids are multifactorial, several risk factors have been reported to be associated with the formation of hemorrhoids such as pregnancy, elderly, constipation, chronic diarrhea, and internal rectal prolapse ***(Lohsiriwat, 2013, 2015).***

The concepts of hemorrhoid formation could be categorized into four groups: sliding anal cushions (loss of fixation network), vascular abnormality, rectal redundancy, and an increased pressure on anorectal vascular plexus ***(Lohsiriwat, 2012).***