

## Anal Sphincter Injuries During Hemorrhoidectomy: A Multi Center Study

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**Abstract-** Hemorrhoidectomy is the treatment of choice for patients with third or fourth-degree hemorrhoids. Although the majority of surgeons believe that surgical hemorrhoidectomy is the most effective approach with excellent results in the management of hemorrhoid disease, but hemorrhoidectomy is not a simple procedure. One of the complications of this surgery is an injury to anal sphincters that can lead to incontinency in some patients. In this study, we aimed to reveal the percentage of external and internal anal sphincter injuries in surgical hemorrhoidectomy. We prospectively enrolled 128 patients from April 2006 to February 2007. They underwent hemorrhoidectomy in three general hospitals in Tehran. All patients were in grade III or IV and underwent open hemorrhoidectomy (Milligan-Morgan). After surgery, all resected material was histopathologically examined by two expert pathologists and the results confirmed by other one if there is any discrepancy. From all specimens which sent to the pathology department 15.8% (21 Pts.) had muscle fibers that Smooth muscle fibers were seen in 80.5% (17 Pts.) of them and striated muscle fibers were found in 19.5% (4 Pts.). Although hemorrhoidectomy is a safe and effective method for treatment of hemorrhoid, but the inadvertent removal of smooth and striated muscle during open hemorrhoidectomy had raised concerns about its effects on postoperative anorectal function.

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### Introduction

Hemorrhoids are one of the most common benign anorectal problems worldwide, which affects more than one million individuals per year (1,2). In most cases, hemorrhoids are treated conservatively, and the surgeon is contacted when conservative measures have failed, or complications such as thrombosis have occurred.<sup>2</sup>

Hemorrhoidectomy is the treatment of choice for patients with third or fourth-degree hemorrhoids (3-6). Although, the majority of surgeons believe that surgical hemorrhoidectomy is a safe and effective approach in the management of hemorrhoid disease, but it is not a thoroughly uncomplicated procedure (5,6).

Hemorrhoids develop as hyperplastic formations of the anorectal organ of continence, the corpus cavernosum recti. Well-meaning, complete resection of the corpus cavernosum will inevitably result in incontinence (7,8). Only operative techniques which resect exclusively those segments of the hemorrhoidal tissue adjacent to the muscle layer in the anal canal are

adequate. These procedures will spare sufficient tissue of the corpus cavernosum to allow a safe segmental resection of this structure and at the same time permanently eradicate the hemorrhoids (8).

After standard hemorrhoidectomy for internal hemorrhoids, approximately ten percent of patients may have a complicated follow-up, including fecal incontinence, perianal crypto- glandular infection and complex fistula or abscess formation which is associated with an increased risk (30-80%) of complications (2).

The aim of the recent study was to reveal the percentage of external and internal anal sphincter injuries in surgical hemorrhoidectomy performed by Iranian general surgeons.

### Materials and Methods

The study was conducted in the departments of surgery and pathology of Hazrat Rasoul Hospital. The protocol of this research was reviewed and approved by the research committee of Tehran University of Medical

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Science (TUMS). The specimens were obtained from patients who had undergone hemorrhoidectomy in three general hospitals in Tehran, during a one year period from 2006 to 2007. All patients had hemorrhoids with grade III or IV and underwent open hemorrhoidectomy, the Milligan-Morgan technique, by general surgeons. The patients had no symptoms of fecal soiling or incontinence before surgery, had no previous surgery history and had no inflammatory bowel disease, diabetes, or neurologic disorders. A medical history was taken regarding anorectal complaints, anorectal surgery, and obstetric procedures. A physical examination of the anal region was performed. After surgery, the whole resected material was histopathologically examined by two expert pathologists in order to report the presence of smooth or striated muscle fibers. The results were confirmed by another pathologist, in case of any discrepancy.

### Statistical analysis

The analyses were performed, using the SPSS software for Windows, Version 16 (SPSS Inc., Chicago, IL, USA). The data are presented as proportion and mean  $\pm$  SD. Differences with  $P < 0.05$  were considered statistically significant.

### Results

One-hundred twenty-eight patients were recruited in the study in which their mean of age was  $43.32 \pm 16.36$  years. Forty one percent (51 patients) were females and 59% (77 patients) were men. No defect was palpated on rectal examination after surgery. No patients had symptoms of soiling or fecal/gas incontinence immediately after surgery. From 128 specimens which were sent to the pathology department, the first evaluation reported no sphincter component. In the second evaluation and due to the surgeons' insistence, pathologist reported that 21 (15.85%) specimens contained muscle fibers in which 17 (80.5%) were smooth and 4 (19.4%) were striated muscle fibers.

The detailed characteristics of patients and presence of muscle fibers percentage are demonstrated in Table 1.

### Discussion

In surveys assessing the causes of fecal incontinence, the highest incidence rate was reported in patients with a positive surgical history of hemorrhoidectomy (7,9,10).

The results of the recent study revealed that 15.8% of the hemorrhoidectomy specimens contained muscle

fibers, which 80.5% had isolated internal, and 19.5% had isolated external anal sphincter muscle fibers.

In the study of Stamatiadis and their colleagues on 123 subjects who had previously undergone hemorrhoidectomy, no subjects had isolated external anal sphincter defects. In his study, 55 (45%) had no sphincter defects, 42 (34%) had only internal anal sphincter (IAS) defects and 26 (21%) simultaneously had external and internal anal sphincter (EAS) defects (11). In another study performed by Felt-Bersma on 24 patients who had undergone hemorrhoidectomy, three (12.5%) had sphincter defects, in which two were isolated internal anal sphincter injury (12).

Patterns of sphincter injury in 93 patients with fecal incontinence after manual dilation, internal sphincterotomy, fistulotomy, and hemorrhoidectomy were studied by Lindsey et al. in the United Kingdom, in which the internal sphincter was almost universally injured, in a pattern specific to the underlying procedure. One-third of patients had a surgery-related external sphincter injury (13). In conclusion, although hemorrhoidectomy seems to be a safe and effective method for treatment of hemorrhoid, the inadvertent removal of smooth and striated muscles during open hemorrhoidectomy had raised concerns about its effects on postoperative anorectal function.

The recent study shows that sphincter injury during surgery may be due to technical errors, which can be documented by pathologic evaluation. It seems that surgical anatomy needs to be included as an important syllabus while educating surgeons for hemorrhoid surgery.

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