EVALUATION OF INTERNAL ANAL SPHINCTER REPAIR IN PATIENTS WITH FAECAL INCONTINENCE SECONDARY TO ISOLATED INTERNAL ANAL SPHINCTER DEFECTS

Thesis

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LIST OF ABBREVIATIONS

Abbrev.	Complete term
EAS:	External anal sphincter
EAUS:	Endo anal ultrasound
EMG:	Electromyography
EUS:	Endoanal ultrasound
FDD:	Functional defecatory disorders
FI:	Faecal incontinence
IAS:	Internal anal sphincter
MR:	Magnetic resonance
MRI:	Magnetic resonance imaging
OD:	Obstructed defecation
PFD:	Pelvic floor descent
PFM:	Pelvic floor muscles
PNTML:	Pudendal nerve terminal motor latency
RAIR:	Recto-anal inhibitory reflex
SARs:	Sacral anal reflexes
SEPs:	Somatosensory evoked potentials
SSR:	Sympathetic skin response
US:	Ultrasonography

INTRODUCTION

Faecal incontinence is a devastating disability and distressing condition. It is responsible for social embarrassment of such a degree that it frequently induces isolation as severe as in the case of paraplegia ***(Kouraklis et al., 2004).*** The prevalence of faecal incontinence in general community people is 2.2-6.9%, but in nursing homes residents, the prevalence increases up to 45-47% ***(Whitehead, 2005)***

Faecal continence is multifactorial and depends on anal sphincters to generate high anal pressure that is greater than rectal pressure, when contents are present ***(Sapsford, 2001).*** Currently the internal anal sphincter (IAS) is thought to be responsible for 75% of resting pressure of the anal sphincter system. The smooth muscle of the internal sphincter is well suited to its job of generating a constant tension over long periods of time ***(Peschers et al., 2007).*** Thus, the internal anal sphincter is the primary barrier to leakage of faeces between acts of defecation ***(Wood, 2003).***

Internal anal sphincter dysfunction, which can be the result of physical or functional impairment, may lead to anorectal incontinence. This suggests that IAS plays a significant role in preserving continence (gases and loose

stools). Patients with poor IAS function and low resting pressure commonly experience passive leakage of stool and the need to wear a pad. Partial or total internal sphincterotomy is accompanied by an 8-40% postoperative risk of soiling or incontinence concerning gases ***(Andromanakos et al., 2006).***

The most common injury to the internal anal sphincter is an obstetrical tear, but decreases in internal anal sphincter tone may also occur for unknown reasons and may compromise continence ***(Whitehead, 2005).*** Sphincter disruption may also result from surgery for haemorrhoids, fistula, fissures, or from perineal trauma. Anal dilation or lateral sphincterotomy may cause permanent incontinence from fragmentation of the sphincter ***(Troche et al., 2007).***

Repair of the external sphincter by overlap sphincteroplasty has established its place in management of faecal incontinence, with good to excellent results in 70 to 80 percent of patients ***(Abou-Zeid, 2000).***

On the other hand, the results of the repair to the internal anal sphincter alone have not been extensively evaluated ***(Leroi et al., 1997).*** Direct repair of the IAS has been seldom advocated presumably because the muscle ends retract and the IAS has a poor reputation for holding sutures ***(Morgan et al., 1997).***

Few studies reported on the results of management of internal sphincter defects with silicon injection. The results

were not encouraging. On the other hand, the early results of direct internal anal sphincter repair were encouraging. Unfortunately long term results were not so good. Over the last years we were improving our technique of internal sphincter repair to get better results. Unpublished data showed acceptable improvement on long term in 70% of patients. Hence, longer follow-up and more patients need to be studied to verify or refuse such preliminary results ***(Abou-Zeid, 2000).***

AIM OF THE WORK

The aim of the present thesis is to evaluate the results of internal anal sphincter repair surgery in improving the symptom of faecal incontinence in patients with isolated internal anal sphincter defects and to correlate anal sphincter morphology as detected by endoanal ultrasonography, and anal sphincter function as detected by anorectal manometry with patients' symptoms and outcome after surgery.

Chapter 1

ANATOMY OF THE ANAL CANAL

The anal canal

The anal canal is an anteroposterior slit, with its lateral walls in close contact. The proximal 10 mm of the anal canal is lined by columnar, rectal-type mucosa. The next 15 mm (which includes the valves) is lined by stratified, or a modified columnar, epithelium. Distal to that is about 10 mm of thick, non hairy, stratified epithelium (i.e., the pectin). The most distal 5–10 mm is lined by hairy skin. The anal canal is surrounded by the internal and external anal sphincters. The internal sphincter is a thickened extension of the circular smooth muscle layer surrounding the rectum that contains discrete muscle bundles separated by large septa ***(Bharucha, 2007)*** Figure (1).

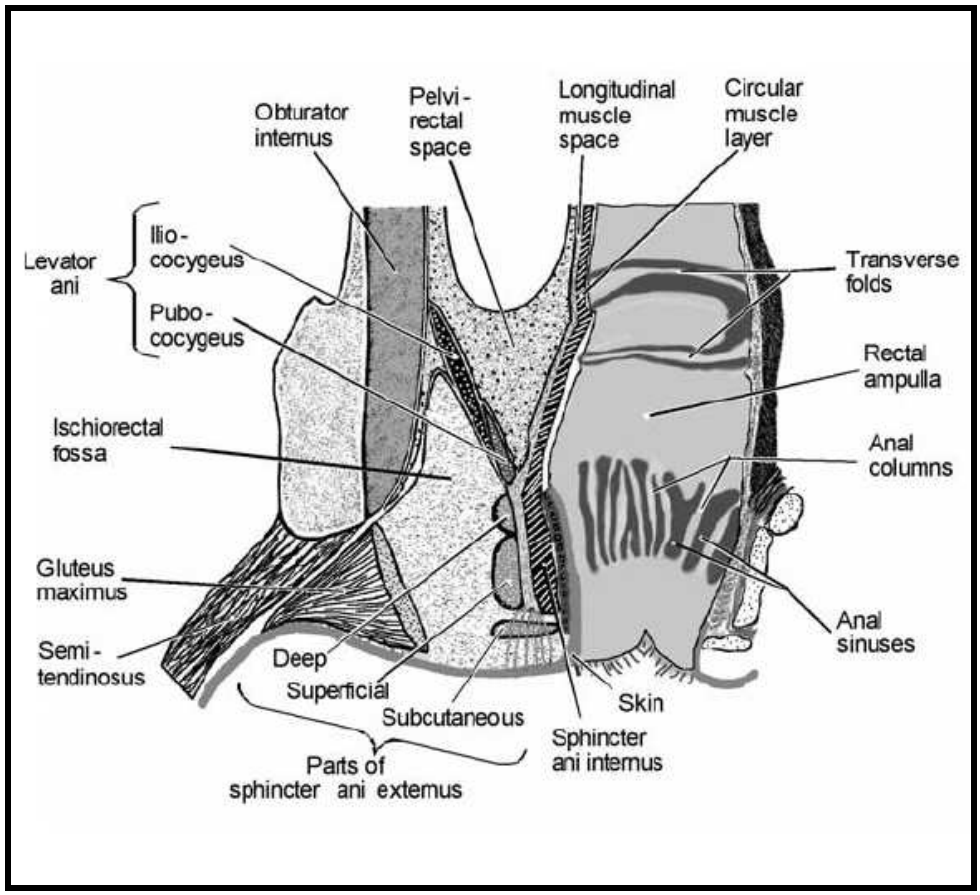

Figure (1): Diagram of a coronal section of the rectum, anal canal, and adjacent structures. The pelvic barrier includes the anal sphincters and the pelvic floor muscles ***(Bharucha, 2007).***

Anal sphincters

Anal sphincters are rings of muscle surrounding the distal rectum and anal canal. There are two anal sphincters in this region, the internal anal sphincter and the external anal sphincter. Either sphincter, when contracted, assists in closing the anal canal to the passage of faeces and flatus. Figure (2) ***(Wood, 2003).***