

# Prevention and Management of Iatrogenic Sphincter Injuries

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## Introduction

Iatrogenic injury of the anal sphincter is not so common, however when it does occur it can be a major catastrophe for the patient as well as the concerned surgeon/gynaecologist. This article will try to identify the causes and provide a solution for its management.

## Anatomic Considerations

Muscles responsible for the anal continence are the internal and external anal sphincters, puborectalis, levator ani complex and the longitudinal muscle (Shafiq 1998). Damage to these muscles result in various degrees of incontinence. Proper understanding of the anatomy and familiarity with the same during surgery can help the surgeon in avoiding injury to these muscles and if such an injury takes place, then it can help him/her in immediate diagnosis and repair of the same.

## Surgical aspects

Iatrogenic injuries can be divided into 2 groups- surgical and obstetrics.

*Surgical* – The most common surgery responsible for anal sphincter injury is the one done for a high fistula in ano. Other less common surgeries are haemorrhoidectomy, sphincterotomy for anal fissure, total proctocolectomy and very low anterior resections. Rarely pelvic radiotherapy can cause anal sphincter injury.<sup>1</sup>

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*Obstetrics* – Obstetric trauma constitutes the large bulk of injuries seen by gynaecologists. 3<sup>d</sup> and 4<sup>th</sup> degree perineal tears caused during an unsupervised delivery are largely responsible for it. Improperly conducted episiotomy can also cause sphincter injury. Gynaecological procedures rarely cause sphincter injuries

## Prevention

*Fistula in ano* – High fistula has always been a difficult situation for the surgeon to handle. Lot of surgeries are left incomplete by the surgeon for the fear of injuring the sphincter. It is important to understand the anatomy and the role of the sphincters in maintaining anal continence. Pre-op assessment of the sphincters is essential to rule out a pre-existing sphincter injury. In case of a high trans-sphincteric fistula, one can either core out the tract or pass a seton through the sphincter while excising the lower part of the tract. Now the anal fistula plug is available to bridge the sphincteric portion of the tract. In case of a high inter-sphincteric tract, one can do an inter-sphincteric dissection to reach the supra-levator space; thus avoiding injury to the sphincters. At the end of a fistula surgery, if one finds that a significant portion of external sphincter has been divided or if part of the puborectalis has been divided, it should be sutured primarily with either PDSII or Vicryl.

*Sphincterotomy* – The standard surgery for fissure in ano has been lateral internal sphincterotomy i.e. division of the portion of the internal sphincter below the dentate line.

One has to be sure that the sphincters have not already been compromised earlier before carrying out the sphincterotomy. In patients where the puborectalis is very short, if the internal sphincterotomy extends proximal to the dentate line, the puborectalis can get injured. Anal dilatation can also cause incontinence if not performed properly.

*Haemorrhoidectomy* – Incontinence following haemorrhoidectomy is extremely uncommon unless it is a very badly performed procedure. Sometimes an incontinence can be caused by excising most of the anal cushions and anoderm; thus causing “sensory incontinence”

*Obstetric* – Obstetric trauma is seen mainly in home deliveries or unsupervised deliveries. Pre-op assessment of the foetal head, pelvic inlet and other factors concerned should be taken into account by the obstetrician. In case of anticipated difficult labour, the delivery should be conducted by a qualified person and an optimal episiotomy should be carried out.

#### **Assessment of Sphincter Injury**

Clinical examination of the sphincter can never replace any investigation. It can give a clue to the anatomical and dynamic state of the sphincter. Digital rectal examination done while asking the patient to contract his sphincters will provide not only an idea about the integrity of the puborectalis and its deficiency, but also provide you with an idea about the contractile power of the muscle. In smaller towns where investigations like MRI, endoanal USG and manometry are not available, this may be only assessment possible.

*Endoanal USG* – This is the single most useful investigation in determining the integrity of the sphincters. This can provide information about the defect in the external

sphincter and its length, the maximum thickness of the external sphincter and the quality of the internal anal sphincter ring.<sup>2</sup>

*MRI* – Endoanal MRI is a better tool than MRI to assess the anal sphincters and may be a useful alternative to endoanal USG.<sup>3</sup>

*Manometry* – It is more useful when combined with an endoanal USG or an endoanal MRI.<sup>2</sup> The resting anal pressures and squeeze pressures usually correlate with the degree of incontinence.

#### **Treatment**

Non-surgical treatment can be tried with patients who have a minor degree of incontinence. These essentially consist of bulking agents, anti-diarrhoeals and sphincter exercises and stimulation. Major degree of incontinence can affect the social life of the patient and they almost go into a social recluse. It can also affect the sexual life of the patient. Females in general carry on for longer periods of time before seeking medical help. Colostomy is usually not necessary for iatrogenic injuries, but may become necessary with sphincter injuries associated with anorectal trauma.

*Primary Surgery* – If the sphincter division is diagnosed intra-operatively, then the best results are obtained by primary suturing with PDSII or Vicryl. 3<sup>rd</sup> and 4<sup>th</sup> degree perineal tears are also best sutured primarily. If not done primary, then delayed primary or an early secondary reconstruction of the sphincter should be done.<sup>4</sup>

*Secondary local reconstruction* – Most of the iatrogenic sphincter injuries can be repaired by local repair of the sphincters. If the pre-op assessment reveals a localized sphincter injury with the divided sphincter stumps not retracted too far, one can plan a local sphincter reconstruction. The operative treatment essentially consists of exposing the

sphincter stumps, mobilizing them adequately and approximating them together preferably by double breasting it.<sup>5</sup> If it is not possible to double breast, then approximation should be done with interrupted sutures, preferably without any tension.<sup>6</sup> Suturing of the internal anal sphincter underneath the external sphincters gives better results.

*Muscle transposition* – Graciloplasty/ Gluteus muscle repair is done for more diffuse sphincter injury – like after anal dilatation or when there is muscle loss and a very wide gap between the divided sphincter stumps. These muscles need to be trained by stimulation, but the results are not as good as with local sphincter reconstruction.

*Artificial sphincter* - A perfect artificial sphincter is still elusive. Many versions of the sphincter have been introduced, but none have provided satisfactory results. Complications following implantation of the sphincter have deterred many surgeons from pursuing this actively.

#### References

1. Hayne D, Vaizey CJ, Boulos PB Anorectal injury

following pelvic radiotherapy. *Br J Surg* 2001 Aug; 88(8) : 1037-48.

2. Titi MA, Jenkins JT, Urie A, Molloy RG. Correlation between anal manometry and endosonography in females with faecal incontinence. *Colorectal Dis* 2008 Feb; 10(2) : 131-7.
3. Tan E, Anstee A, Koh DM, Gedroyc W, Tekkis PP. Diagnostic precision of endoanal MRI in the detection of anal sphincter pathology: a meta-analysis. *Int J Colorectal Dis* 2008 Jun; 23(6) : 641-51.
4. Soerensen MM, Bek KM, Buntzen S, Højberg KE, Laurberg S. Long-term outcome of delayed primary or early secondary reconstruction of the anal sphincter after obstetrical injury. *Dis Colon Rectum* 2008 Mar; 51(3) : 312-7.
5. Abramov Y, Feiner B, Rosen T, Bardichev M, Gutterman E, Lissak A, Auslander R. Primary repair of advanced obstetric anal sphincter tears: should it be performed by the overlapping sphincteroplasty technique? *Int Urogynecol J Pelvic Floor Dysfunct* 2008 Aug; 19(8) : 1071-4.
6. Oberwalder M, Dinnewitzer A, Nogueras JJ, Weiss EG, Wexner SD. Imbrication of the external anal sphincter may yield similar functional results as overlapping repair in selected patients. *Colorectal Dis* 2008 Mar 29.

#### INTENSIVE INSULIN THERAPY IN NEWLY DIAGNOSED TYPE 2 DIABETES

Nevertheless, the central importance of declining  $\beta$ -cell function in type 2 diabetes is underscored by its correlation with a progressive loss of glycaemic control, which typically occurs over time.

Insulin therapy is usually instituted late in the course of type 2 diabetes, when glycaemic control can no longer be maintained with oral antidiabetics. Interestingly, however, as shown in limited studies up to now, early implementation of a short course of intensive insulin therapy by continuous subcutaneous insulin infusion or multiple daily injections can induce sustained euglycaemia (i.e., off any antidiabetic therapy) in patients with type 2 diabetes. The “remission” of type 2 diabetes achieved in these studies persists for 1 year after the cessation of insulin therapy in about 40% of patients.

**The Lancet, 2008; 371 : 1725.**