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REVIEW

Surgical approaches to fecal incontinence in the adult



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injection

Summary Surgical treatment of anal incontinence is indicated only for patients who have failed medical treatment. Sphincterorraphy is suitable in case of external sphincter rupture. In the last decade, sacral nerve stimulation has proven to be a scientifically validated solution when no sphincter lesion has been identified and more recently has also been proposed as an alternative in cases of limited sphincter defect. Anal reconstruction using artificial sphincters is still under evaluation in the literature, while indications for dynamic graciloplasty are decreasing due to its complexity and high morbidity. Less risky techniques involving intra-sphincteric injections are being developed, with encouraging preliminary results that need to be confirmed especially in the medium- and long-term. Antegrade colonic enemas instilled via cecostomy (Malone) can be an alternative to permanent stoma in patients who are well instructed in the techniques of colonic lavage. Stomal diversion is a solution of last resort.

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Introduction

Anal incontinence (AI) has devastating effects on the quality of life. Over the last 20 years, multiple treatment options have been developed; while no “miraculous treatment” exists, currently available methods can significantly improve disability in almost all patients, even in the elderly. The comprehensive term of AI comprises two distinct entities: firstly, incontinence due to a defect of retention (intrinsic sphincter deficiency), and secondly, incontinence associated with abnormal rectal compliance. The sub-heading of sphincter incompetence includes sphincter injury (obstetrical, postoperative or accidental trauma), AI with unruptured sphincter (a common age-related situation with impaired muscle tone

and/or nervous control), and finally AI as a consequence of congenital anomalies. Under the heading of AI due to abnormal rectal compliance, we include the causes of terminal constipation such as rectal stasis disorders, fecal impaction, megacolon, inflammatory proctitis, radiation proctitis, and the sequelae of rectal resection. This classification helps to orient the management of AI, even if multiple mechanisms are actually involved in a particular patient with AI. Thus, both rectal stasis and anal sphincter deficiency can be simultaneously responsible for AI. This paper will deal with the management of AI due to anal sphincter incompetence.

Whatever the situation, the possibility of neoplastic disease must be eliminated before considering embarking on interventions for AI. Once malignancy has been ruled out, treatment is initiated with anti-motility medications, dietary management and re-education. These three legs form a solid base for initial management of the incontinent patient, and have had some success, since optimized medical management may result in improved patient comfort in

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almost half the cases, without the need to pursue further investigations and aggressive interventions [1].

If medical treatment is inadequate to maintain a comfortable life, more invasive management should be proposed to the patient and surgery becomes a reasonable option. Before undertaking operative treatment, further testing is needed. Anorectal manometry and endo-anal ultrasound are the initial tests. Electro-physiologic testing and dynamic defecography (or MRI-defecography) may be needed secondarily, as indicated by the clinical examination (neuropathy or rectal stasis disorder).

After a presentation of data on AI in general, we will describe the development of the various operative approaches aimed at improving sphincter function, whether validated or still under evaluation, the parameters that help in choosing the optimal approach(es), and the prospects for future developments.

Data on surgery for AI

Recent epidemiological studies have shown that AI is a common condition in adults: a recent study in the French population showed a prevalence of AI in the population over 18 years of age to be 5% (Wexner score > 5 = incontinence of air at least once a day), while severe incontinence (Wexner score > 10 = incontinence of stool several times a week) was found in 0.8% of respondents [2]. Extrapolation of these figures to the entire French population implies that approximately 500,000 people suffer from severe incontinence! Similar figures are found in most countries, with a delay in the diagnosis of several years in 90% of cases [1]. As regards surgical management, approximately 500 artificial sphincters have been implanted in France since 1987 for sphincter incontinence. In 2012, a total of 24 interventions for implantation of artificial sphincters were reported [3]. Meanwhile, about 2000 sacral neurostimulation interventions were performed in France for AI (source: Medtronic®, unpublished data), although this technique is of more recent description (1995). There are no accurate statistics on the frequency of colostomy performed for incontinence, but this must be low compared to the frequency of the disease.

Rectocele, rectal prolapse and AI

Multiple mechanisms are often involved in AI, involving varying degrees of sphincter incompetence, and anatomical and/or dysfunctional disorders of the rectum and of the pelvic floor. In general practice, when rectocele or rectal prolapse is a causative component of AI, this should be corrected before focusing attention on the sphincter apparatus. This strategy has not been validated by randomized studies, but it is based on two observations.

On the one hand, anal continence is improved in many patients undergoing correction of rectocele or rectal prolapse. Reported series show an improvement in 50 to 100% of patients after rectopexy for total externalized rectal prolapse and/or high-grade internal prolapse [4,5]. Moreover, even if the Altemeier perineal approach is used, continence seems to be improved after correction of prolapse, even despite rectal resection [6].

On the other hand, the various interventions targeting the sphincter are most effective when anatomical conditions are favorable, i.e., in the absence of rectal prolapse or underlying pelvic floor weakness (in themselves a cause

of terminal constipation), which can be troublesome both intraoperatively and postoperatively. Given the lack of pre-operative prognostic factors, the general consensus is that management of AI should begin by correction of rectocele or rectal prolapse.

Various operative approaches for rectal prolapse include the abdominopelvic laparoscopic approach (ventral rectopexy) whose use is increasingly widespread, and a variety of perineal approaches. These different surgical approaches will not be detailed in this article.

Surgical approaches to correction of AI

Sphincter repair (sphincterorrhaphy)

Sphincterorrhaphy is indicated for localized sphincter ruptures; the diagnosis is confirmed by clinical examination and endorectal ultrasound. Sphincteric rupture can be caused by obstetrical laceration, morbidity from perianal surgery (fistulectomy), and traumatic injuries (motor vehicle accidents, impalement, sexual abuse). The localization of the rupture depends on the etiology and guides the surgical procedure (Fig. 1).

Operative technique: the most typical example is post-obstetrical laceration

An incision is made in the scarred area of the vulvar fourchette and the incision is deepened to develop two 4–6 cm flaps: an anterior vaginal flap and a posterior anorectal flap. The whitish sclerotic sphincteric scar is identified and freed. Dissection is carried bilaterally to identify and develop the severed muscle ends, which always lie close to the anoderm. The entire thickness of the sphincter muscle must be freed sufficiently to allow proper suture co-aptation of the two ends (Fig. 2). The fibrous scar can be excised or used to reinforce an overlapped repair. Before actual sphincter repair, the two bellies of the *levator ani* muscles are grasped posteriorly by clamps in the corners of the incision and are approximated by two sutures, taking care to place these far enough posteriorly to avoid narrowing the introitus and vagina. This corrects levator muscle diastasis, a commonplace obstetrical sequel, and helps to elongate the anal

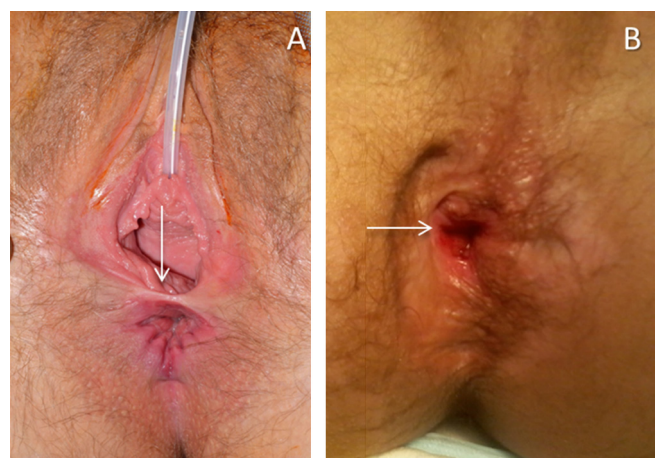


Figure 1. Examples of anal incontinence (AI) due to sphincter rupture. A. Post-obstetrical sphincter rupture, with perineal laceration resulting in anterior sphincteric disruption (arrow). B. Trauma following automobile accident with complete rupture of the right side of the external sphincter (arrow).

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