

Surgical Treatment Options For Fecal Incontinence

B Salehi, J Pfeifer

Citation

B Salehi, J Pfeifer. *Surgical Treatment Options For Fecal Incontinence*. The Internet Journal of Gastroenterology. 2000 Volume 1 Number 2.

Abstract

The exact incidence of fecal incontinence is unknown. Nevertheless, it is estimated that 0,5 to 1,5 % (1) of the normal population is suffering from this disease; if soiling is included the incidence rises up to 5% (2). In geriatric wards the incidence is as high as 30% ; in psychiatric wards up to 50% (3) .

Several factors are responsible for continence (Fig. 1) Therefore treatment options are variable. To achieve a high success rate, clinical and physiological work up must be demanded.

INTRODUCTION

The exact incidence of fecal incontinence is unknown. Nevertheless, it is estimated that 0,5 to 1,5 % (1) of the normal population is suffering from this disease; if soiling is included the incidence rises up to 5% (2). In geriatric wards the incidence is as high as 30% ; in psychiatric wards up to 50% (3) .

Several factors are responsible for continence (Fig. 1) Therefore treatment options are variable. To achieve a high success rate, clinical and physiological work up must be demanded.

Figure 1 : Factors maintaining fecal continence

- Stool volume and consistency
- Small bowel transit
- Colon transit
- Distensibility , tone , and capacity of the rectum
- Motility and evacuability of the rectum
- Anorectal angle
- Anorectal sensory and reflex mechanism
- Motility of the anal canal
- Anal canal high pressure zone

Keywords: Fecal incontinence, surgical treatment, incontinence

INVESTIGATIONS

The first step in evaluating patients is always an exact history. Questions should focus on type and degree of incontinence as well as on alteration of the patient's life style. An incontinence scoring system to rate incontinence more accurate is often used (Fig.2) .

Figure 1

Figure 2: Incontinence Scoring System according to Jorge, Wexner

Type of Incontinence	Never	Rarely (<1/month)	Sometimes (<1/week)	Usually (<1/day)	Always (>1/day)
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Requires pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

20 points = complete incontinence

0 points = perfect continence

The next step in clinical evaluation is inspection. A thin or scarred perineum or other morphological changes like a patulous anus , tags or prolapsing hemorrhoids as well as an overt rectal prolapse or a ballooning of the pelvic floor during straining may give a hint to the possible etiology of the fecal incontinence. Pseudoincontinence , soiling due to a hygienic problem , must be excluded.

A dynamic digital-rectal examination meaning investigation during straining, relaxing and squeezing, should follow. Tumors, fissures can be excluded. Furthermore sphincter pressures can be estimated and amobile segments as after sphincter disruption can be palpated.

Endoscopic investigations (colonoscopy and proctoscopy) are mandatory to exclude structural disorders like polyps ,

tumors or circumferential intussusception. In special situations like in patients with overflow incontinence a barium enema may be enough.

If basic investigation methods fail to show any evidence for fecal incontinence, a more sophisticated physiologic work up is necessary.

PHYSIOLOGIC TESTS

Anal manometry: Anal manometry is most useful to get objective data on patient's anal pressures. Mean and maximal resting pressures reflect the status of the function of the internal sphincter ; mean and maximal squeeze pressures of the external sphincter muscle. Furthermore the length of the high pressure zone, the recto-anal-inhibitory reflex (sampling reflex) , rectal sensibility and capacity as well as the rectal compliance can be estimated.

Anal endosonography (AEUS) : Endoanal ultrasound is the most important test to rule out structural lesions such as isolated or combined sphincter muscle defects. The investigation is simple, painless , accurate and can be repeated, if necessary. Furthermore EUAS is used for follow up after surgical correction of fecal incontinence.

Neurophysiologic assessment : EMG of the pelvic floor with concentric needles or a single fiber EMG should nowadays only be done in selected patients, as this test is painful. Pudendal nerve terminal motor latency measurements (PNTML) should be done, as this test may have influence on prognosis after surgical corrections of sphincter defects (4).

Other tests : In selected cases other tests like MRI, defecography, fecal- flow-metry, scintigraphic evacuation procedures as well as electrosensibility studies may be useful.

SURGICAL OPTIONS

If conservative treatment options fail, patients may be considered for surgical treatment. The options are listed in Figure 3. Simple encirclement procedures like the Thiersch wire are obsolete.

Figure 3 : Surgical options to treat fecal incontinence:

SPHINCTER REPAIR

Apposition (Classical repair)

Plication procedures (Reefing):

- Anterior

- posterior
- combined (= Total pelvic floor repair)

Overlapping anterior sphincteroplasty (with/without internal sphincter imbrication)

MUSCLE TRANSFER OPERATIONS

- Gracilis muscle transposition (with/ without stimulation)
- Gluteus maximus transposition

ARTIFICIAL PROSTHESIS

- Artificial bowel sphincter (ABS)

NERVE STIMULATION

- Sacral Nerve Stimulation (SNS)

COLOSTOMA

SPHINCTEROPLASTY

Patients best suited for surgical corrections are those in whom the incontinence is secondary to an anterior sphincter defect. Obstetric and iatrogenic etiologies are among the most common surgically correctable fecal incontinence. An overlapping repair is preferable (5) to a simple apposition of the sphincter muscles (6). The sphincter defect should not exceed more than “three hours” or 90 ° in EUAS, as overlapping may become technical impossible (Fig.4.). Some centers are suturing the internal sphincter muscle as a special pronounced layer, some do not. Sphincteroplasty can be done even in elderly patients (7) . Success rates are expected in about three quarters of patients (Table 1) . However, recent studies have shown a worse long term prognosis (17) ; especially in patients with concomitant pudendal neuropathy evaluated by PNTML studies preoperatively (4,8).

Figure 2

Figure 4 : Successfull overlapping sphincteroplasty as seen with endoanal endosonography (EUS)

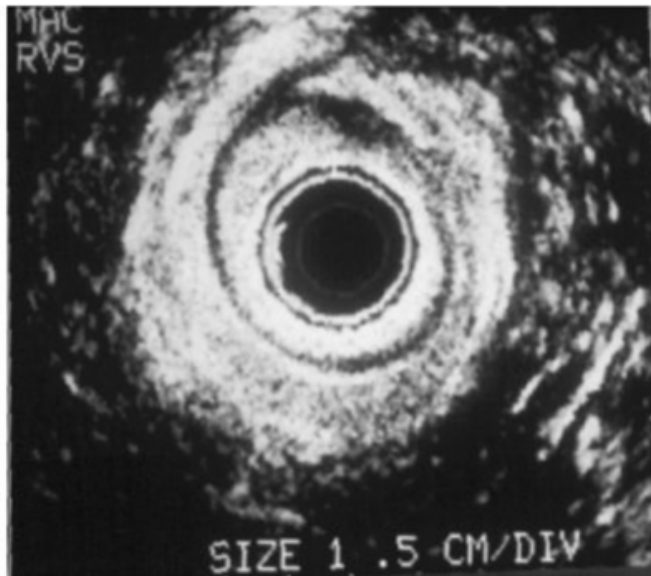


Figure 3

Table 1 : Results for overlapping sphincteroplasty

Author	Year	N	Mean (range) age (years)	Success (%)
Fang	1984	79	(17 - 68)	89
Laurberg	1988	19	(23 - 64)	47
Yoshuoka	1989	27	34 (17 - 81)	74
Fleishman	1991	28	38 (22 - 75)	75
Engel	1994	55	32 (26 - 52)	76
Pfeifer	1996	55	48 (27 - 72)	71
Gilliland	1998	77	47 (25 - 80)	60*
Malouf	2000	55	43 (26 - 67)	50*

* long term results = > 5 years

POSTANAL REPAIR, TOTAL PELVIC FLOOR REPAIR

A frequent method popularized by Sir Alan Parks from St.Mark's Hospital, London , in the eighties was the postanal repair. The idea was by an intersphincteric approach to sharpen the ano-rectal angle and therefore improving incontinence. Long term results (>5 years) are around 50%(₉). However, in special situations this simple operation can be the treatment option of choice ; in an elderly patient if no sphincter defect is visible on EAUS.

Total pelvic floor repair , a combination of postanal repair and preanal levatorplasty (reefing), recommended by Keighley et al (₁₀), is of no further benefit in long term (₁₁).

STIMULATED GRACILOPLASTY

Encirclement procedure of the anus with the gracilis muscle was first described by Pickrell as early as 1952. However, due to lack of technical knowledge, this operation gave bad

results. Since the advent of stimulated devices, similar to cardiac pacemaker, this operation method has seen an increasing interest among colorectal surgeons. In experienced hands success rate can be as high as 78 % (₁₂). However, complication rate is still very high and in a range of about 54 %(₁₃).

ARTIFICIAL BOWEL SPHINCTER (ABS)

Another new treatment option is the implant of an artificial prosthesis. The procedure seems to be simple, but the infection rate resulting in explantation of this sphincter is about 35%. At the moment no definitive answer about this device, which is popular among urologists since more than 20 years, can be given (₁₄) .

SACRAL NERVE STIMULATION (SNS)

A new approach treating fecal incontinence is the direct stimulation of the sacral root S2,S3 or S4 (₁₅). If a test stimulation is successful, a permanent stimulation device similar to the cardiac pacemaker can be implanted. At the moment the number of patients treated with this method is very small and no long term results are available (₁₆) .

STOMA

Probably the safest, best and most easiest way to handle patients with fecal incontinence is fashioning of a colostoma. Furthermore, irrigation can improve life quality . Even among the choice of many different and partly high sophisticated surgical treatment options, the creation of a stoma is still a good operation method.

CONCLUSION

Surgical treatment of fecal incontinence must be tailored to the individual patient; physiologic tests help selecting the right patient for the right operation.

References

1. Mandelstam DA. Faecal incontinence. Social and economic factors. In: Henry MMM, Swash M, eds. Coloproctology and the pelvic floor. Pathophysiology and management. London: Butterworth, 1984 : 217 - 222
2. Drossman DA, Sandler RS, Broom CM, McKee DC. Urgency and fecal soiling in people with bowel dysfunction. Dig Dis Sci 1986; 31 : 1221 - 1225
3. Thomas TM, Egan M, Walgrove A, Meade TW. The prevalence of fecal and double incontinence. Community Med 1984; 6 : 216 - 220
4. Gilliland R, Altomare DF, Moreira H Jr, Oliveira L, Gilliland JE, Wexner SD. Pudendal neuropathy is predictive of failure following anterior overlapping sphincteroplasty. Dis Colon Rectum 1998; 41 : 1516 - 1522
5. Pfeifer J, Oliveira L, Wexner SD. Die Sphinkterplastik zur Behandlung der fllen Inkontinenz - Technik und Ergebnisse . Akt Chir 1996; 31 : 1 - 5

6. Arnaud A, Sarles JC, Sielezneff I, Orsoni P, Joly A. Sphincter repair without overlapping for fecal incontinence. *Dis Colon Rectum* 1991; 34: 744 - 747
7. Oliveira L, Pfeifer J, Wexner SD. Physiological and clinical outcome of anterior sphincteroplasty. *B J Surg* 1996; 83 : 502 - 505
8. Pfeifer J, Salanga V, Agachan F, Weiss E, Wexner SD. Variation in pudendal nerve terminal motor latency according to disease. *Dis Colon Rectum* 1997; 40 : 79 - 83
9. Stricker JW, Schoetz DJ Jr, Collier JA, Veidenheimer MC. Surgical correction of anal incontinence. *Dis Colon Rectum* 1988; 31 : 533 - 540
10. Deen KI, Oya M, Ortiz J, Keightley MB. Randomized trial comparing three forms of pelvic floor repair for neuropathic faecal incontinence. *B J Surg* 1993; 80 : 794 - 798
11. Korsgen S, Deen KI, Keightley MR. Long-term results of total pelvic floor repair for postobstetric fecal incontinence. *Dis Colon Rectum* 1997 ; 40 : 835 - 839
12. Mavrantonis C, Wexner SD. Stimulated graciloplasty for treatment of intractable fecal incontinence : critical influence of the method of stimulation. *Dis Colon Rectum* 1999; 42 : 497 - 504
13. Geerdes BP, Heineman E, Konsten J, Soeters PB, Baeten CG. Dynamic graciloplasty. Complications and management. *Dis Colon Rectum* 1996; 39 : 912 - 917
14. Lehur PA, Glemain P, Bruley des Varannes S, Buzelin JM, Leborgne J. Outcome of patients with implanted artificial anal sphincter for severe faecal incontinence. A single institution report. *Int J Colorect Dis* 1998; 13 : 88 - 92
15. Matzel-KE; Stadelmaier-U; Hohenfellner-M; Gall-FP. Electrical stimulation of sacral spinal nerves for treatment of faecal incontinence. *Lancet*. 1995; 346 : 1124 - 1127
16. Vaizey CJ, Kamm MA, Gold DM, Bartram CI, Halligan S, Nicholls RJ. Clinical , physiological, and radiological study of a new purpose-designed artificial bowel sphincter. *Lancet* 1998; 352 : 105 - 109
17. Malouf AJ, Norton CS, Engel AF, Nicholls RJ, Kamm MA. Long term results of overlapping anterior anal-sphincter repair for obstetric trauma. *Lancet* 2000; 355(9200): 260 - 265

Author Information

Berooz Salehi, MD

Department of General Surgery, Surgery, Karl-Franzens University School of Medicine

Johann Pfeifer, MD

Professor of Surgery, Department of General Surgery, Surgery, Karl-Franzens University School of Medicine