Management of Fecal incontinence with muscle loss

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26TH ANNUAL CONFERENCE OF THE EGYPTIAN SOCIETY OF COLON & RECTAL SURGEONS

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Disclosures

- Speaker and trainer for Medtronic

- Consultant for Touch Stone

Definition

- Involuntary loss of rectal contents (feces, gas) through the anal canal and the inability to postpone an evacuation until socially convenient
  - Symptom for at least one month
  - Age > 4 years with previously achieved control

Determinants of continence

- Stool consistency
- Rectal compliance
- Rectal and anal sensation
- Pelvic floor function including anal sphincter function

Incontinence with abnormal anal sphincters

- Anatomic sphincter defect – internal or external
    - Obstetric injury – prolonged difficult labor with forceps application, episiotomy complications, third or fourth-degree lacerations
    - Anorectal surgery – **anal fistula surgery** - most common operative procedure that results in fecal incontinence; **hemorrhoidectomy**
- Muscle denervation
    - Pudendal neuropathy (primary or secondary)– 80%. Denervation of the puborectalis muscle and external anal sphincter muscles

Diagnostic evaluation

- History
  - Few patients will volunteer the symptom on their own – embarrassment, "chronic diarrhea"
  - Use terms as "leakage", "soiling" or "accidents" to facilitate communication
  - Incontinence grading scale

Table 63–2 • INCONTINENCE GRADING SCALE

Type of Incontinence	Never	Rarely	Sometimes	Usually	Always
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

Never = no occasions
Rarely = <1 episode per month
Sometimes = <1 episode per week and >1 episode per month
Usually = <1 episode per day and >1 episode per week
Always = >1 episode per day

0 points = normal
20 points = complete incontinence

Modified from Jorge JM, Wexner SD: Etiology and management of fecal incontinence. Dis Colon Rectum 36:77–97, 1993.

Physical examination

- Search for hemorrhoids, scars from previous surgery, skin tags, fissures, fistulas
- Signs of rectal prolapse or descent of the perineum
- Rectal examination – obtain estimation of resting anal sphincter pressure/external anal sphincter strength; fecal impaction

Diagnosis

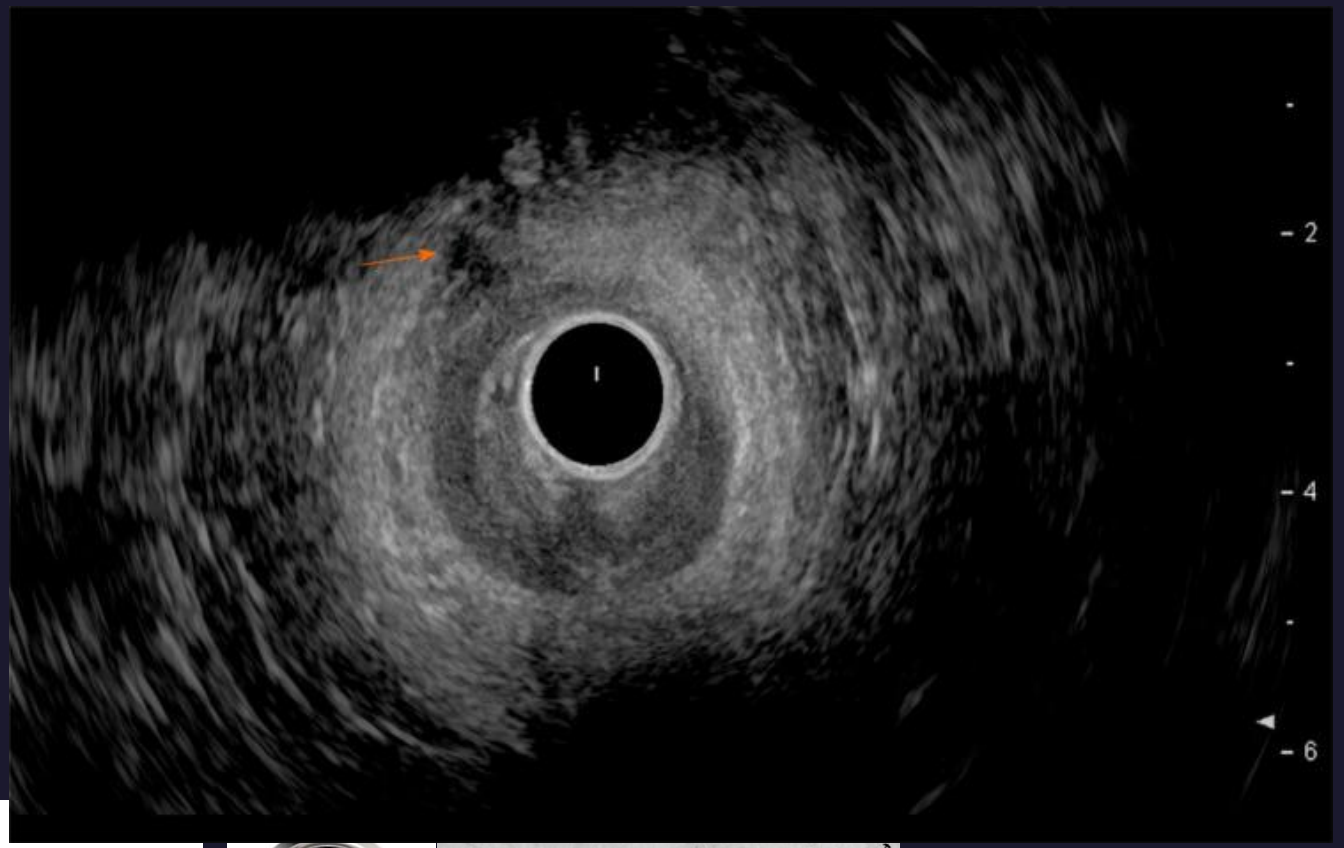
DIAGNOSTIC STUDIES FOR FECAL INCONTINENCE	
Tests	Information Obtained
Sigmoidoscopy	Inflammation, strictures, tumors
Anorectal manometry	Sphincter pressures
	Rectal sensation, compliance
	External sphincter responses
Pelvic floor neurophysiology	External sphincter electromyography
	Puborectalis electromyography
	Pudendal nerve conduction
Proctography	Rectal capacity
	Anorectal angle
	Perineal descent
	Retention of contrast
Anal ultrasonography	Assess Anal sphincter defect

Anal Endosonography

- An ultrasound probe is placed in the anal canal to detect sphincter injuries and to evaluate pelvic floor structures
- 360 degree
- 7-10 M Hz

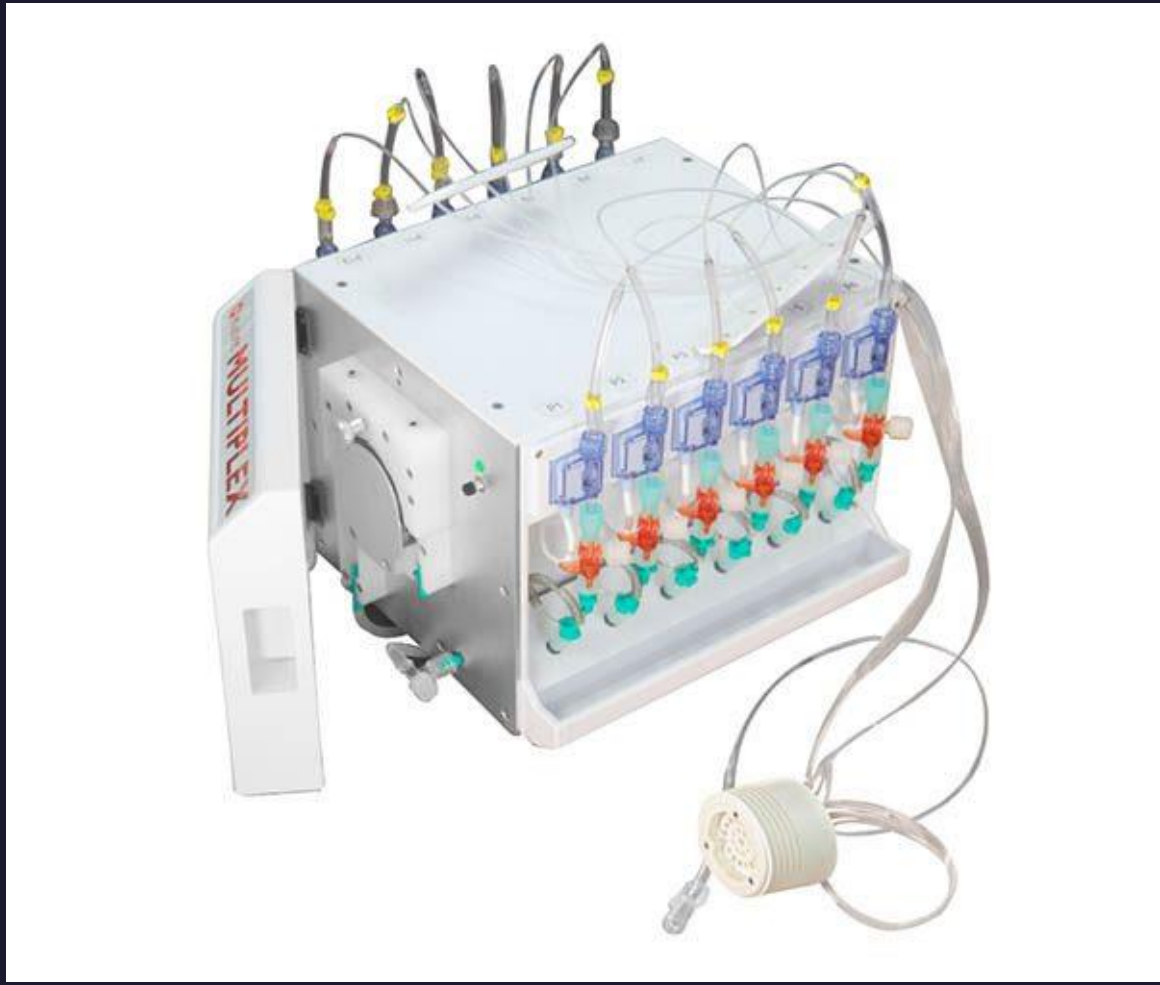
FI Evaluation- EAUS

FI Evaluation- EAUS



Anorectal manometry

- Measurement of both resting and voluntary sphincter squeeze pressure
- Incontinent patients – low resting and voluntary squeeze pressure
- The study cannot discriminate between primary muscle and neuronal defects
- Estimate threshold for rectal sensation/compliance, rectoanal inhibitory reflex



Electrophysiologic tests

- EMG – needle electrodes into the superficial portion of the external sphincter or puborectalis muscle – myoelectric activity
- Pudendal nerve terminal motor latency – measures the delay between the application of an electrical stimulus and external sphincter muscle response. Prolonged – pudendal neuropathy

Treatment

- Improving stool consistency
  - Increase intake of bulking agents – bran, psyllium
  - Antidiarrheal agents – loperamide, lomotil, cholestyramine

Bowel management

- Scheduled toileting
  - Glycerin suppositories daily, 30 min postprandial
  - Attempt to defecate at the same time daily
- Daily tap water enema

Biofeedback training

- Patients looks at a polygraph tracing while attempting to contract the external anal sphincter
- Through visual "feedback" of looking at anal canal pressures during contraction and verbal guidance, patients can learn to appropriately contract the external sphincter in response to the sensation of rectal distension

- Biofeedback is superior to pelvic floor strengthening exercises
- 1974-1990, 13 studies – incontinent pt's treated with biofeedback – success rates between 50% and 92%

Correction of morphological deformities

Sphincter repair

- The goal is to reconstitute the circular configuration of the muscle around the anal canal
- The short-term results are generally good with an estimated 75%-86% improvement of FI episodes
- Urgency may persist and over time, the long-term function has been noted to deteriorate

End to End versus Overlap?

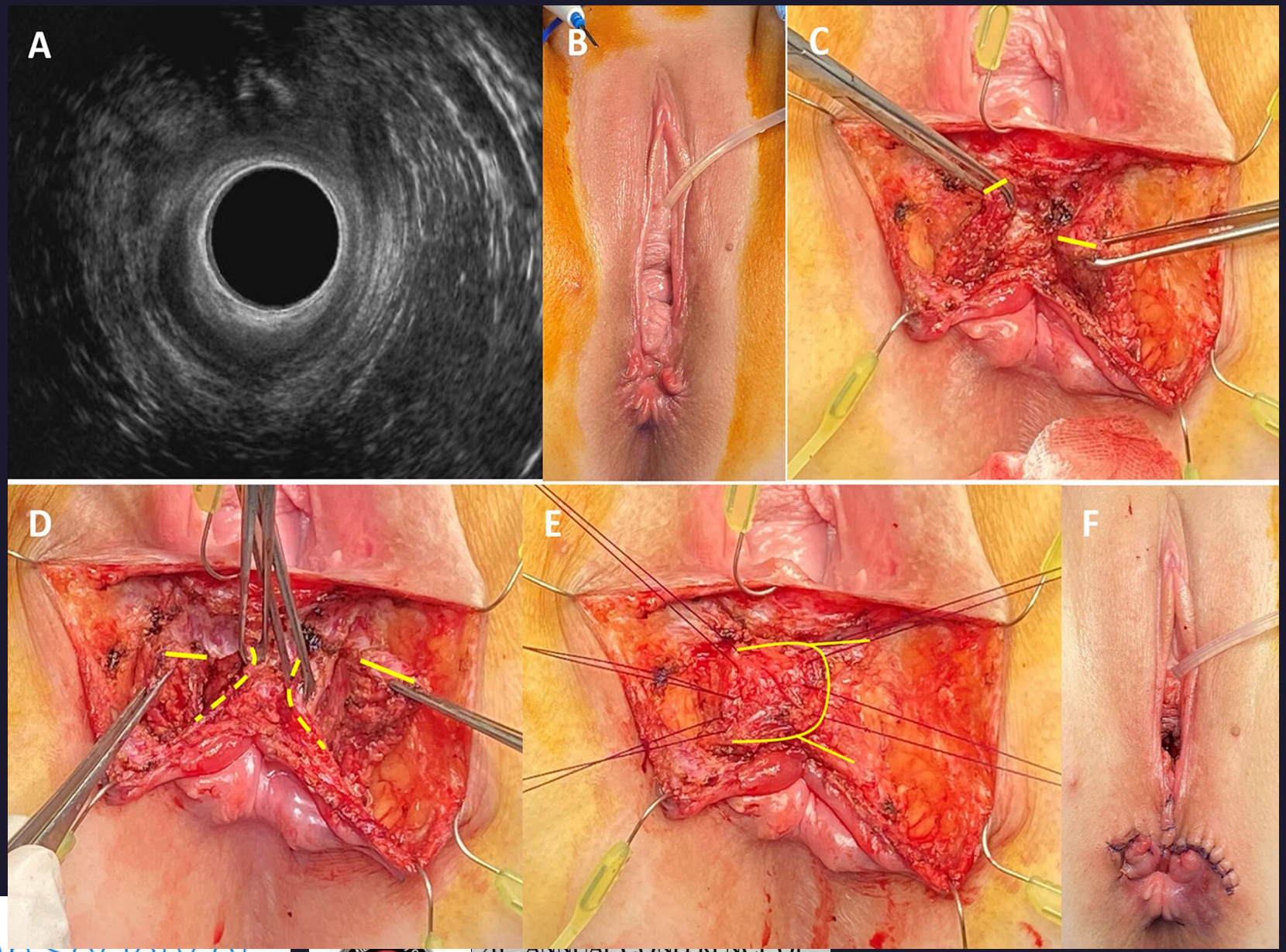
- 4 trials. No significant difference in longteram or shorterm outcome

UROGYNECOLOGY: EDITED BY NARENDER BHATIA

Overlapping compared with end-to-end repair of third and fourth degree obstetric anal sphincter tears

Farrell, Scott A.

Author Information



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Outcome after sphincter repair

Study	Type of injury	Country	Short term	Long term
Maldonado et al.,2019	Obestetric	USA	NA	53.8% reported complete continence at amean follow-up of 7.0 ± 3.6 year
Khafagy et al.,2017	Case mix , after fistula surgery 48%, obstetric 13%, necrotizing faciatis 13%.....	Egypt	6 months to 12 months; mean Wexner score improvement 7.7 and 7.4	NA
El-Gazzaz et al., 2012	Obstetric	USA	NA	The mean FISI score changed from 27.2 to 29.8 over an average of 7.7 years of follow-up
Zutshi et al., 2009	97% obestetric	USA	NA	Changes in scores from 5 years to 10 years of follow-up:a) mean patient-related FISI – from 21 to 39.39)
Dobben et al., 2007	95% obestetric	Netherland	Wexner score improved from 17.8 preoperatively to 3.6 three months after the operation	Wexner deteriorated over time to 6.3 after an average of 80.1 months of follow-up

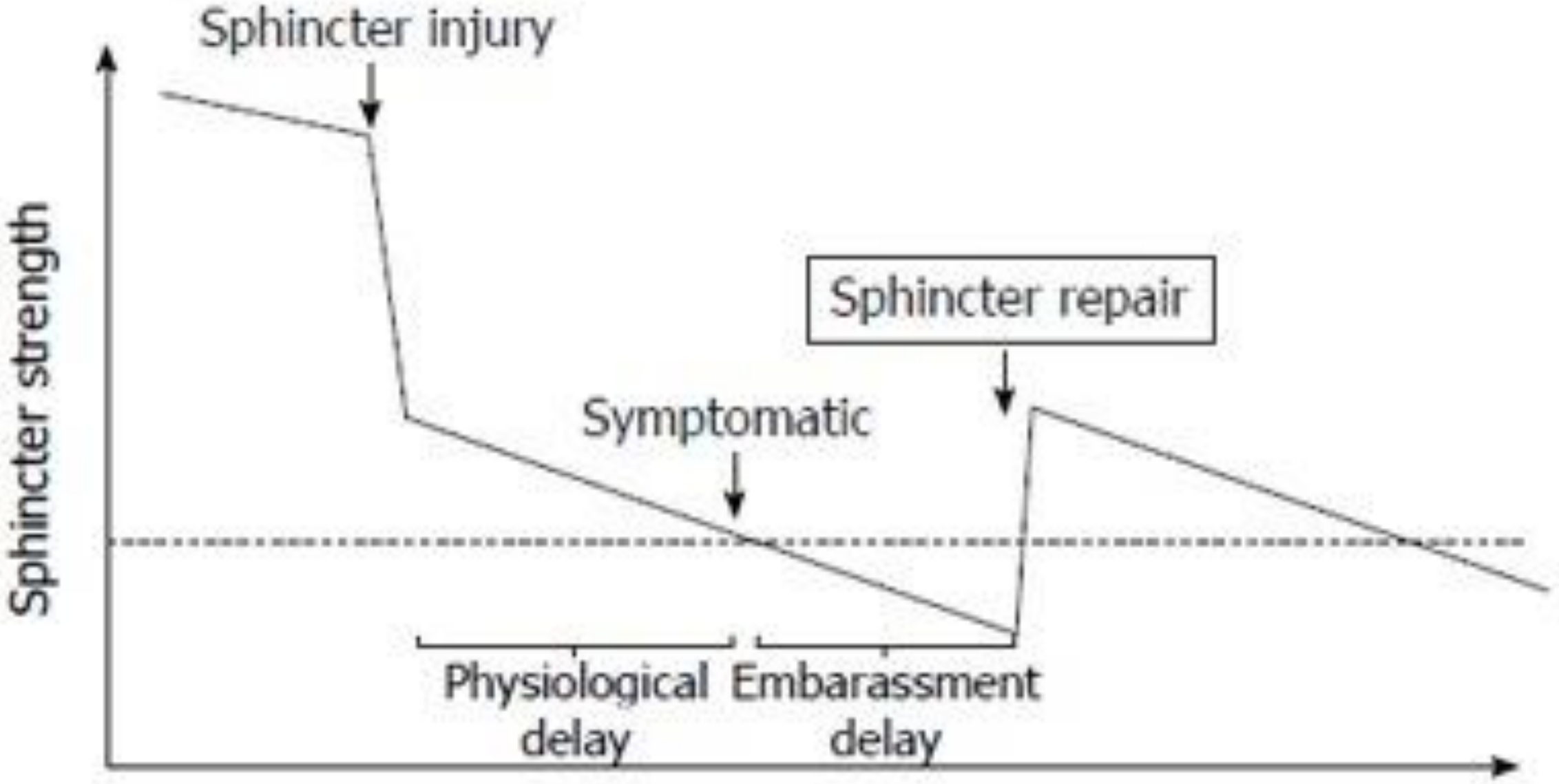
Predictors of longterm deterioration

- Older age
- Patients with short term deterioration

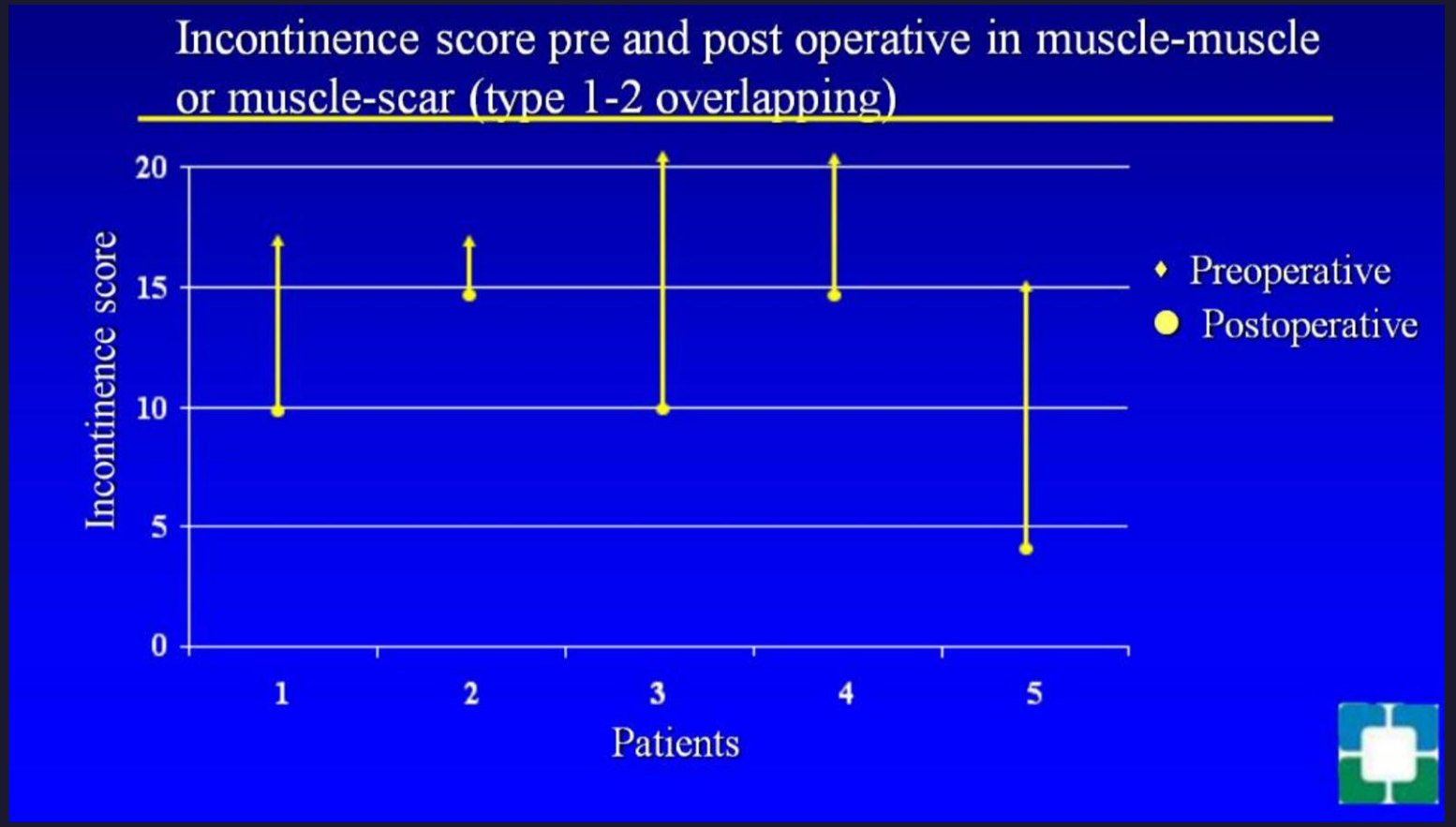
Gutirez DCR 2004

- Sphincter repair stretching might be responsible for a faster degeneration process!!!

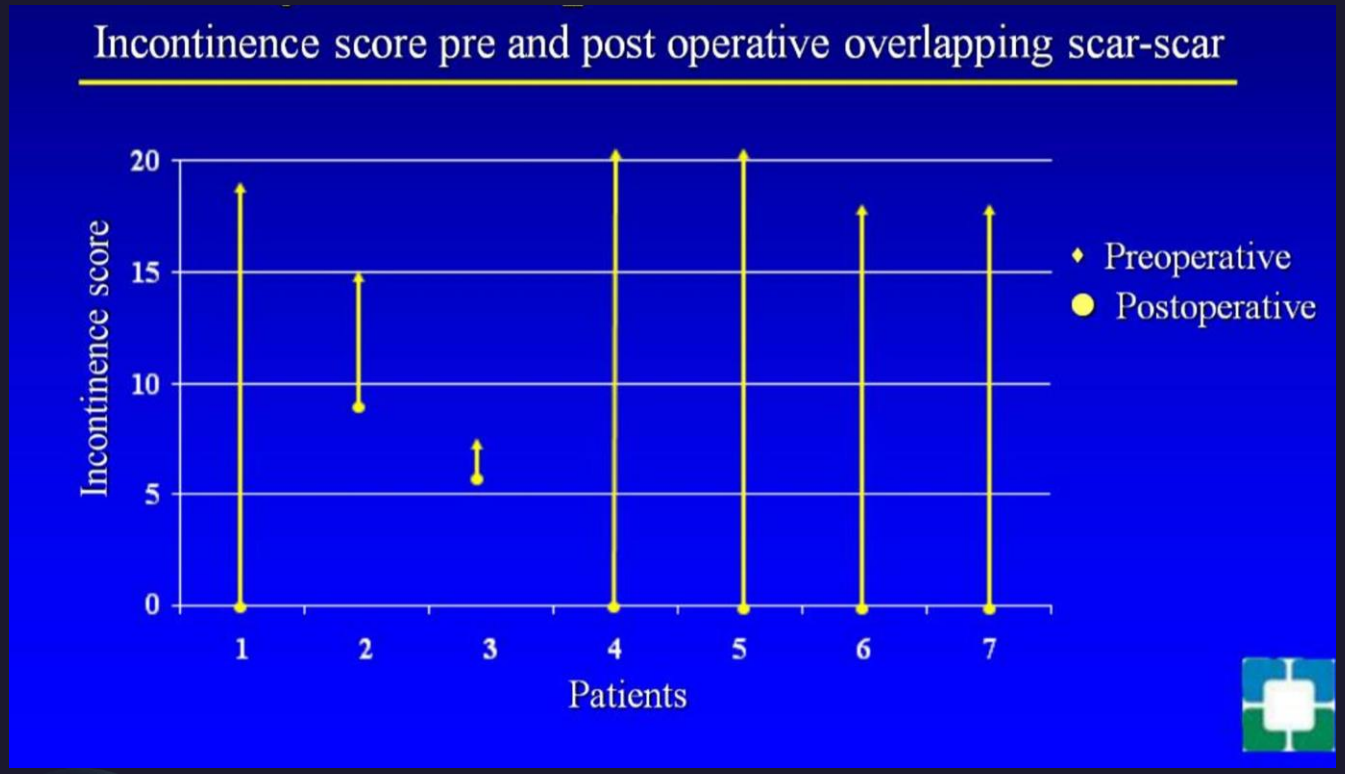
Sphincteroplasty - mechanism of poor outcomes



Remove or keep the scar?



Remove or keep the scar?

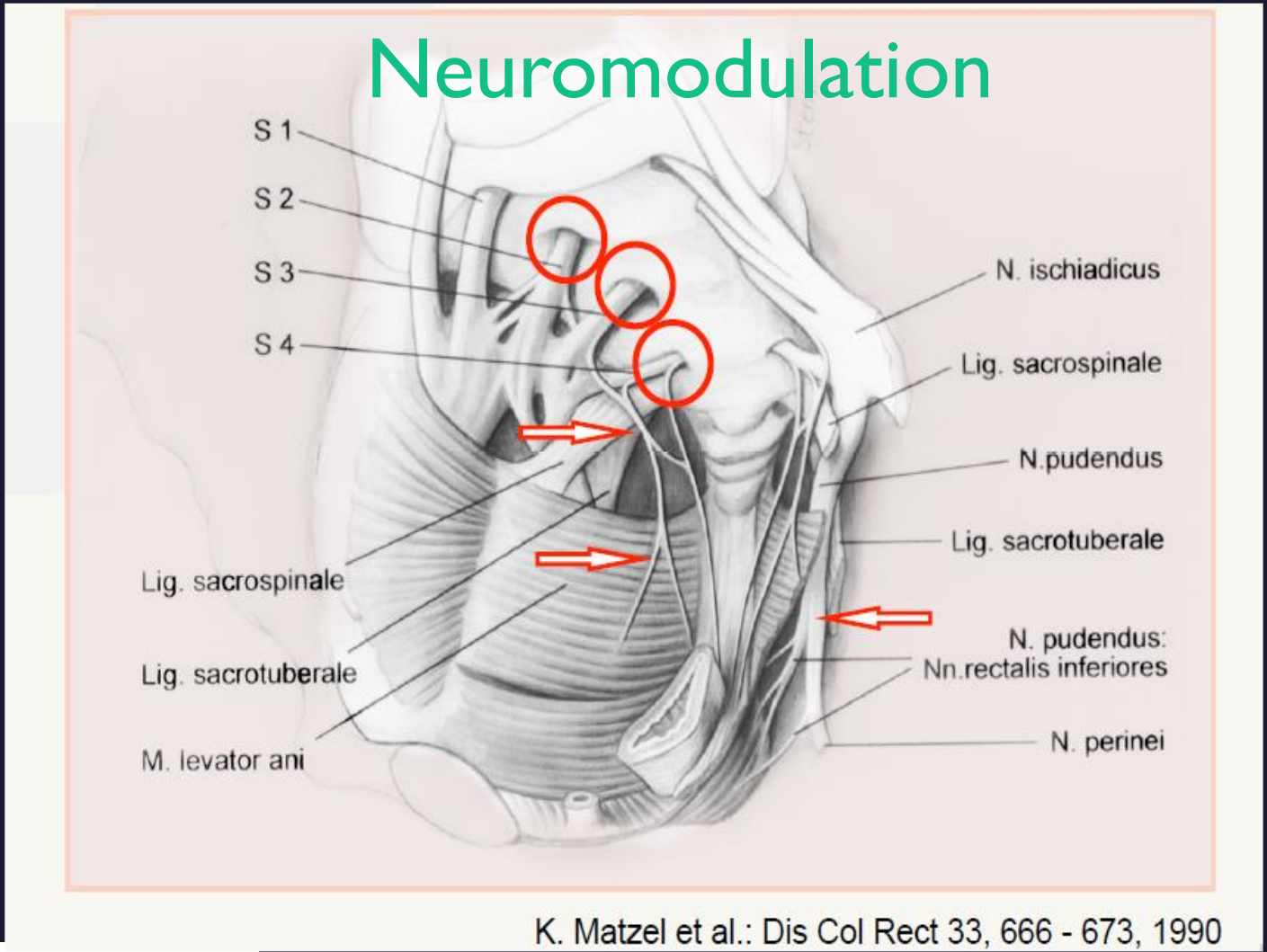


Post anal repair

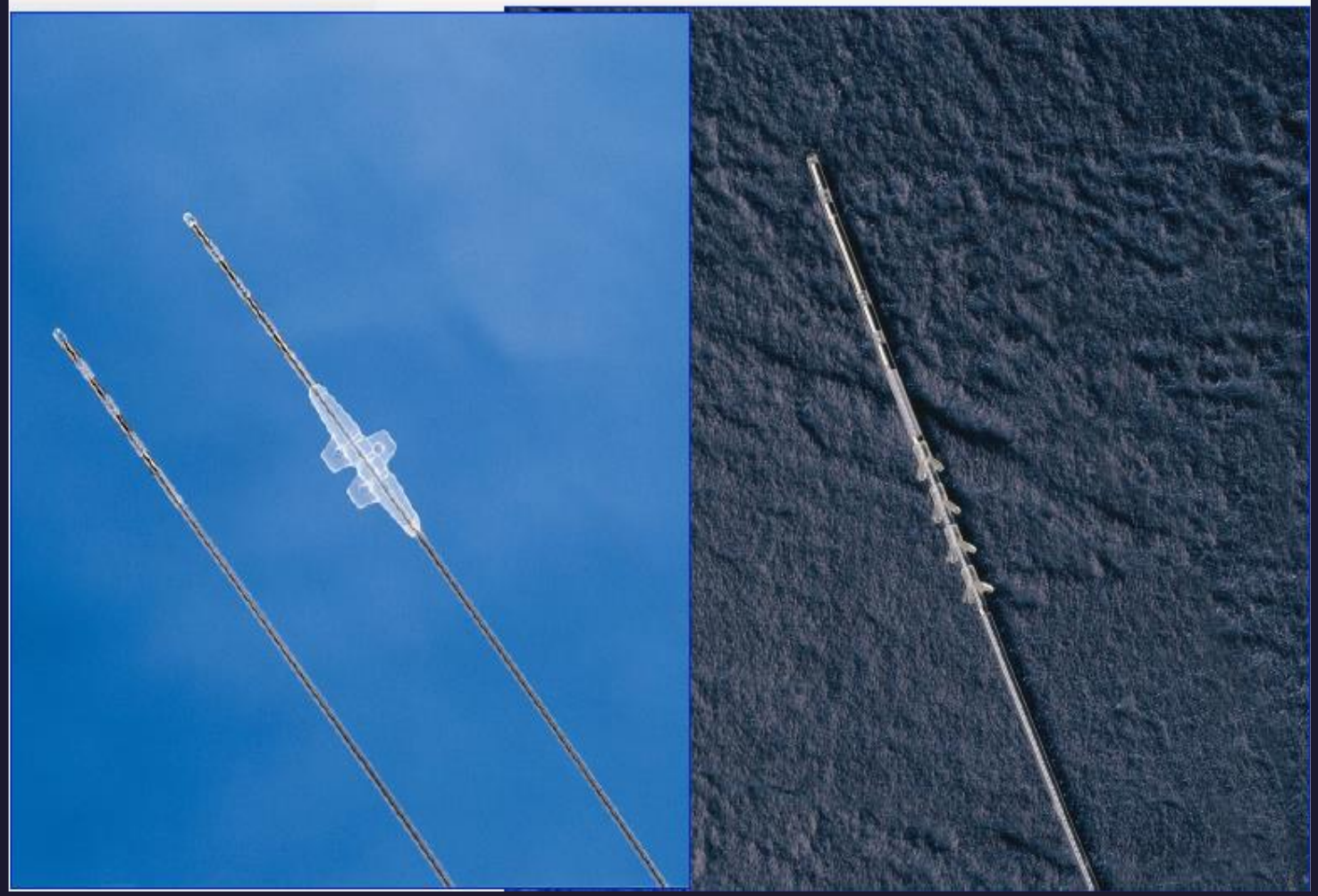
- Repair of internal and external anal sphincters posteriorly and plicates the levator ani muscles
- All data are retrospective and old
- Success rate ranged from 32-87%

Kieghly 1982 ,Browning 1983, Womak 1987

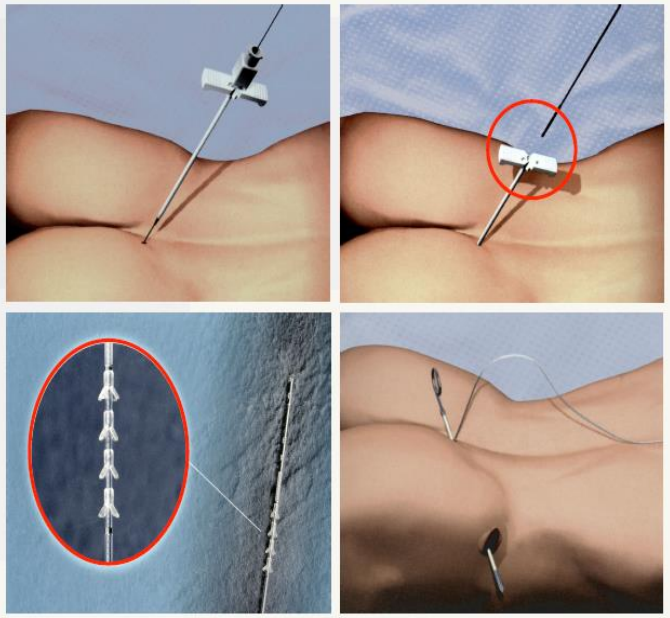
Enhancement of impaired sphincter function Sacral



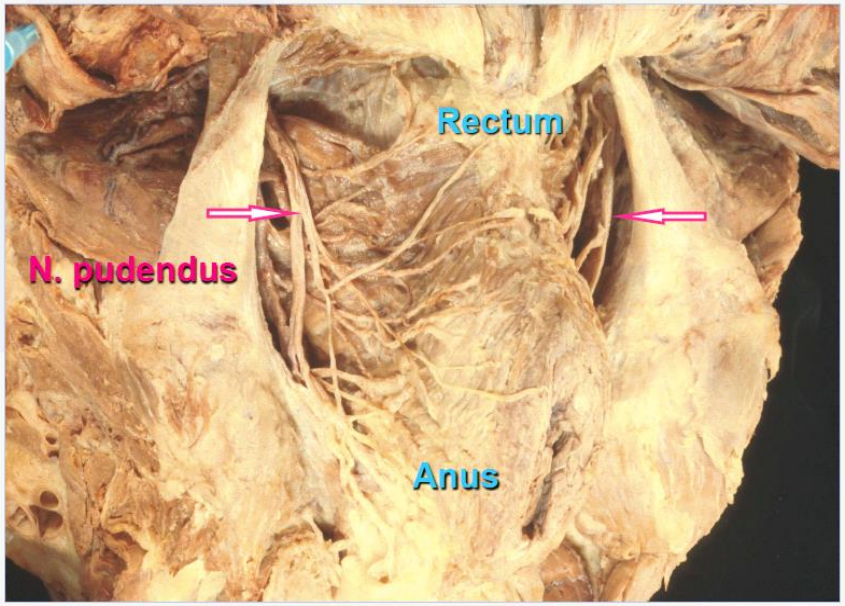
SNS: Foramen Electrode



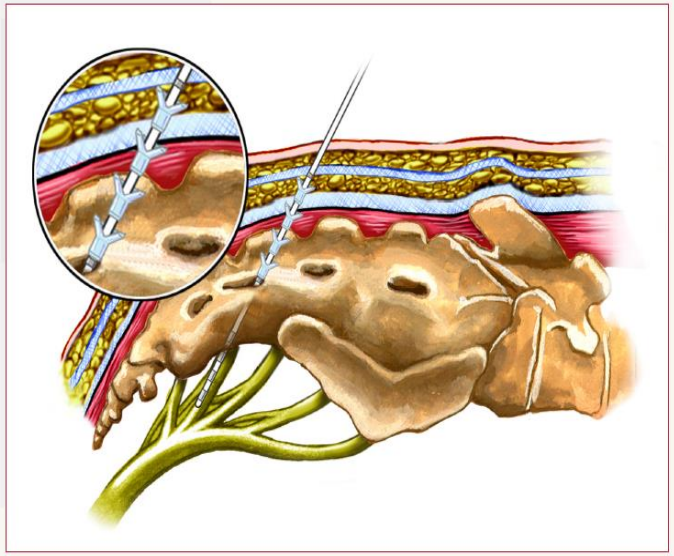
SNS: Tined Lead



Low frequency stimulation:
15 Hz, 210 µsec, on/off : 5sec/1sec,
voltage adapted to patients perception



SNS: Tined Lead



Enhancement of impaired sphincter function

SNM

- It does not focus at all on the anal canal as such
- Placement of a 4-point electrode at the sacral root S3 (trial phase then permenant phase)
- The exact mechanism of this technique is yet to be completely understood
  - Re-stimulate a dysfunctional pelvic floor and receptor pathway
  - activate the afferent brain pathway related to the continence mechanism
  - might affect the pacing of the colon
- After definitive implantation, 86%-87% of patients reported a greater than 50% improvement and about 40% of the patients achieved perfect control, a success persisted over 3-5 years and beyond

Enhancement of impaired sphincter function

Posterior tibial nerve stimulation

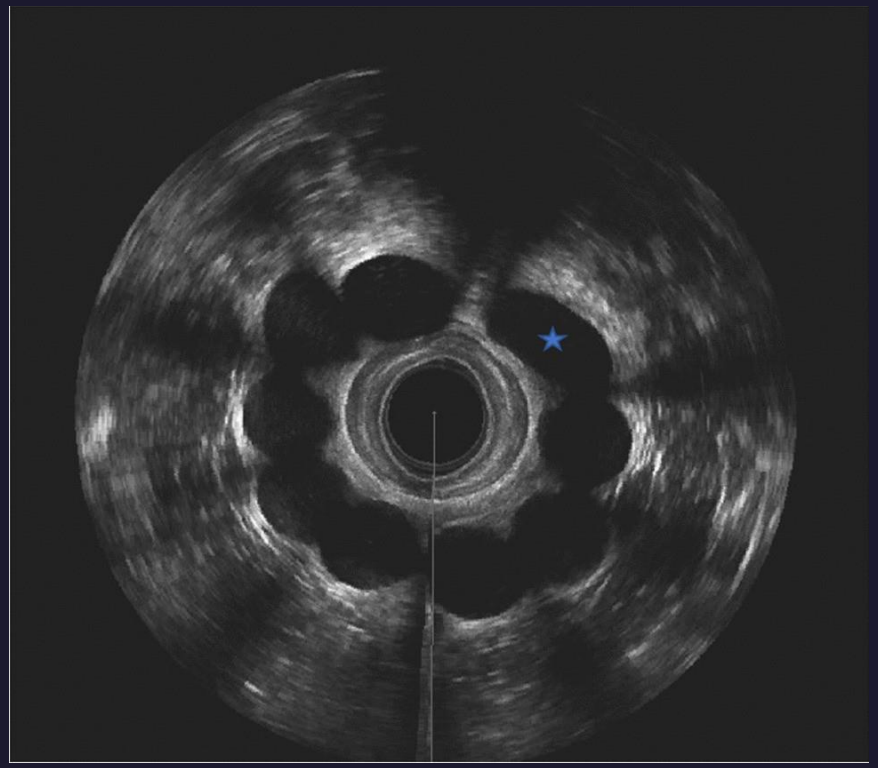
- Using either transcutaneous or percutaneous electrodes
- sessions of approximately 30 min duration over a minimum of 3 months.
- Believed to impact fecal control through the activation of the central nervous system and supra-sacral neural centers *via* the afferent fibers of the peripheral nervous system

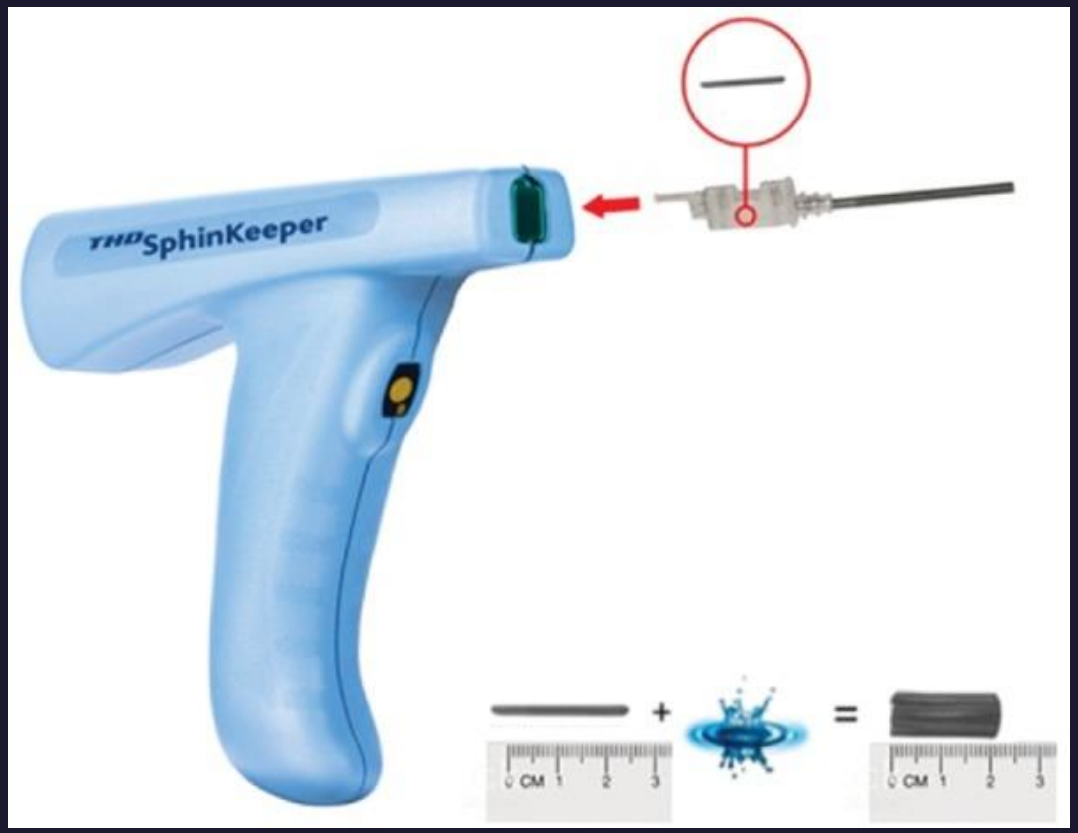
Author and Year	Type of Electrical Stimulation	Sample	Outcomes	Intervention	Results	PEDro
Zyczynski et al., 2022 [28]	P-PTNS	$n = 166$ (EG = 111; Sham = 55)	St Mark's, Diary events, quality of life	12 weekly 30 min sessions	Short and long-term clinical relevant improvements in symptoms but not statistically significant from sham therapy.	8/10
Marinello et al., 2021 [27]	P-PTNS	$n = 46$ (EG = 23; Sham = 23)	LARs score, St Mark's, EORTC QLQ-C30, IIEF-5, FSFI	16 sessions, 200 ms, 20 Hz, 30 min	Long-term improvement in LARs score($p = 0.018$) and FI score after 12 months in EG. No differences in CdV and FS	9/10
Leo et al., 2021 [19]	P-PTNS	$n = 50$ (EG-Anal graft = 25; EG-P-PTNS = 25)	DF, ICIQ-BS, St Mark's, antidiarrheal agents, VAS	12 sessions, 200 ms, 10 Hz, 30 min	Reduction of ≥50% of FI episodes in the 76% of anal graft group and 48% of P-PTNS group ($p = 0.04$). Improvements in St Mark and ICIQ-BS ($p = 0.01$)	7/10
Thin et al., 2015 [18]	P-PTNS	$n = 40$ (ENS = 23; P-PTNS = 17)	DF, CCIS, FIQoL, SF-36, EQ-5D	15 sessions, 200 μs, 20 Hz, 30 min	≥50% improvement in FI episodes per week at 6 months in 11 of SNS and 7 of P-PTNS. Poor improvements in SF-36 and EQ-5D.	6/10
Van der Wilt et al., 2017 [22]	P-PTNS	$n = 59$ (EG = 29; Sham = 30)	DF, SF-36, CCF-FI, FIQoL	15 sessions, 200 μs, 20 Hz, 30 min	Higher reduction (≥50%) of FI episodes in EG. Improvements in CCF-FI and SF-36 in EG.	8/10
George et al., 2013 [24]	T-PTNS and P-PTNS	$n = 30$ (T-PTNS = 11; P-PTNS = 11; CG = 8)	DF, SF-36 St Mark, Rockwood	12 sessions, 200 μs, 20 Hz, 30 min	Higher reduction of FI episodes for P-PTNS ($p = 0.035$) and higher posponement of defacation compared with other groups along 6 months	8/10

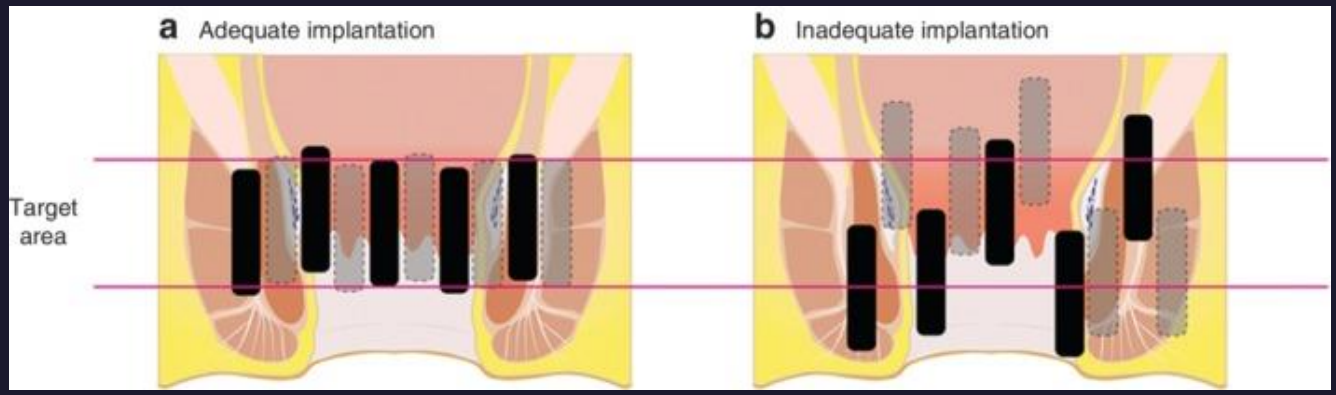
Enhancement of impaired sphincter function
bulking agents

- Goal to bulk up the anal canal or perianal tissues and increase the passive outlet resistance
  - Sphin Keeper
  - PTP
  - PTQ
- Patient selection has been poorly defined but could include those with mild passive incontinence secondary to internal anal sphincter weakness, or patients with postsurgical deformities and an uneven shape of the anal canal

Sphinkeeper







Sphinkeeper

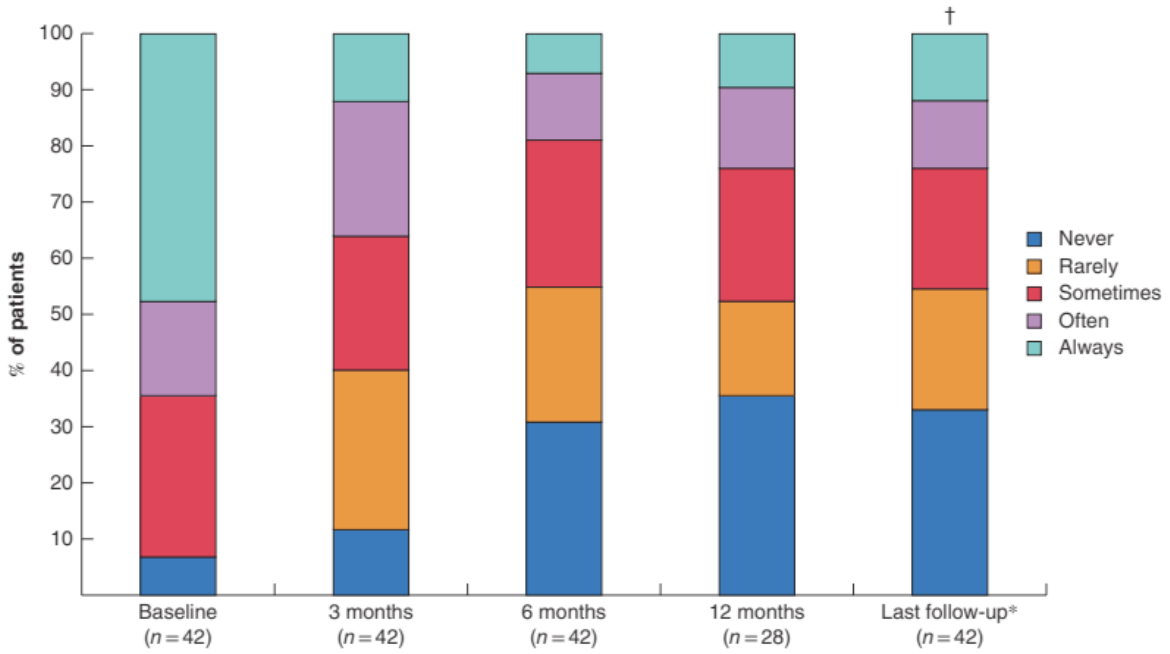
- Defect < 120 degrees
- Improves contractility of external anal sphincter
- Support IAS at rest

Rapid research communication

Efficacy of Sphinkeeper™ implant in treating faecal incontinence

F. Litta[1], A. Parello[1], V. De Simone[1], P. Campennì[1], R. Orefice[1], A. A. Marra[1], M. Goglia[1], R. Moroni[2] and C. Ratto[1,3]

Fig. 3 Frequency of postdefaecation episodes of soiling at baseline and during follow-up



Original article

doi:10.1111/codi.14801

Sphinkeeper™ for faecal incontinence: a preliminary report

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Patient (M/F)	Past history	Clinical examination	EAUS (degree of injury)	AM resting (mmHg pre/post)	AM squeeze (mmHg pre/post)	CCFIS (pre/post)	No. of FI per week (pre/post)
1 (M)	Fistulotomy, sphincteroplasty	FI to gas and liquid stool	EAS/IAS lesion (65°)	11/26	65/72	13/9	8/2
2 (M)	Haemorrhoidectomy	FI to gas and liquid stool	IAS lesion (70°)	25/38	98/105	12/6	6/2
3 (F)	Forceps delivery, sphincteroplasty	FI to gas and liquid stool	EAS lesion (82°)	27/35	97/100	11/7	6/2
4 (F)	Fistulectomy, sphincteroplasty	FI to gas and liquid stool	EAS/IAS lesion (30°)	22/31	89/91	13/10	5/1
5 (F)	Forceps delivery, multiparity	FI to gas and liquid stool	EAS/IAS lesion (55°)	28/33	80/86	14/10	5/1
6 (F)	Forceps delivery, multiparity	FI to gas and liquid stool	IAS lesion (20°)	26/39	105/106	10/6	3/1
7 (F)	Multiparity	FI to gas and liquid stool	EAS/IAS lesion (15°)	18/29	83/90	14/10	3/1
8 (F)	Radiotherapy, LAR	FI to gas and liquid stool	IAS inhomogeneity	20/30	95/96	15/11	4/2
9 (M)	Anal fissure, sphincterotomy	FI to gas and liquid stool	IAS inhomogeneity	19/29	92/98	10/9	3/1
10 (F)	Rectosigmoid resection, ventral rectopexy, Delorme	FI to gas and liquid stool	EAS/IAS inhomogeneity	10/20	30/40	15/11	11/5
11 (F)	Forceps delivery, multiparity	FI to gas and liquid stool	EAS/IAS inhomogeneity	23/35	68/76	11/6	3/1
12 (F)	Anal fissure, sphincterotomy	FI to gas and liquid stool	IAS lesion (57°)	30/41	95/102	13/10	4/2
13 (F)	Ventral rectopexy	FI to gas and liquid stool	EAS/IAS inhomogeneity	18/28	79/92	15/12	6/4

Research Article

Does Implantation of an Artificial Soft Anal Band Provide an Opportunity for Improvement of Biopsychosocial Function in Patients with Severe Fecal Incontinence?

Dorota Żelazny, Michał Romaniszyn, and Piotr Wałęga

Third Chair of Surgery, Jagiellonian University Medical College, Krakow, Poland

Sphincter replacement

- Soft anal band
- The study included a group of 12 patients: 6 females and 6 males, aged from 36 to 60 years

Sphincter replacement

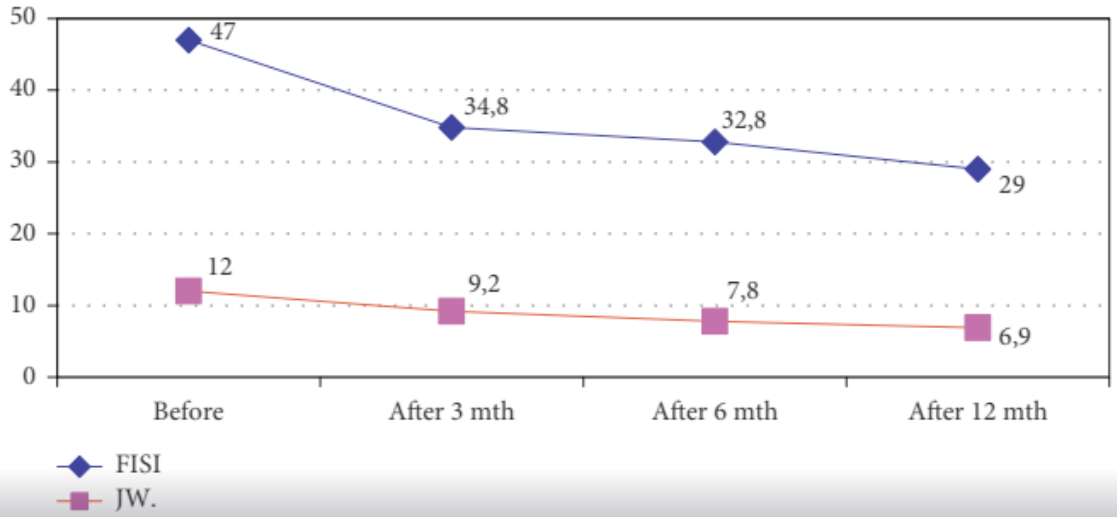

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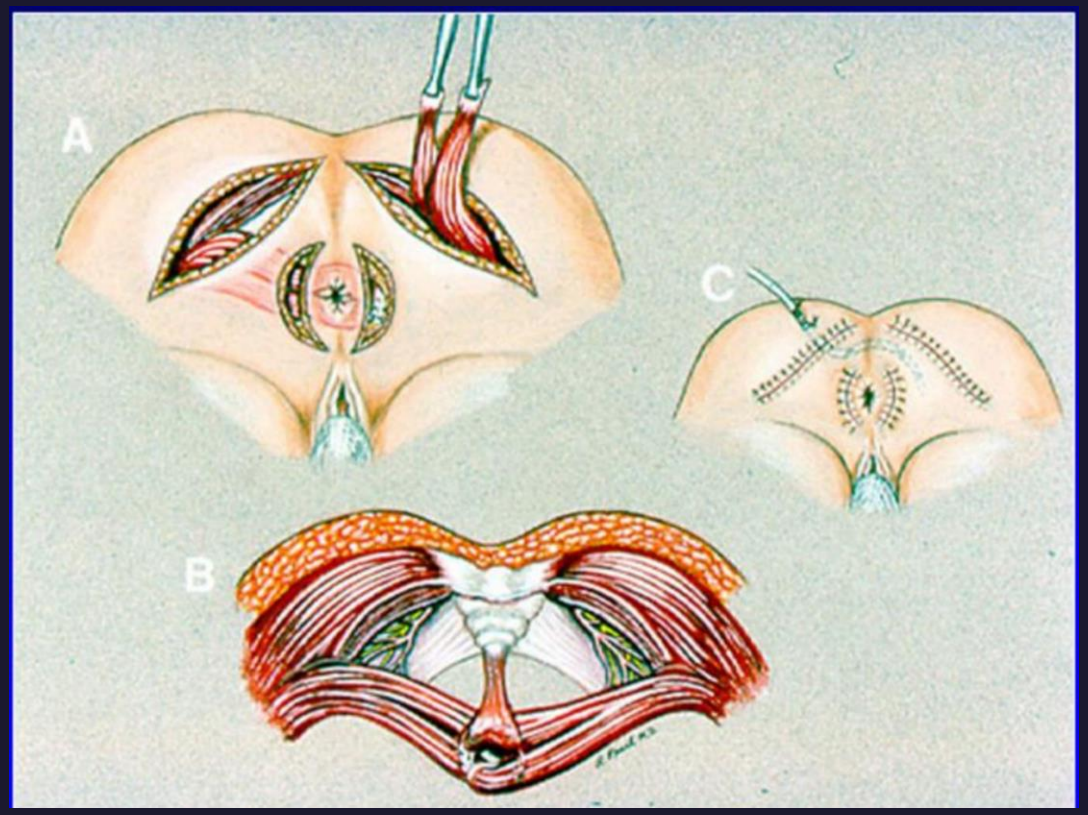
Table 6: The assessment of all the four aspects of quality of life (FIQL) prior to the procedure and 3, 6, and 12 months postoperatively.

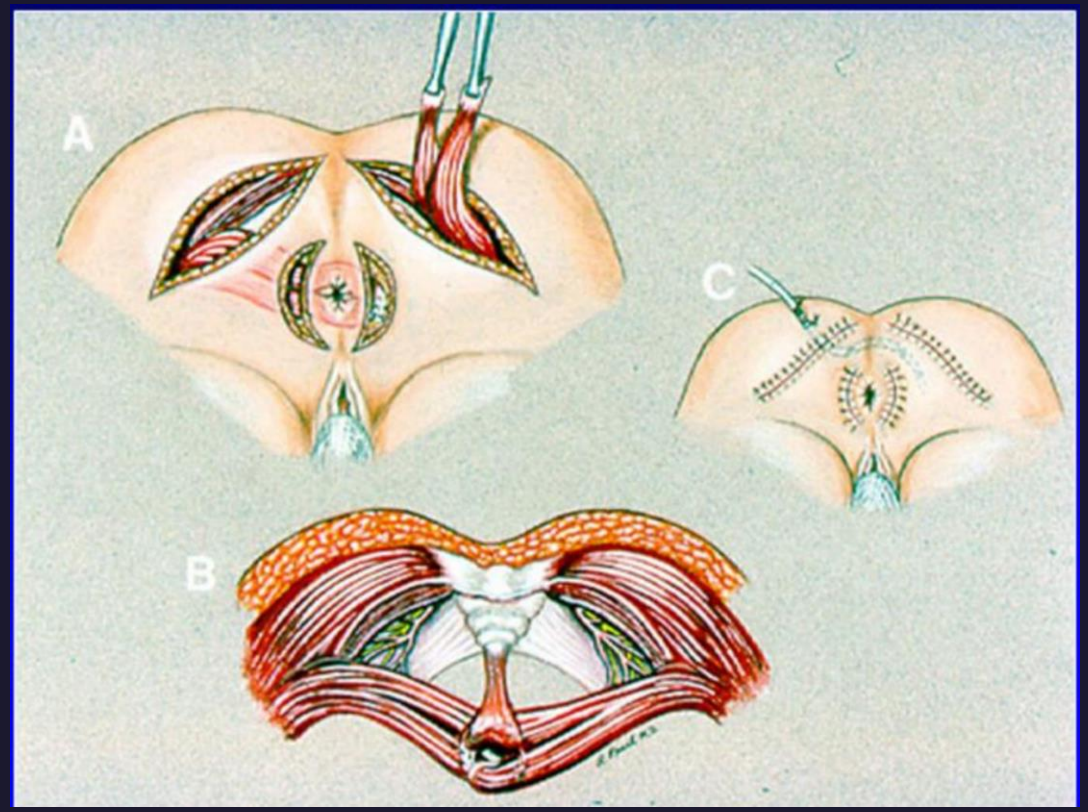
	0	3	6	12
Lifestyle	1,8	2,3	2,8	3,0
Coping	2,0	2,5	3,0	3,2
Depression	1,9	2,6	3,3	3,5
Embarrassment	1,6	2,0	2,6	2,9



Sphincter replacement

- Nondynamic sphincter and pelvic floor support: Non-dynamic gluteoplasty
- Wrapping of gluteus muscle around the anal canal ("bio-Thiersch")
    - high risk of complications and a lack of true functionality

Gluteus maximus flap



		Patients	Good Results	Fair Results	Poor Results
Iwai	1985	1	1	--	--
Chen	1987	6	3	1	2
Onishi	1989	1	1	--	--
Pearl	1991	7	4	2	1
Christian sen	1995	7	0	3	4
Devesa	1992, 96	17	9	1	7

Conclusions

- Fecal incontinence is not uncommon condition but usually under reported
- Traumatic FI after obestetric and anal surgeries are the commonest
- History and clinical examinations are important to exclude other diseases that can cause anal discharge
- Enoanal US, anorectal manometry and pelvic MRI are crucial in patient evaluation
- Management can be as easy as diet modification up to SNM


THANK YOU!