

UNIVERSITÀ DEGLI STUDI DELL'INSUBRIA
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**STARR vs Internal Delorme for Obstructed Defecation:
a prospective randomized trial.**

Tesi di Dottorato

Dr ANDREA BONDURRI

Matr. 718261

Relatore:

Chiarissimo Prof LORENZO DOMINIONI

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La tradizione è la salvaguardia del fuoco,
non l'adorazione delle ceneri.

Gustav Mahler

Surgery is not just science.

Surgery is an art.

One can learn about science
from courses, conferences and books.

In art, one has to have talent first
and then seek out a master
who can bring that skill to perfection.

Francis Seow-Choen

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ABSTRACT

Transanal rectal resection with two circular staplers (STARR) and transanal mucosectomy (endorectal proctopexy or Internal Delorme) are two effective surgical approaches to severe obstructed defecation syndrome (ODS) associated to rectocele and rectal intussusception.

Thirteen consecutive patients with ODS (average age 56.5 years) underwent surgery at Luigi Sacco University Hospital of Milan between October 2009 and February 2011. After routinely preoperative diagnostic work-up, patients were randomized to STARR (n=7) or Delorme procedure (n=6). All patients were submitted to three questionnaires: SF-36, ODS score and Wexner Continence Score before and after surgery (3 months, 1 and 4 years). All data and post operative complaints were recorded and collected by an independent investigator. All variables related to ODS symptoms have improved with both surgical techniques at 3 months, 1 year and 4 years ($p < 0,05$). STARR procedure reduces operation time from 102 to 53 minutes and the hospital stay from 6 to 3 days and ($p < 0,05$). No major complication occurred. The overall short-term minor complications rate was 3/7 in the STARR group and 3/6 in the Internal Delorme group. Our study confirms the safety and the efficacy of the surgical approach with STARR or with Internal Delorme procedure in selected patients with ODS. Global health and psychological well being at 3 months, 1 year and 4 years after surgery are similar for both techniques.

INTRODUCTION

Because of its diffusion and symptoms, constipation could be considered a social disease that can seriously reduce the quality of life of people. The British National Health Service spends about 143 millions of dollars in prescription of laxatives for the elderly population. American population spends more over 725 million of dollars to treat the most common gastrointestinal disease of the country. The diffusion of constipation in the world isn't exactly known. According to an American epidemiological study, the overall prevalence of constipation should correspond to 14,7% of the American population. The diffusion of this disease usually increases with age and frequently occurs in black people and women; the overall prevalence in the western society is between 2 and 27%.

Patients with obstructed defecation syndrome (ODS) present symptoms of functional constipation in accordance with Roma III criteria (incomplete evacuation, straining and/or abdominal pain during defecation, tenesmus, time spent in the toilet >30min, digital assistance, use of enemas, rectal bleeding, prolapse) and have manometrical, electromiographical and radiological images that demonstrate an inadequate contraction, a failure to relax pelvic floor muscles during defecation or an appropriate contraction associated to an incomplete evacuation. Patients, therefore, have an inability to coordinate the bowel movement with pelvic floor muscles to produce a normal defecation. The result is an incomplete emptying of the rectum, with the perception of an obstacle that occludes the anal canal, reliance on laxatives, feeling of incomplete evacuation and persistence of the stimulus. The final pathway consists in excessive straining or needing for digital maneuvers or enema to help evacuate. Pathophysiology and treatment of ODS remains to be define clearly; its real incidence in the constipated population is not completely clear too and probably underestimated, due to its unspecific symptoms.

Anatomically, ODS is often correlated with a rectal intussusception and/or an anterior rectocele that doesn't allow the normal transit of the feces. Attempts at classification of the abnormalities based only on anatomical changes are not useful without a clinical correlation since they can also be observed in asymptomatic patient.

ODS can affect the quality of life of many patients because they are obliged to spend several hours a day in the toilet. More than 30% of these patients show an improvement with diet, changing in life style and biofeedback therapy, avoiding unnecessary and potentially dangerous surgery, that should be reserved for selected patients who do not improve after medical treatment.

Surgical treatment of ODS is widely debated. The goals of the treatment are not only to correct the prolapse and the rectocele, but also to eliminate the symptoms associated and to restore defecatory function with minimal surgical morbidity and disability. Many different surgical techniques to correct ODS have been described in the literature, with important limitations and different patterns of post-operative complications. Transanal rectal resection of the rectum with two circular staplers (STARR) and transanal mucosectomy (Internal Delorme) are two effective surgical approaches to ODS associated to rectocele and rectal intussusception. Many studies confirm STARR effectiveness in the short period, while there is a lack of evidence about the Internal Delorme procedure. As every other abdominal or transanal described technique, there are concerns about long-term efficacy. The aim of this study is to investigate the differences of these two surgical treatments in terms of safety and long-term (4 years) efficacy.

PATIENTS AND METHODS

Thirteen consecutive patients with ODS associated to rectocele and rectal intussusception underwent surgery at Luigi Sacco University Hospital of Milan between October 2009 and February 2011.

All the patients were female. Mean age was 56.5 years old (range 36-80). Anamnestic data included number of pregnancies, previous gynecological, urological or anal surgery.

All patients presented an internal rectal prolapse, and an anterior rectocele was present in 12 (92%). Eleven patients (85%) had experienced vaginal deliveries: 2 had 1 delivery, 7 had 2 deliveries and 2 had 3 vaginal deliveries. Three patients had undergone prior anorectal surgery, and one had prior uro-gynecologic surgery.

Trial inclusion criteria were:

persistence of at least **three** ODS symptoms

- incomplete evacuation
- straining and/or abdominal pain during defecation
- tenesmus
- time spent in the toilet >30min
- digital assistance or use of enemas
- rectal bleeding
- prolapse

AND medical therapy failure (1,5 l /day of water and a fiber rich diet), lack of effect in the use of laxatives or enemas;

AND the presence of at least two of the following radiological signs: rectocele greater than 3cm; rectal intussusception greater than 10 mm; retention of barium contrast at the end of defecation;

AND ultrasonography or manometry negative for lesions, when indicated.

Trial exclusion criteria were:

good response to conservative treatment, slow transit constipation, enterocele, peritoneo-entero-sigmoidocele, cystocele, hystero-vaginal prolapse, complete rectal prolapse, spastic pelvic floor syndrome, chronic diarrhea, inflammatory bowel diseases, cancer, anal or rectum stenosis, previous rectal resection surgery, severe fecal incontinence (Cleveland Clinic Florida, Wexner Score >7), psychiatric disorders.

Preoperative diagnostic valuations consisted in a clinical examination of perineum, rectum and vagina to evaluate presence of rectal prolapse, voluntary contraction of external anal sphincter and puborectal muscle, presence of enterocele or genital prolapse; anoscopy to

exclude any anorectal disease. Colonoscopy in patients older than 50 years. Rx defecography with the evidence of rectal prolapse or rectocele. Anorectal manometry to evaluate the anal canal pressure at rest and after contraction and the rectal sensitivity or transanal ultrasonography to evaluate the presence of prior injuries of the sphincter, when clinically indicated.

In order to quantify the magnitude and degree of constipation and the lifestyle and psychological scores, all patients were submitted to three questionnaires: SF-36 QoL, ODS score and Wexner Continence Score before and after surgery (3 months, and 1 year). A 4 years telephonically survey was attempted and ODS score and Wexner score re-obtained. The use of dedicated scores represents an essential tool for the clinical staging of ODS for the evaluation of therapeutic results.

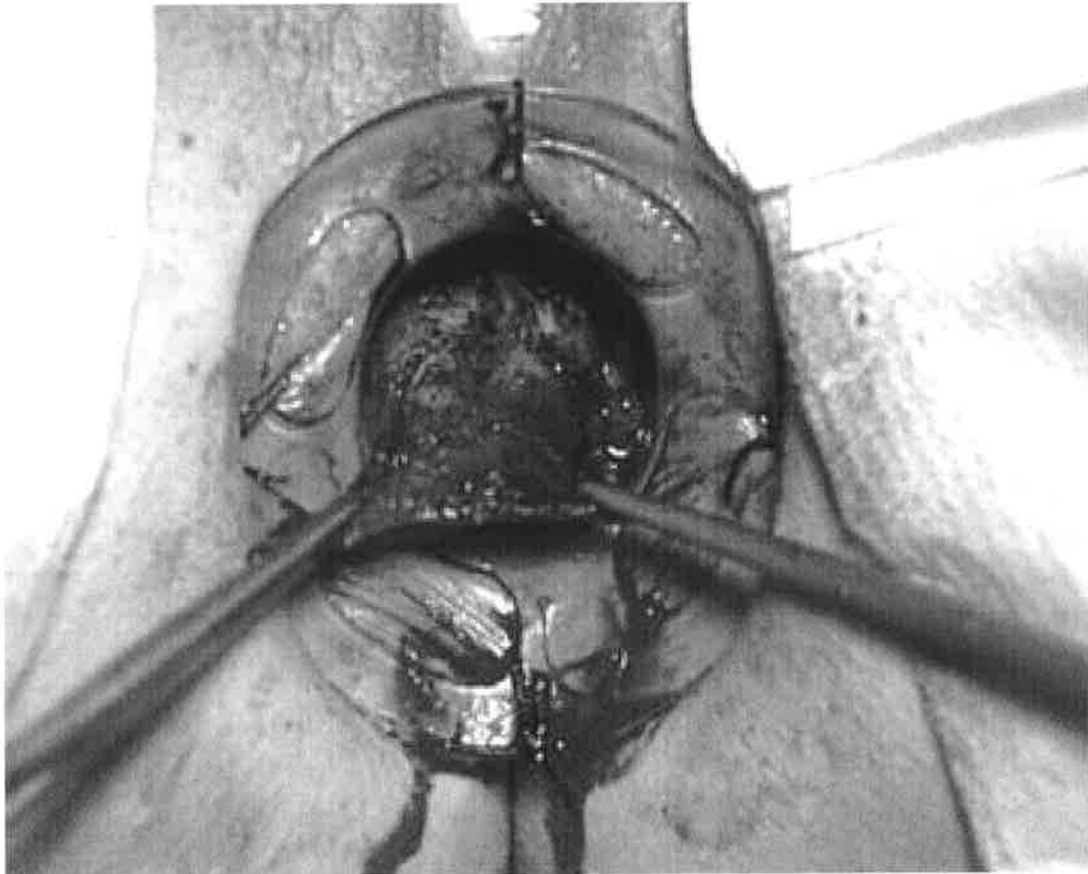
Microsoft Excel 2007 (Microsoft Corp, Redmond, WA, USA) was used to collect preoperative patient characteristics, surgery-related data and follow-up information. Statistical comparisons were carried out using the Student's t test and the chi-square test with data expressed as means and standard deviations. Significant values were reported where P was < 0.05.

Surgical techniques

All patients signed an informed consent before surgery. Bowel preparation with an oral cleansing agent and perioperative antibiotics were used routinely. Surgery was always performed in the lithotomy position after the induction of the anesthesia. Six patients were submitted to general anesthesia and seven to spinal anesthesia.

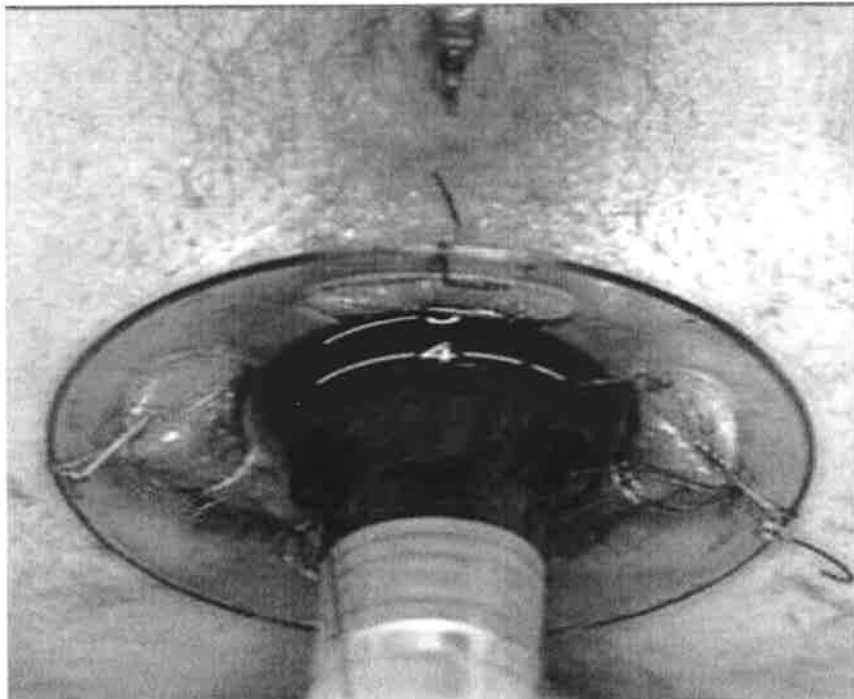
Internal Delorme procedure.

The anal verge is gently dilated and a 34mm circular dilator is fixed with four stiches. An adrenalin solution is injected in the sub-mucosal layer and the dissection begins with a circumferential diathermy incision approximately 2cm above the dentate line. Mucosectomy is then carried out proximally for a distance of 7-12cm according to the length of the rectal intussusception. A careful hemostasis is accomplished. Vertical placcation sutures of 2-0 absorbable (polyglactine 910) stiches are then placed in the muscle, one for each quadrant. The mucosal anastomosis is then completed with other 8-12 sutures of 2-0 absorbable (polyglactine 910) stiches. Specimen is sent to pathologist. **(Figure 1)**



STARR procedure.

The anal verge is gently dilated and the 34mm circular dilator (CAD) is fixed with four stitches. An operative anoscope is introduced and a retractor (spatula) is inserted in order to protect the posterior rectal wall. According to recommendations for the performance of STARR, two circular PPH-01™ staplers (Ethicon Endo-Surgery) are used. Three sutures are positioned in the anterior rectum at approximately 4 cm above the dental line at the 10, 12 and 2 o'clock position. The first stapler is inserted. The ends of sutures are delivered through the specific holes of the stapler, and tension is applied to prolapse the removed tissues into the stapler housing, making sure that the posterior vaginal wall had not been incorporated. The stapler is then closed and fired. By the same procedure, three sutures are positioned in the posterior rectum; the spatula is then placed anteriorly and a second stapler is used to perform posterior rectal wall resection. Subsequent bleeding from the staple line is carefully checked and controlled with full-thickness 2-0 absorbable stitches, and the “posterior staple bridge” is divided with scissors. The two specimens are sent to pathologist (**Figure 2**)



RESULTS

Thirteen consecutive patients were enrolled in the trial. Six patients underwent Internal Delorme procedure and seven patients underwent STARR procedure using double stapler. Clinical pre-operative data of the two groups are shown in **Table 1**. All patients were exposed to three questionnaires: Wexner Continence Score, ODS score and SF36 QoL (see Appendix).

Table 1. Clinical pre-operative data

	Delorme	STARR
Patients	6	7
Median age	58,5	54,7
No Delivery	1	1
Mean Delivery	2	2
Previous pelvic floor surgery	1	3
Rectal prolapse	6	7
Rectocele	5	6
Haemorrhoids	1	3

Surgery was made by two colorectal surgeons with the same equipment, protocols and surgical procedures.

The mean operative time with STARR was 53 minutes (range 40-80 minutes), while with Delorme procedure was 102 minutes (range 80-140 minutes). The mean hospital stay after STARR procedure was 3 days, while with Delorme was 6 days ($p < 0,05$).

All postoperative complications and reinterventions were recorded by an independent investigator. Patients were re-examined by means of digital rectal examination and anoscopy at 3 and 12 months. In the same period they were also submitted to the questionnaires. At 4

years, the ODS and Wexner questionnaires were submitted telephonically. Postoperative data were available for a mean of 4 years (**Table 2**).

Table 2. Pre- and post-operative constipation score

pt	Procedure	pre-operative		3 months		1 year		4 years	
		ODS	Wexner	ODS	Wexner	ODS	Wexner	ODS	Wexner
1	Delorme	13	15	2	5	6	2	4	5
2	STARR	7	10	2	1	8	2	2	4
3	Delorme	14	16	10	10	7	8	7	8
4	Delorme	13	17	1	0	0	0	0	0
5	STARR	4	9	2	2	5	1	5	1
6	Delorme	7	14	7	10	0	0	0	0
7	STARR	8	7	8	2	7	0	2	1
8	Delorme	25	23	9	10	17	18	n.a.	n.a.
9	STARR	11	16	n.a.	n.a.	3	11	11	3
10	Delorme	9	9	6	7	n.a.	n.a.	9	6
11	STARR	9	16	n.a.	n.a.	1	8	1	8
12	STARR	19	14	1	2	6	3	6	6
13	STARR	3	6	1	1	0	2	1	0

Seven patients (2 Delorme and 5 STARR) had a complete resolution of ODS symptoms. Four patients (3 Delorme, 2 STARR) continued to have residual symptoms, better than the preoperative level. One patient of the Internal Delorme group experienced a short-term benefit from surgery, with return to severe ODS at the 1 year follow-up. She was sent to pelvic floor elettrostimulation and bio-feed-back. ODS (**Table 3**) and Wexner (**Table 4**) score collected at three months, one year and four years reflect such significantly positive results ($p < 0,05$).

Table 3. Mean ODS score

	Pre-operative	3 months	1 year	4 years
Delorme	13,50	5,80	6,00	6,20
STARR	8,70	2,80	4,29	4,00

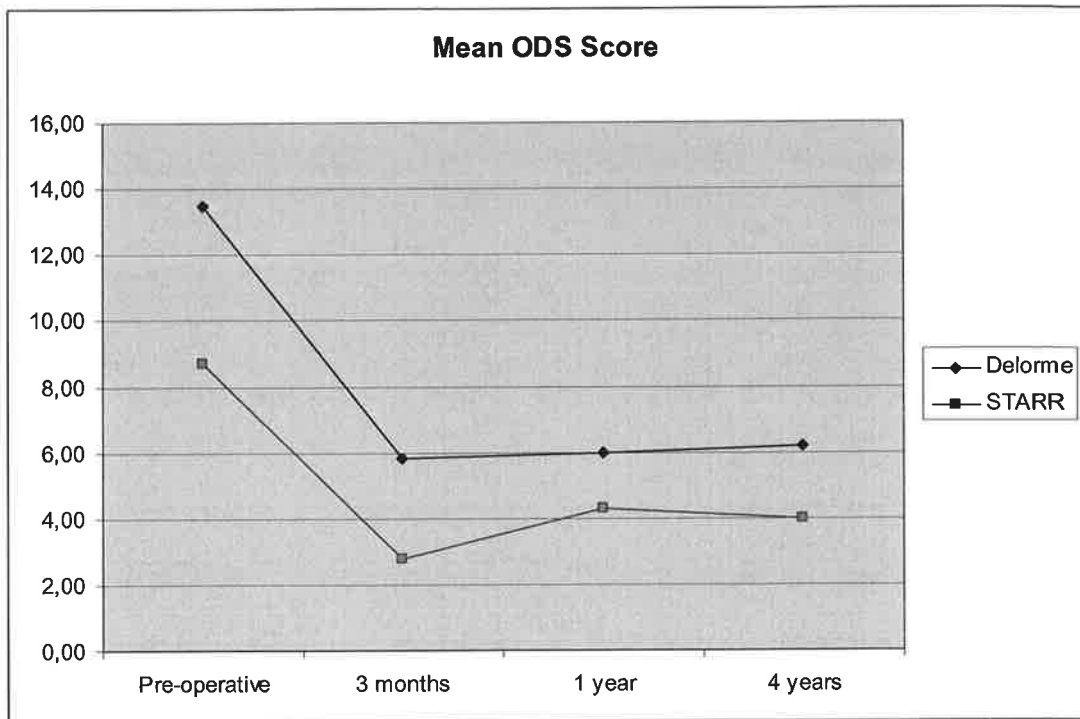
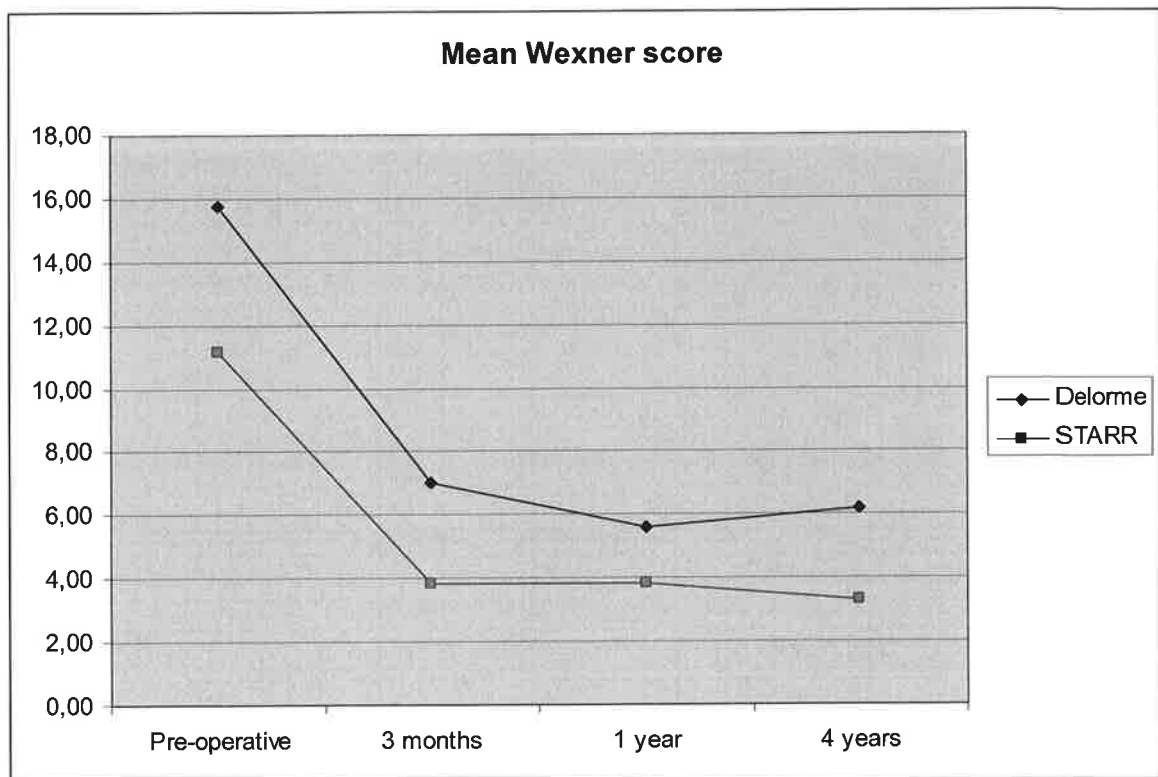
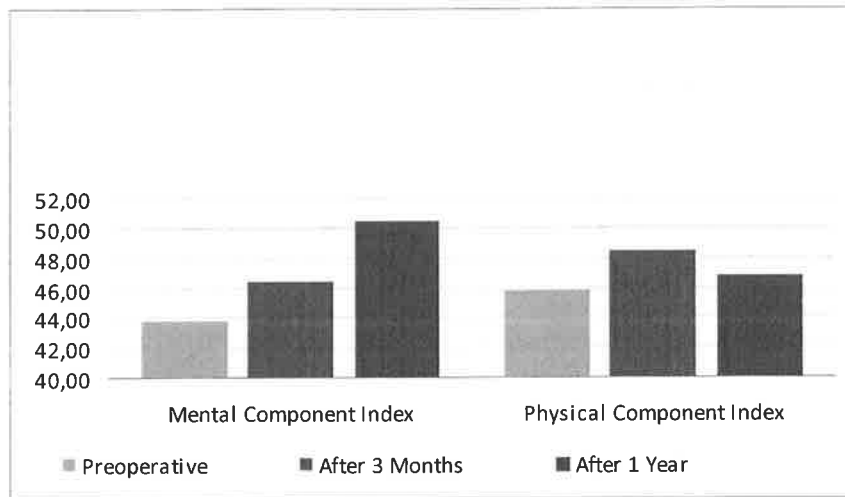


Table 4. Mean Wexner score

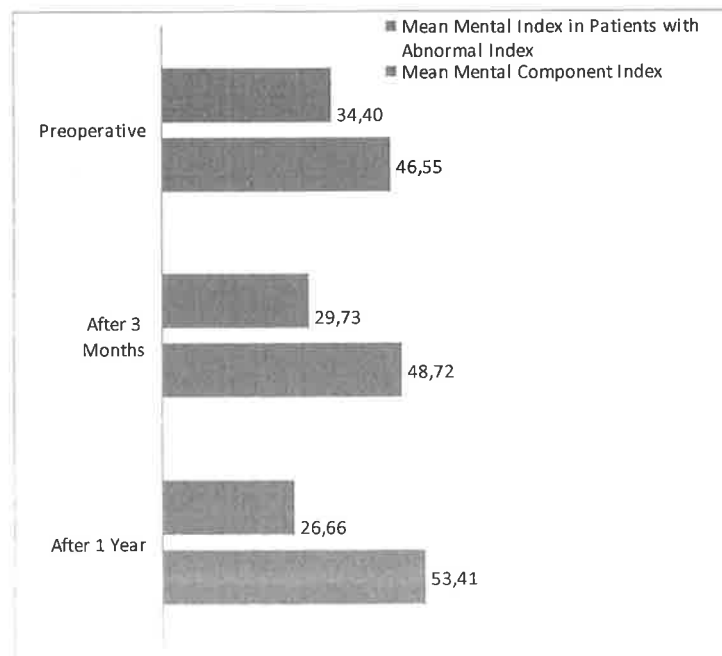
	Pre-operative	3 months	1 year	4 years
Delorme	15,75	7,00	5,60	6,20
STARR	11,14	3,86	3,86	3,30



Global satisfaction and well-being were assessed with the 36SF italian questionnaire (see Appendix). Mean mental and physical index both improved three and twelve months after surgery (**Figure 3**).



Interestingly, we find two patients with abnormal pre-operative mean mental index, one in each group. Both had ODS and Wexner score improved with mean mental index worsened. Both had residual ODS symptoms (**Figure 4**).



Complications

An intra-operative complication occurred in an Internal Delorme procedure with a lateral rectal perforation. The subsequent perirectal abscess (**Figure 5**) was successfully managed with conservative therapy, parenteral nutrition and i.v. antibiotics.

Figure 5. Post-operative perirectal abscess



There were no postoperative major complications and no mortality. The early and late complications are reported in **Table 4**.

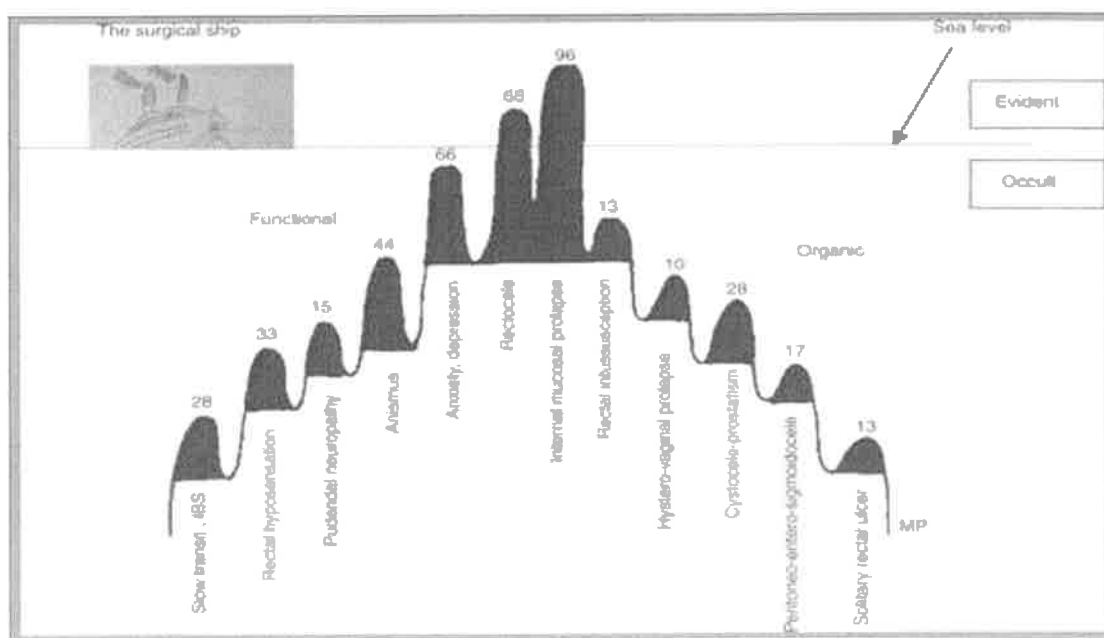
Table 4. Complications

	Delorme <1m	STARR <1m	Delorme 3m	STARR 3m	Delorme 1y	STARR 1y
Hematoma	1	1	0	0	0	0
Anal pain	2	1	1	2	0	0
Urgency	0	1	0	1	1	1
Dyspareunia	0	2	0	2	0	0
Rectal stenosis	2	0	0	0	0	0

Two cases of anastomotic stricture needed rehospitalization for anal dilatation under anesthesia, both occurred after Delorme procedure two weeks after the procedure. No bleeding complications and no postoperative alterations of the continence (but urgency) occurred. In the STARR group, early urgency appeared in 1 patient and dyspareunia in 2 patients. The latter disappeared in 4 and 5 months, after anterior rectal wall granuloma resolution. Fecal urgency in the STARR group still persists at 1 year. At the same late follow-up, a fecal urgency appeared also in the Delorme group.

DISCUSSION

ODS is a frequent but underestimated disease. The underlying anatomical and physiological disturbances are complex and only partly understood. Rectocele and rectal intussusception have been identified to be organic causes of outlet obstruction. Transanal rectal resection of the rectum with two circular staplers (STARR) and transanal mucosectomy (internal Delorme) are two effective surgical approaches. This procedures aim to correct rectocele, resect internal prolapse, restore anatomy, correct rectal volume and improve function. But it has been demonstrated that patient selection should be very careful because there is a recognized association between ODS and other pelvic floor disorders. In a prospective study Mario Pescatori, founding the coexistence of many different functional and organic pathologies, coined the term "iceberg syndrome" to express the numerous pathologies that may underlie ODS.



In too many cases the patient is visited only to evaluate the presence or the absence of rectocele and rectal prolapse, while other diseases, as slow-transit constipation, rectal hyposensation, cystocele, pudendal neuropathy, anismus, solitary rectal ulcer, hystero-vaginal prolapse, cystocele, enterocele, peritoneo-entero-sigmoidocele, anxiety and

depression, are often ignored. Surgery in the presence of these other diseases fails, because symptoms may persist.

According to some authors, Internal Delorme seems the best choice especially for elderly and obese patients or for young adult males in whom an abdominal rectopexy can threaten sexual potency by damaging pelvic or hypogastric nerves. The literature also describes internal proctopexy effective in the emergency treatment of strangulate rectal prolapse. In our trial, Internal Delorme group had less prior pelvic floor surgery, the same number of natural delivery but the higher ODS and Wexner score. The unique intra-operative complications occurred in this group: a right lateral rectal perforation was made. The lesion was intra-operative recognized and sutured. The post-operative peri-rectal collection was successfully managed with conservative therapy, parenteral nutrition and i.v. antibiotics. This patient experienced a transient improvement of both ODS and Wexner score at the 3 months follow-up, with a sudden worsening after a post-traumatic stress triggered by her husband's death. She underwent pelvic floor rehabilitation therapy with very partial satisfaction. We lost the patient at the 4 years follow-up.

Pelvic floor rehabilitation therapy, with biofeedback and/or electrostimulation, is frequently reported as effective adjuvant therapy after anorectal surgery, but has not been studied in large series.

Rectal stenosis complications are described after a wide number of rectal surgery procedures. In our trial two cases occurred in the Delorme group, and they were treated successfully with one time dilatation under anesthesia. This finding can be explained with an uncompleted mucosal anastomosis.

The same patient that complained persisting mild ano-rectal pain 3 months after manual proctopexy, reported fecal urgency episodes 1 year after surgery.

Many studies confirm that STARR is effective especially in a shorter time period with a high patient's satisfaction rate. Concerns are still present about chronic pain and urgency.

In the STARR group, anal pain is present as an early and late symptom. Staples that are poorly positioned (especially when a too low staple line is performed) in the tissue have been

identified as a primary source of postoperative pain, that can be frequently treated by removing staples, the so called “agraphectomy”.

The correct etiology of fecal urgency is not clear. STARR procedure is a trans-anal resection of the rectum. It may probably lead to a transient change in the anal and rectal sensitivity. Furthermore, the procedure creates an inflammation at the level of the anastomotic line for the presence of staples. They are not present in Delorme, whose anastomotic line appears soft. Fecal urgency represents a problem for most of the patients, as it can interfere with their normal activities and their psychological point of view. Urgency after stapler procedures can become a long-lasting symptom very difficult to manage with.

Dyspareunia may be due to anterior granuloma or intramucosal abscess (rectal pocket syndrome) formation. In our trial, two women experienced a complete symptomatic resolution after the disappearing of those granuloma. Oral antibiotics may be useful.

Concerns remain about long-term results, as in all pelvic floor functional surgery. The recurrence of internal rectal prolapse seems to be unaffected by the type of operation.

Preoperative factors which may predict a poorer outcome are still unknown.

Economical consideration

Our trial confirms data of the literature. STARR procedure allows a reduction in operative times and in hospital stay. However, the cost of the devices are high (300-700 Euros in Italy). We were not able to study differences in earlier return to work. Although a correct cost/effectiveness analysis is difficult, this point must be taken into account when a more expensive technique is used and when results seem to be equivalent in the long period.

CONCLUSIONS

In our experience, the surgical treatment of ODS by trans-anal approach with Internal Delorme or STARR procedure is safe and effective in the short and in the relatively long period (4 years). The results are comparable in terms of patients satisfaction and patient well-being. Perioperative minor complications occurred in half patients. Long-lasting fecal urgency remain a significant problem, especially after stapled resection. Results seems to be good if the patients are strictly and carefully selected and if the surgical technique is performed by experienced colorectal surgeon.

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APPENDIX 1: ODS Score System

VARIABILI	0	1	2	3	4
Tempo medio in minuti necessari per evacuare	≤ 5 min	6-10 min	11-20 min	21-25 min	≥25 min
N° di tentativi per defecare al giorno	1	2	3	4	≥5
Bisogno di digitazione anale e\o vaginale	Mai	> 1 \ mese e <1 \ settimana	Una volta a settimana	2-3 volte a settimana	Sempre alla defecazione
Uso di lassativi	Mai	> 1 \ mese e <1 \ settimana	Una volta a settimana	2-3 volte a settimana	Sempre alla defecazione
Uso di clisteri	Mai	> 1 \ mese e <1 \ settimana	Una volta a settimana	2-3 volte a settimana	Sempre alla defecazione
Incompleta e\o defecazione in più tempi	Mai	> 1 \ mese e <1 \ settimana	Una volta a settimana	2-3 volte a settimana	Sempre alla defecazione
Tipo della consistenza fecale	Soffici	Dure	Dure e piccole	Formazione di fecalomi	

Altomare DF, Spazzafumo L, Rinaldi M, et al. Set-up and statistical validation of a new scoring system for obstructed defecation syndrome. *Colorect Dis* 2008; 10(1): 84-8

APPENDIX 2: Short-Form 36

Apolone et al. 1997 (progetto IQOLA), dall'originale inglese di Ware and Sherbourne, 1992

Scelga una risposta per ogni domanda

1. In generale direbbe che la Sua salute è...				
Eccellente	Molto buona	Buona	Passabile	Scadente
1	2	3	4	5

2. Rispetto a un anno fa , come giudicherebbe, ora, la Sua salute in generale?				
Decisamente migliore adesso rispetto a un anno fa	Un po' migliore adesso rispetto a un anno fa	Più o meno uguale rispetto a un anno fa	Un po' peggiore adesso rispetto a un anno fa	Decisamente peggiore adesso rispetto a un anno fa
1	2	3	4	5

Le seguenti domande riguardano alcune attività che potrebbe svolgere nel corso di una qualsiasi giornata. Ci dica, scegliendo una risposta per ogni riga, se attualmente la Sua salute la limita nello svolgimento di queste attività.

	Sì, mi limita parecchio	Sì, mi limita parzialmente	No, non mi limita per nulla
3. Attività fisicamente impegnative , come correre, sollevare oggetti pesanti, praticare sport faticosi	1	2	3
4. Attività di moderato impegno fisico , come spostare un tavolo, usare l'aspirapolvere, giocare a bocce o fare un giro in bicicletta	1	2	3
5. Sollevare o portare le borse della spesa	1	2	3
6. Salire qualche piano di scale	1	2	3
7. Salire un piano di scale	1	2	3
8. Piegarsi, inginocchiarsi o chinarsi	1	2	3
9. Camminare per un chilometro	1	2	3
10. Camminare per qualche centinaia di metri	1	2	3
11. Camminare per circa cento metri	1	2	3
12. Fare il bagno o vestirsi da soli	1	2	3

Nelle ultime quattro settimane, ha riscontrato i seguenti problemi sul lavoro o nelle altre attività quotidiane, **a causa della Sua salute fisica?**

Risponda Sì o No a ciascuna domanda	Sì	No
13. Ha ridotto il tempo dedicato al lavoro o ad altre attività	1	2
14. Ha reso meno di quanto avrebbe voluto	1	2

15. Ha dovuto limitare alcuni tipi di lavoro o di altre attività	1	2
16. Ha avuto difficoltà nell'eseguire il lavoro o altre attività (ad es., ha fatto più fatica)	1	2

Nelle ultime quattro settimane, ha riscontrato i seguenti problemi sul lavoro o nelle altre attività quotidiane, a causa della Suo stato emotivo (quale il sentirsi depresso o ansioso)?

Risponda Si o No a ciascuna domanda	Sì	No
17. Ha ridotto il tempo dedicato al lavoro o ad altre attività	1	2
18. Ha reso meno di quanto avrebbe voluto	1	2
19. Ha avuto un calo di concentrazione sul lavoro o in altre attività	1	2

20. Nelle ultime quattro settimane, in che misura la Sua salute fisica o il suo stato emotivo hanno interferito con le normali attività sociali con la famiglia, gli amici, i vicini di casa, i gruppi di cui fa parte? (Indichi un numero)				
Per nulla	Leggermente	Un pò	Molto	Moltissimo
1	2	3	4	5

21. Quanto dolore fisico ha provato nelle ultime quattro settimane?(Indichi un numero)					
Nessuno	Molto lieve	Lieve	Moderato	Forte	Molto forte
1	2	3	4	5	6

32. Nelle ultime quattro settimane, per quanto tempo la Sua salute fisica o il suo stato emotivo hanno interferito nelle Sue attività sociali, in famiglia, con gli amici? (Indichi un numero)				
Sempre	Quasi sempre	Una parte del tempo	Quasi mai	Mai
1	2	3	4	5

Scelga , per ogni domanda, la risposta che meglio descrive quanto siano **Vere** o **False** le seguenti affermazioni.

	Certamente vero	In gran parte vero	Non so	In gran parte falso	Certamente falso
33. Mi pare di ammalarmi un po' più facilmente degli altri	1	2	3	4	5
34. La mia salute è come quella degli altri	1	2	3	4	5
35. Mi aspetto che la mia salute andrà peggiorando	1	2	3	4	5
36. Godo di ottima salute	1	2	3	4	5

APPENDIX 3: Agachan-Wexner Constipation scoring system

VARIABILI	0	1	2	3	4
Frequenza delle evacuazioni	1-2 volte 24h	2 volte a sett.	1 volta a sett.	<1 volte a sett.	<1 volta al mese
Tempo necessario per ogni evacuazione	<5 Minuti	6-10 Minuti	11-20 Minuti	21-30 Minuti	>30 Minuti
Episodi di dolore addominale	Mai	Raramente	Qualche volta	Usualmente	Sempre
Tentativi infruttuosi di defecazione	Mai	1-3	4-6	7-9	>9
Defecazione difficile	Mai	Raramente	Qualche volta	Usualmente	Sempre
Necessità di aiuto manuale all'evacuazione	Mai	Raramente	Qualche volta	Usualmente	Sempre
Senso di defecazione incompleta	Mai	Raramente	Qualche volta	Usualmente	Sempre
Durata della stipsi	<1 anno	1-5 anni	6-10 anni	11-20 anni	>20 anni

Agachan F, Chen T, Pfeifer J, Reissman P, Wexner SD. A constipation scoring system to simplify evaluation and management of constipated patients. *Dis Colon Rectum* 1996; 39:681-685.