Manual vs stapled excision of rectal mucosal prolapse: clinical and functional results

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Riassunto

CONFRONTO TRA MUCOSECTOMIA RETTALE MANUALE E CON STAPLER: RISULTATI CLINICI E FUNZIONALI

Il prolasso mucoso del retto è una causa rilevante di ostruita defecazione. Nei casi resistenti al trattamento conservativo, può essere indicata la prolassectomia. Recentemente è stata introdotta la tecnica della prolassectomia con suturatrice meccanica e quest'ultima può rappresentare una valida alternativa alla più difficoltosa prolassectomia manuale. In questo studio abbiamo confrontato due gruppi di pazienti consecutivi e non selezionati, sottoposti a prolassectomia manuale (Gruppo M, N=12) oppure con suturatrice meccanica (Gruppo S, N=12). Abbiamo valutato sintomatologia clinica, gradazione del prolasso, manometria anorettale, sensibilità rettali preoperatoriamente e dopo un follow-up mediano di 28 mesi (intervallo 4-120 mesi). Abbiamo riportato due complicanze postoperatorie maggiori, una in ciascun gruppo (sepsi pelvica gruppo M e sanguinamento gruppo S). Non abbiamo riscontrato differenze nei due gruppi in merito al punteggio del dolore postoperatorio né relativamente al consumo di analgesici. Al controllo postoperatorio, 67% dei pazienti del gruppo M e 80% dei pazienti del gruppo S si dichiaravano soddisfatti dei risultati raggiunti dal trattamento chirurgico. In particolare, in entrambi i gruppi il numero di defecazioni settimanali risultò aumentato fino ad un ritmo quotidiano (gruppo M pre 2.5±1.8, post 5.8±2.7; gruppo S pre 3.2±2.6 post 6.9±4.2: $p<0.05$). Sintomi come sforzo alla defecazione ed autodigitazioni si dimostrarono migliorati (p=ns). Il 40% dei pazienti riferiva il ricorso ai lassativi. Alla manometria anorettale, nel gruppo S abbiamo osservato una lieve, non significativa riduzione della contrazione volontaria postoperatoria. Al test della sensibilità e capacità rettale, abbiamo riscontrato una riduzione del massimo volume tollerabile postoperatorio nel gruppo M (pre 181.5±9.5 post 111.4±8 ml/aria: $p<0.05$). Non abbiamo osservato differenze nel gruppo S a tale riguardo. La resezione manuale o meccanica del prolasso mucoso, sono entrambe efficaci nel rimuovere il difetto anatomico migliorando la sintomatologia dell'ostruita defecazione a breve termine. Dai nostri risultati inoltre, si può desumere che la resezione con suturatrice meccanica non altera i volumi della sensibilità e capacità rettali. Ulteriori studi sono necessari per chiarire possibili conseguenze della prolassectomia meccanica sullo sfintere anale.

Parole chiave: Prolasso mucoso rettale, trattamento chirurgico, prolassectomia meccanica.

Introduction

Rectal internal mucosal prolapse (RIMP) is one of the most frequent causes of obstructed defecation, sometimes associated to other symptoms such as tenesmus, mucus discharge, bleeding (8). Not rarely ischaemic changes in prolapsed mucosa may end up in ulcerations and polyps, as reported in the solitary rectal ulcer syndrome (1, 2, 13).
Standard treatment includes high fiber diet, bulk laxatives, hydrocortisone enemas. In case of prolapsed mucosa, causing distressing symptoms, surgical excision may be indicated (6). However, the manual excision of the redundant mucosa is not an easy procedure. The operation may be technically difficult, bleeding can occur, it involves prolonged sphincter stretch and is tedious and time consuming. Recently the circular stapler has been introduced with promising results in the surgical treatment of hemorrhoids and RIMP (5, 9).
The aim of this retrospective study was to compare manual and stapled excision of RIMP with particular attention to postoperative pain, functional results and patients' satisfaction.

Materials and Methods

Patients

We investigated 24 consecutive patients who had transanal rectal prolapsectomy in our unit between January 1992 and December 2000, 12 in the manual excision group (M) and 12 in the stapled excision group (S).

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Tab. I A – DEMOGRAPHIC FEATURES OF PATIENTS INVESTIGATED

	Manual	*Stapler*
No.	12	12
Median Age (yr)	44	49
Age range(yr)	36-80	29-60
M/F	4/8	4/8

Tab. I B – PREOPERATIVE CLINICAL PATTERN

	Manual (%)	*Stapler (%)*
Bowel opening per week (mean±sd)	2.5±1.8	3.2±1.6
Straining	11 (91.6)	11 (91.6)
Use of laxatives	12 (100)	12 (100)
Self digitations	8 (66.6)	9 (75)
Incomplete evacuation	10 (83.3)	11 (91.6)

Tab. II – GRADING* OF RECTAL INTERNAL MUCOSAL PROLAPSE OF THE PATIENTS PRIOR TO SURGERY

	Manual	*Stapler*
Grade I	2 pts	0 pts
Grade II	6 "	9 "
Grade III	4 "	3 "

*grading according to a method previously described (10)
grade I: prolapse below the anorectal ring
grade II: prolapse reaching the dentate line
grade III: prolapse reaching the anal verge on straining

Both groups were comparable with regard to age, sex, symptoms and associated diseases. Patients' demographics and characteristics are summarised in Tab. I A-B. A standard course of 3 months of conservative treatment with bulk laxatives and high residue diet had resulted unsatisfactory in all cases. Four patients in M group and 3 in S group showed a solitary rectal ulcer syndrome at rectal biopsy.

Pre - operative investigations
The degree of prolapse was evaluated at proctoscopy according to a previously described grading (10) (Tab. II). Anorectal manometry was performed in the left lateral position with a 4 channel, open tip, perfused catheter (Arndorfer Inc., Greenvale WI, USA) connected to polygraph software (Synectics Medical Inc., Irving TX, USA) via pressure transducer. Basal resting tone (mmHg) and maximal squeeze pressure (mmHg) were recorded. Volumes of rectal sensitivity test (in ml/air) were obtained by means of a latex balloon mounted on a tiny tube and filled with air. Onset of feeling, call for stool, and maximal tolerable volume were recorded.

Operative Technique
Patients underwent surgery in lithotomy position, after mechanical bowel preparation and antibiotic prophylaxis, either in spinal or general anesthesia. In the M group, rectal access was obtained transanally with either an Eisenhammer or a Fansler rectal speculum. A Lone-Star retractor (Lone Star Medical Products, Houston, Texas, USA) was used in the last 10 cases. All patients were operated on by the senior author. The redundant mucosa was grasped gently with Babcock clamps and infiltrated with adrenaline diluted in Saline (1:250000). Excision of the prolapsed mucosa was performed starting from the dentate line by either sharp dissection or diathermy carefully sparing the smooth muscle fibers. Recto-anal anastomosis was performed with interrupted 3-0 slowly absorbable sutures. The mucosa excision involved an area of at least 3 x 5 cm of the antero-lateral rectal surface. In the S group, the operation was performed according to a described method (9), using a circular stapler. Depending upon the size of the prolapse, one to two 0-prolene purse-string sutures were placed circumferentially through the rectal mucosa. In case of thin anterior rectal muscle and deficient recto-vaginal septum, or hysterectomized patients with prolapsed Douglas pouch and peritoneo-enterocele, a sub-mucosa injection of saline prevented the entrapment of the Douglas pouch and the vagina in the stapler's jaw, as previously reported (11). If concomitant anal pathology was found, it was treated if clinically indicated; this was done in 40% of the patients in each group, predominantly skin tags excision (3 pts), fistulotomy (1 pt), single hemorrhoid excision (1 pt).
Postoperative care included analgesic administration (Ketorolac 30 mg t.i.d. given intramuscularly) for 36-48 hours, a bulk laxative administered the day after the operation and early discharge, usually within 72 hours. Pain evaluation was performed by using the 1 to 10 visual analogical scale (VAS) administered twice between 12-36 hrs post-operatively.

Follow - up
All patients were evaluated after a period ranging from 4 to 120 months (median 28 months). The protocol included questionnaire, physical examination and proctoscopy after 1 month and then every year. Anorectal manometry was performed after two months.

Statistics
Values were expressed as mean ± standard deviation of the mean. Student' t test and Wilcoxon's non parametric Rank Sum test were used for statistical comparison. Statistical significance was set at a p value < 0.05.

Results

Postoperative mortality was nil. Two major post-operative complications occurred, one in each group: a pelvic sepsis developed in a patient after M excision, requiring drainage and loop sigmoidostomy, closed after two months; a profuse bleeding occurred in one patient taking aspirin of the S group requiring transfusion of 4 units of blood. Both patients are symptoms-free and in good general health after two and four years, respectively.

When interviewed, 8 or 67% of the patients in the M group declared to be satisfied with the results of operation compared to 10 or 80% in the S group (p = n.s.). In particular, they stated that their expectation regarding postoperative course and clinical results were met. The comparison of the mean values of postoperative VAS score showed no differences between the two groups (Fig. 1). As far as symptoms resolution is concerned, we observed a striking improvement in both groups (11/12 M group, 12/12 S group) postoperatively. The number of bowel opening per week in both groups significantly changed nearly to a daily frequency ($p < 0.05$) (Tab. III). Other symptoms such as straining, self-digitations, and incomplete evacuation were also ameliorated (p = n.s.). However 5 pts or 40% in M group and 4 pts or 33% in S group reported frequent use of laxatives.

As far as anorectal physiology studies were concerned, no differences were found between the two groups with regard to both resting tone and squeeze pressure. A slight reduction of postoperative squeeze pressure was observed in S group, compared to preoperative, without reaching statistical significance. Comparison of volumes of rectal sensitivity test showed a statistically significant reduction of postoperative maximal tolerable volume in the M group compared to the preoperative values. No differences were found in the S group in this respect (Tab. IV). All other comparisons were not significant.

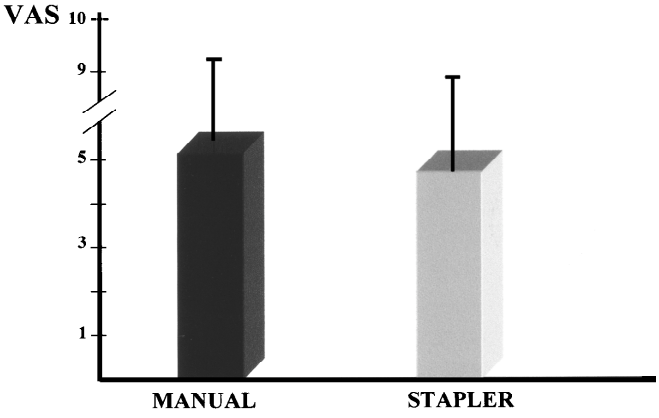

Fig. 1: Comparison of the postoperative VAS score in the two groups of patients under investigation (p = N.S.).

Tab. III – CLINICAL RESULTS AFTER THE OPERATION IN THE TWO GROUPS OF PATIENTS INVESTIGATED

	Manual (%)	*Stapler (%)*
Straining	5 (41.6)	5 (41.6)
Use of laxatives	5 (41.6)	4 (33.3)
Constipation improved or relieved	11 (91.6)	12 (100)
Bowel opening per week (mean ±sd)	5.8±1.7 *	6.9±0.2*

*p < 0.05 compared with preoperative value (see Tab. I)

Discussion

The presence of a symptomatic RIMP involves a series of clinical problems. Usually medical treatment with biofeedback in case of an associated non-relaxing puborectalis, achieves a good percentage of success. However in case with persistence of invalidating obstructive defecation, surgical excision may be required. This varies in literature from 29 percent (14) to 45 percent (10).

The surgical approach may be challenging, as manual excision of a RIMP may be a difficult operation requiring a certain skill. In addition the operation is time consuming and may involve a prolonged sphincter stretch and blood loss.

Recently, the technique of stapled excision has been successfully used to manage RIMP. This alternative technique seems easier to perform especially with the newly developed, dedicated Kit (PPH, Ethicon Endosurgery, Pratica di Mare, Rome, Italy). Our results seem to suggest that, on a short term, both procedures are equally effective in terms of relief of symptoms related to outlet obstruction with no relevant differences in the incidence of postoperative complications, postoperative pain, and prolapse recurrence. Stapled excision of haemorrhoids is claimed to be less painful than conventional haemorrhoidectomy (7, 12). In our study however, postoperative pain was not a major end-point since manual excision of RIMP bears undoubtedly less pain than haemorrhoidectomy as the suture line is above the sensitive epithelium of the anal canal. The relatively high values of the pain score observed in our patients of both groups however may be explained by the fact that 40% of the patients in each group had an associated anal procedure possibly responsible for the increased pain.

Eight patients showed a 1st or 2nd degree recurrent RIMP at proctoscopy (4 each group) but none of them reported recurrence of symptoms thus confirming that an anatomical lesion does not necessarily trigger a clinical disturbance (10). Those patients showed predominantly a low defecation threshold (< 60 ml/air) and were aged, multiparous females, thus suggesting that factors responsible for straining other than RIMP were still present. No difference was found at anorectal physiology studies,

Tab. IV – COMPARISON BETWEEN PREOPERATIVE AND POSTOPERATIVE VALUES OF ANORECTAL MANOMETRY

	Manual		*Stapler*	
	PRE	*POST*	*PRE*	*POST*
Resting tone	52.7±13.9	60.2±18 .1	73.4±14.2	61.6±18.2
Squeeze press. (mmHg)	100.7±9.7	100.5±14.6	109.4±10	74.6±14.3
OS	27.5±8	27.1±6	37±9.1	30.5±8
CFS	86.2±18.4	51.4±8	62.4±18	69.1±10.3
MTV (ml/air)	181.5±9.5	111.4±8*	146.6±8	143±10

*$p < 0.05$ compared to preoperative value
All other comparison were not significant

OS: onset of stimulus - CFS: call for stool - MTV: maximum tolerable volume

apart from a slight reduction of postoperative squeeze pressures in the S group, without statistical significance. This finding may be in accordance with recent concerns raised about overstretching of the anal sphincter during proctologic surgery and in particular by the 36 mm in diameter, standard anoscope of the PPH Kit (5). Our policy in the use of anal retractors during trans-anal surgery is to avoid overstretching and use of gentle anal retractors such as Lone Star, Eisenhammer or Fansler, which can be modulated to sphincter tone according to preoperative manometry or other patient's risk factors for incontinence (i.e. sex, age, parity, previous anal surgery). Although our data do not enable us to draw valid conclusions, they are certainly in accordance with an emerging problem in proctologic surgery. This point therefore deserves further investigation and perhaps the development of a range of various size disposable anal proctoscopes to be used with the stapler.

Interestingly, the postoperative values of maximal tolerable volume were significantly reduced in the M group compared with the preoperative values, whereas this parameter resulted unchanged in the S group. This may be an important finding since a reduced rectal capacity might be a factor responsible for persistence of tenesmus or fractionated defecation, which may cause straining and RIMP recurrence in the long term. Further follow-up studies might contribute to clarify this point. A possible explanation may be that manual excision of a large area of mucosa, makes suturing sometime problematic, causing tension, suture line dehiscence and eventually rectal scarring and stricture. Conversely, a mechanical excision-anastomosis may ensure a limited and symmetric excision of rectal mucosa with a safe anastomosis.

Overall, a very high rate of either improvement or resolution of patient's symptoms was achieved with both operations (up to 100% in the S group). Nevertheless, 33 per cent in the M and 20 per cent in the S group complained of unsatisfactory results compared to their expectations. In this type of "functional" surgery, this might be a crucial point, also considering that psychological disturbances are often the basis of abnormal toilet behaviour (3, 4). Therefore RIMP might represent only the "tip of the iceberg" of more complex functional disturbances (10).

In conclusion, both manual and stapled excision of RIMP may be helpful in the management of outlet obstruction. In addition our results seem to suggest that stapled excision does not alter the volumes of rectal sensitivity test when compared to manual excision. In spite of this, further studies are needed to confirm our data at longer follow-up, with particular attention to possible consequences on anal sphincters by the use of the standard 35 mm diameter PPH anoscope.

Finally, the complex clinical picture of outlet obstruction requires a deep screening by an expert coloproctologist, in order to avoid the risk of leaving unrecognised underlying anatomical, functional and psychological disorders, which may be responsible for either a persistency or a recurrence of symptoms.

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