Obstructed Defecation Syndrome does the Starr Procedure Take Place? Technical and Functional Facts

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Received: December 02, 2019
Published: December 16, 2019

Summary

Background: constipation due to bowel obstruction in the outflow tract aims to correct the anatomy and functionality of the pelvic floor in the posterior side. Among several approaches, the STARR technique (Stapled Trans Anal Rectocele Resection) has valid foundations in order to solve them.

Objectives: to communicate the experience with the technique in a center of Argentina and analyze its feasibility, results and review the current evidence.

Design: prospective and consecutive

Materials and Methods: between January 2009 and January 2019 Starr was used in 30 patients diagnosed with constipation due to bowel obstruction in the outflow tract –Obstructed defecation syndrome - (ODS) caused by rectocele with or without rectoanal intussusception. We analyse the demographic variables, indications, technique, morbidity rate and functional results.

Results: 100% of the people who had surgery were women. The average age in all the procedures was about 58.5 years old. The technique was performed as ambulatory surgery in the 6% percent of the cases. The global index of complications was of 30% percent, which was grouped according to the Dindo-Clavien classification. Severe complications or morbidity weren’t registered. 30% percent of the patients presented recurrence of the symptoms after more than six months follow up, eventhough all of them solved through fingering or manoeuvre in order to empty the bowels and improved the quality of life.

Conclusion: Starr technique is and effective and safe procedure for the treatment of constipation due to ODS. It could be carried out as outpatient basis. The correct indication and experience in the handling of mechanical sutures are essential. The recurrence of symptoms is probably associated with functional and neuromuscular disorders developped by the patients.

Keywords: Constipation; obstructed defecation syndrome; surgery; starr

Background

Among the types of constipation, patients with Obstructed Defecation Syndrome (ODS) represent a subgroup with serius deterioration of quality of life, to whom we can offer surgical correction of the anatomical alterations which determine their symptoms. The challenge is complex, since it is important to achieve the improvement of the functionality in the bowel mechanism which is affected under these circumstances. For the ODS determined by a previous rectocele, associated (or not) to a rectoanal intussusception, there are various approaches which are described, with variable acceptance and uncertain long- term results. Among the resection techniques, the procedure called Stapled Transanal Rectal Resection (STARR) was proposed in the early 2000’s by the doctor Antonio Longo with interesting arguments on its favor [1]. The purpose of this communication is to present our experience with the approach, analyze its feasibility and results in our place, revising the national and international evidence.

Material and Methods

We carried out a consecutive longitudinal analysis of data uploaded on a prospective database of the procedures done with...
STARR. We recorded the demographic variables, indications and short – and long terms morbidity.

The data was uploaded prospectively on a computerized database (Excel). The results are expressed in averages and percentages. For this approach we selected patients with constipation for obstruction of the outflow tract caused by previous rectocele with or without rectoanal intussusception evidenced with physical exam, colonic transit, video defecography (VDFG) or dynamic resonance of the pelvic floor (RMNDPP) with significant effect on the life quality and did not improve with hygiene and dietetic measures and / or Biofeedback. One diameter of rectocele greater than or equal to 4 cm in VDFG or 2.5 cm in RMNDPP and that it didn’t empty completely during the bidding process was considered pathological. In order to evaluate the symptoms and the alteration of the life quality, the patients completed a modified questionnaire of the ODSSS index of the Italian Society of Colon and Rectal Surgery, which was answered by the patients before the surgery and after one month of postoperative period [2]. All the procedures were carried out by the same colorectal surgeon with experience in hemorrhoidopexy with mechanical suture. During the preoperative period, a cleansing of the rectum with phosphates and antibiotic prophylaxis enemas in the anesthetic induction (ciprofloxacin 200 mg + metronidazole 500 mg) was done.

### Surgical technique

All the patients underwent surgery in gynecologic position with spinal anesthesia. The anoscope of the hemorrhoidopexy set was inserted. First, we proceeded in anterior side, doing points of suture separated in X with Prolene suture 2/0 with SH Needle ® (Ethicon inc.) in the rectocele vertex (12 hour) and at the ends (9 hour and 3 hour) including mucosa, submucosa and muscular of the rectum. Afterwards, a shot of stapler designed for hemorrhoidopexy was done, with previous protection of the posterior side with ductil valve. Once the device was removed, hemostasis at the end of the suture line was found, performing hemostasis systematically, with resorbable material (Figures 1,2,3 & 4). Once the forward face was finished, it was proceeded in the same way with the posterior side, placing the stitches in hours 6,9 y 3 at the same level than the previous side (Figures 5,6,7,8 & 9). During the immediate postoperative period, continuous intravenous analgesia with Diclofenac + Hydrocortisone was supplied. Once the anesthesia wore off, active movement was indicated. At the moment of the medical discharge, analgesia with AINES and opioid booster as demanded, were prescribed. The postoperative complications were recorded according to the Dindo and Clavien Classification (2004) [3]. The medical checks were made after 10 days, 1 month and every six months postoperative with medical interrogation and proctological examinations.

![Figure 1: Performing hemostasis systematically, with resorbable material.](image_url)
Figure 2: Performing hemostasis systematically, with resorbable material.

Figure 3: Performing hemostasis systematically, with resorbable material.

Figure 4: Performing hemostasis systematically, with resorbable material.
Figure 5: Placing the stitches in hours 6, 9 y 3 at the same level than the previous side.

Figure 6: Placing the stitches in hours 6, 9 y 3 at the same level than the previous side.

Figure 7: Placing the stitches in hours 6, 9 y 3 at the same level than the previous side.
Results

Between January 2009 to January 2019, 30 women underwent surgery with STARR procedure for constipation for ODS caused by Rectocele with or without rectoanal intussusception. All the patients that were operated were women. The average age was 58.5 years old (age range 26-76). Functionally, the patients presented a ODS Score greater or equal to 12 during the preoperative period in addition to the various symptoms of ODS (excessive bowel effort, emptying of the bowel in stages, feeling of incomplete bowel emptying, rectal bleeding, dyspareunia, recurrent urinary tract infections) all of them referred vaginal, anal or perineal fingering to complete the faeces evacuation. 29 surgeries were done with PPH 03® (Ethicon inc.) device, which represents 96.6% of our serie; 1 with PPH 03® (Ethicon inc) devices 3.4%. The average operative time was of 40 minutes in 28 patients (93.4%) to whom only STARR was done, in 2 patients (6.6%) two simultaneous procedures were done in the pelvis, alongside with the Gynecology team prolonging the surgery. 28 patients (93.4 %) stayed hospitalized 24 hours. The last 2 cases of the series were operated under outpatient surgery regimen (6.6%). The global index of complications was of 26.6%, that have been grouped according to Dindo-Clavien (Table 1).

Table 1: Morbidity.

<table>
<thead>
<tr>
<th>Dindo -Clavien</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I: Pushing/tenesmus / urgent bowel movement: 7</td>
<td>23.3%</td>
</tr>
<tr>
<td>II: Pain with re-hospitalization 1</td>
<td>3.3%</td>
</tr>
<tr>
<td>Illa: 0</td>
<td>0%</td>
</tr>
<tr>
<td>IV: 0</td>
<td>0%</td>
</tr>
<tr>
<td>V: 0</td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL: 8</td>
<td>26%</td>
</tr>
</tbody>
</table>
In respect of early results, the improvement in the index of ODSS was significant: from an average of 26/37 (range 33 to 19) to 5/37 range 12 to 1) one month after the surgery. The distant monitoring was on an average of 96 months (range 6-120). 8 patients (30%) had recurrence of some symptom of ODS after 12 months of monitoring, primarily excessive bowel effort, even though all of them solved it with fingering or manual maneuvers in order to empty the bowel and improved their life quality. 3 patients (10%) passed away (for causes not related to the surgery) and in 2 patients (6,6%) a PPH procedure was done, both due to a mucosal hemorrhoidal prolapse grade IV with bleeding. We didn’t carry out another anal, perianal or abdominal surgery to treat ODS in the rest of the patients Table 2. The satisfaction rate of the patients with the procedure was higher than 80% and 90% (27 patients) would recommend the approach or would undergo surgery again.

### Table 2: Some Published Series.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Magazine</th>
<th>N°</th>
<th>Level Of Evidence</th>
<th>Follow up</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boccasanta P, Venturi M [6]</td>
<td>2004</td>
<td>DCR</td>
<td>90</td>
<td>Prospective multi-center to evaluate the safety and effectiveness of the procedure.</td>
<td>16 months</td>
<td>Early: 10% Late: 6%</td>
</tr>
<tr>
<td>Arroyo A, Perez – Vicente F [7]</td>
<td>2007</td>
<td>J Am Coll Surg</td>
<td>37</td>
<td>Prospective to evaluate safety and effectiveness of the procedure, comparing PPH 01 and PPH 03 *Outpatient basis</td>
<td>24 months (range 12-60)</td>
<td>Early: 2.7% Late: 34% urgencies 2.7% relapse 2.7% stenosis 5.4% hemorrhoids</td>
</tr>
<tr>
<td>Jayne DG, Schwadner O [8]</td>
<td>2009</td>
<td>DCR</td>
<td>2838</td>
<td>Prospective multi-center no randomized to evaluate STARR results.</td>
<td>12 months</td>
<td>Overall: 36% (2 severe) No relapse- report Early: 9%</td>
</tr>
<tr>
<td>Reboa G, Gipponi M [9]</td>
<td>2009</td>
<td>DCR</td>
<td>33</td>
<td>Prospective to evaluate functional and complications of STARR</td>
<td>18 months (range 10-36)</td>
<td>They did not communicate late complications or relapse 15.2% &quot;poor functional result&quot;</td>
</tr>
<tr>
<td>Rosato G, Piccinini P [10]</td>
<td>2009</td>
<td>Rev. Argent. Coloproct.</td>
<td>24</td>
<td>Prospective no randomized to evaluate results of STARR.</td>
<td>9 months (range 1-14)</td>
<td>33% Urgency 9.5% Fragmented bowel movement No relapse- report</td>
</tr>
</tbody>
</table>

## Discussion

With the increase in life expectancy over the last decades, anatomical and functional colorectal conditions take an important place during medical consultations, most probably sub recorded due to cultural issues (embarrassment, disinformation or habit-forming). Since they affect the patients’ life quality considerably, it is crucial to be able to offer them the appropriate treatment that relieves them and provides an acceptable relational life. Constipation for Obstructed Defecation Syndrome usually represents a multifactorial entity and is estimated that affects between 15% to 20% of adult women [4,7-9]. The comprehension of the anatomical and functional defects that brings this kind of constipation has led us to propose STARR as a valid alternative to improve it and functional defects that brings this kind of constipation has led us to propose STARR as a valid alternative to improve it when it is caused by large rectocele, associated or not to recto anal intussusception. Noting that stapled hemorrhoidopexy also when it is caused by large rectocele, associated or not to recto anal intussusception. Noting that stapled hemorrhoidopexy also corrects small rectoceles and improves significantly the symptoms of OTS, Antonio Longo carried out cadaverous and dynamic studies (VDFG and Endoanal ultrasound- test), in conclusion, the distal prolapse of the rectum is the cause of OTS. Initially compensated by physiological mechanisms, various modifications became permanent and determine severe effect on life quality. Based on this finding, proposes that circumferential resection of rectal prolapse could be considered as an effective and rational treatment for the OTS. However, notes that possible neuromuscular injuries, that were found are irreversible and cannot be corrected with surgery [1].

From this description, controlled studies were undertaken in order to evaluate its feasibility and efficacy. Regadas and Col. [5] performed three-dimensional Endoanal ultrasound and manometry on women with or without rectocele in order to compare the anatomy of the anal canal and the anorectal ring in both of them. Their findings showed that the rectocele begins in the superior anal canal and then involves the rectum; and that the herniation of the rectum caused by excessive and prolonged strain could explain the origin of the rectocele; and that the vaginal delivery doesn’t seem to have a roll in its pathogenesis (except...
in the case of big obstetric traumas) and that rectal herniation could be promoted by excessive intra-anal pressures resulting in intussusception and rectocele and could be aggravated by elevated intrabdominal pressures. These anatomophysiological foundations set out the bases of the respective technique. In terms of its feasibility and results, Boccastanta et al. [6] published the results of a prospective multicenter study, designed to evaluate the safety and the results of the technique, the average follow-up of 16 months. They operated 90 patients (87 women) 10% of early complications were reported approximately and 6% of late complications (urgent bowel movement, gases incontinence and stenosis) there were no mortalities, or pelvic sepsis. They concluded that the method is safe and effective, with acceptable complication rate and the solving of the symptomatology; make us aware of the need of skilled surgeons and the correct patient selection.

Arroyo et al. [7] studied the safety and efficacy of the procedure and comparing the use of the two devices for stapled hemorrhoidopexy (PPH 01® and PPH 03®). It is worth noting that all the surgeries were performed on an outpatient basis. Low early complications rate and distanced were reported with an average follow-up of 24 months, reporting 1 patient with rectocele relapse (2.7%). They said that STARR is safe and effective as an alternative for constipation caused by OTS treatment and recommend the use of the PPH 03® device in order to reduce the risk of post-operative bleeding.

At 2009 Jayne et al. [8] present the results of the European Register of STARR, designed with the aim of evaluating its safety and results throughout 12 months of follow-up. Great Britain, Italy and Germany are included. Although with different evaluative methods in respect of life quality and functionality, they collected 2838 surgery patients, 83% women. Having an overall complications rate of 36%, mainly emergency, persistent pain, bleeding and urinary retention, with 2 cases of severe complications, with no mortality. They show a clear improvement of the symptoms of OTS that remain during the year of the follow-up. There are no pathology or symptoms relapse reported. They present the procedure as safe and effective, highlighting the points concerning the experience of the surgeon and the correct patient selection. Likewise, other studies proved acceptable short-term results [9]. In Argentina, Rosato-Piccinii [10] and our working group [11] evaluated its feasibility and immediately results with similar patients’ samples. It was proved that technically is possible to perform it with acceptable morbidity, emphasizing on the careful selection of the candidates and the need of training in the handling of the pelvic floor and mechanical sutures. Coincidently, we reported some cases treated in cooperation with urologists and gynecologists, without consider them as a contraindication to the method.

The technique is safe, feasible and reproducible, and could be offered as an option to selected patients. The questioning continued in terms of long-term functional results, and the cost of the procedure. Providing a retrospective analysis of 450 cases submitted to surgery in 10 years, with a follow up in period of at least 5 years Guttaudaro A et al. [12] refers to the urgent emptying of the bowels as the mainly early complication (27,8%) and 6 patients (1,3%) with rectal perforation subjected to treatment, with no mortality due to the method. Functionally, a significant reduction of symptoms is evidenced, which remains on average 6 after 5 years, and doesn’t register relapse of prolapse or rectocele.

Once again, this working group insists in the correct selection of patients and the surgical team’s experience, considering the severe complications only relative to the first phase of diffusion of the technique. The first study with 10 years of follow-up was published in 2017 by Di Visconti et al. [4]. It is about a retrospective analysis of a retrospective data base about 74 consecutive patients subjected to surgery with STARR between 2005-2006; severe complications weren’t registered, 60 of these patients completed the follow-up to 10 years, where the recurrence of OTS was defined as the onset of symptoms that affects the patient with rectocele +/- Intussusception confirmed with VDGF. No patients presented recurrence of symptoms during the first year of follow up. After 10 years 24 patients (40%) had recurrence of symptoms, 12 patients agreed to be subjected to clinical examination, VDGF and manometry. 11 of them were subjected to a new procedure (Laparoscopic rectopexy with ventral mesh, conventional abdominal approach with promontopexy, posterior colorhaphy and ventral rectopexy with mesh + STARR in one patient). In 10 years, 35% of the patients were satisfied with the surgery and 28% would recommend the operation, while 21% wouldn’t choose the technique basically because of the urgent emptying of the bowels and the pain they suffered from. The authors point out as predictive factors of recurrence: female sex, previous urogynecology surgery, previous anorectal surgery and high rates of the ODSS questionnaire. They concluded that STARR determines a significant improvement of symptoms at short-term, being less effective in the long-term, that the possibility of relapse should be raised to the patient, especially to those who have the predictive factors.

In another analysis of the functional results, Giarratano et al. [13] report a short operative time, with no mortality and 23% of morbidity over 262 surgery patients. In an average of 79 months of follow-up, 85% of the patients remain without OTS symptoms, with 86% of satisfaction, with no Dyspareunia. 10 patients experienced recurrence, with 3 re-operative surgery (ventral rectopexy). Our study has some limitations. It is a single center experience an observational study. At limited number of the sample, we could add the fact that we didn’t count with anorectal manometry during the evaluation and the follow up; we exclude animus or paradoxical contraction through physical exam and images, although subjected to the experience deficiencies. Neither we documented with studies the post-operatives results. We believe however that the solving of the symptoms, the satisfaction index achieved, and the fact of improving the relational and life quality and of the patients represent a relevant fact of the contribution.

Conclusion

We considered the STARR technique as safe and effective, presented as an alternative that the specialist could offer to the difficulty in the emptying of bowel cause by rectocele with or without intussusception that does not respond to a medical treatment. It requires experience in the handling of mechanical
sutures in orifice pathology and presents good functional results at short term. It has clear anatomical and functional foundations. The accurate indication and selection of patients seems to increase its efficiency. In the long-term an average of patients could have relapse of symptoms and that situation should be raised to the patients before the surgical intervention.

References


DOI: 10.32474/SCSOAJ.2019.04.000180