Title

Operative vs non-operative management of outlet obstruction

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Abstract

This chapter reviews operative and non-operative management of outlet obstruction in patients with internal rectal intussusception. It highlights and summarizes key studies found in a comprehensive literature search on the subject and provides actionable recommendations for practitioners in colon and rectal surgery.

Keywords

Internal rectal intussusception. Internal rectal prolapse. Outlet obstruction. Obstructed defecation. Ventral mesh rectopexy. Rectoanal prolapse. Rectorectal prolapse.

Introduction

As with many issues in pelvic floor, the management of outlet obstruction is hotly contested. With such a broad umbrella term as outlet obstruction, we will focus on management of internal intussusception in of the rectum in patients with obstructive symptoms for this chapter. There is much debate over whether these patients benefit from intervention, as 20-50% of patients on defecography have asymptomatic internal intussusception, with relatively few (around 2%) going on to develop full-thickness rectal prolapse (1–3). Difficulty with correlating degree of intussusception to obstructed symptoms has also been found, with increasing grades of internal rectal intussusception not found to correlate with symptoms of constipation (4). Conversely, patients with radiographically noted internal intussusception are often symptomatic and have an intussusception morphology that differs from that found in asymptomatic volunteers (5). With such uncertainty, it is unsurprising that a wide range of treatment options for these patients have emerged, ranging from medical therapy alone, to biofeedback and a number of operative interventions.

Search Strategy

A comprehensive literature search of PubMed, Google Scholar and the Cochrane Database of Collected Research was performed to identify all English-language publications from 1990 to 2022 related to outlet obstruction and internal rectal intussusception was performed. Search terms included “rectal intussusception,” “rectal outlet obstruction,” “outlet obstruction,” “internal rectal prolapse,” and “obstructed defecation.” Studies were excluded if they looked at exclusively external rectal prolapse, lacked adequate follow-up, or looked at outcomes of patients with solely fecal incontinence and outlet obstruction. If a group published similar studies on the same patient cohort, only the most recent study was included. In additional to the systematic literature search, references included in the reviewed papers were additionally searched to find relevant papers.

Results

Over the past three decades, numerous papers have been published on the topic of internal rectal intussusception and outlet obstruction. The vast majority involve a low number of patients, with inconsistent definitions of what determines a patient to be symptomatic. There have been few randomized trials and limited follow-up in all studies. Furthermore, many studies have poor methodology with limited use of validated quality of life metrics and limited initial screening of patients to determine if the intussusception is the etiology for their symptoms. This has led a paucity of high-quality data to drive clinical decisions. This lack of data is found foremost in studies that examine the first-line treatment for these patients: non-operative therapy. Little to no studies look at medical management alone in this precise patient population, as most study patients with obstructive symptoms who do not necessarily have internal rectal intussusception. There have been a few studies looking at biofeedback, such as Hwang *et al.*’s paper that, in a retrospective fashion, found 27 patients with internal rectal intussusception with constipation who had completed at least two biofeedback sessions. Patients were found to have an improvement in objective measures such as an increase in weekly bowel movements (from 2 to 4.1 and decrease in weekly assisted bowel movements (3.8 to 1.5) (6). A similar study from Mimura *et. al* looked at 32 women, 38% of who had internal intussusception, with a median follow-up on 10 months after biofeedback sessions. 12% (3 of 25) of patients had resolution of symptoms, with those who still had symptoms, 56% subjectively reporting a small improvement in symptoms and 16% with “a lot” of symptom improvement (7).

The Delorme procedure is an older technique for treatment of internal rectal intussusception with outlet obstruction. Berman published his group’s experience in 1990 with the Delorme treating 21 women with three-year follow-up. They found that at three years, 15 of 21 patients (71%) had the majority of their symptoms relieved, with six still having constipation or pressure on defecation (8). Liberman *et al.* had a similar study in 2000, where they followed 34 patients with evaluation of subjective symptoms, such as incomplete evacuation, with 76% of patients reporting good symptom relief. There was no statement as to the length of follow-up in the study (9). Ganio published the largest cohort, looking at 167 patients from 2001 to 2009 who had obstructed defecation and rectal intussusception. It was a more structured study, using the Cleveland Clinic Constipation Score (CCCS), Obstructed Defecation Syndrome Score (ODS-S), and the Patient Assessment of Constipation Quality of Life (PAC-QoL) questionnaire. Of the patients with obstructed defecation, their CCCS and ODS-S decreased from 12.1 to 4.2 and 11.9 to 4.4 respectively ($p < 0.001$). Over 48 of these 167 patients had a greater than 4 years of follow-up (10).

Stapled trans-anal rectal resection (STARR) is another perineal approach that addresses internal rectal intussusception, through a full-thickness resection of rectal tissue (11). Lehur published a multi-center randomized trial comparing STARR versus 3 months of biofeedback training in patients from 2004-2005. Pre-operatively, the patients had to have an ODS-S of at least 7 to enter the trial with intussusception seen on defecography and were followed for 12 months. 50% of the patients in the biofeedback arm withdrew early. For those patients who stayed in the trial, 31 patients had STARR and 19 biofeedback. The Baseline ODS-S went from 16.1 to 4.7 at 12 months in the STARR patients and 14.2 to 10.9 in the biofeedback patients, with a decrease in ODS-S of more than 50% in 81.5% of the STARR patients versus 33% of the biofeedback patients (12). There have been many additional papers published since STARR's introduction, with a meta-analysis from 2014 looking at 26 publications with a median follow-up on 12 months encompassing 1298 patients. In aggregate, the studies showed an improvement in ODS-S with a decrease by 3.8 (95% CI 3.2-4.5), however, there was a high degree of heterogeneity from the studies suggesting an over-estimation of the improvement (13). Later publications on the procedure have published on the adverse complications from STARR, including rectovaginal fistulas, accidental rectal closure, and pelvic necrotizing fasciitis (14–16). Beyond severe complications, longer-term results for STARR have not been durable, as seen in one study where STARR patients' ODS scores, after an initial drop, doubled in-between their 18 and 42 months post-operative evaluation (17).

Abdominal approaches have also been described in the literature to treat internal rectal intussusception. Von Papen published a retrospective review of patients with internal intussusception with obstructed defecation who failed medical and biofeedback treatment for six months who underwent laparoscopic resection with posterior suture rectopexy. Of the 56 patients, follow-up showed that 63% felt their function improved with 53% better constipation (18). The study was limited by only a three-to-six-month follow-up. The majority of abdominal approach studies over the past two decades have examined the role of using laparoscopic ventral mesh rectopexy (19–21). Retrospective short-term follow-up studies have shown a general improvement in functional scores such as the CCCS or the Wexner Constipation Score (WCS) (19,21). The largest patient cohort comes from a study Consten *et al.* published in 2015 on a prospectively maintained database of 919 patients who had undergone laparoscopic ventral mesh rectopexy. Of these patients, 677 had internal rectal intussusception. Of those with obstructed defecation, 74% had subjective improvement in their symptoms, although this was not assessed with a standardize scoring system. There was no standard length of follow-up, but using a statistical model, the authors estimated recurrence of the intussusception at five and ten years to be 11.1% and 14.2% respectively (20). With concerns for permanent mesh, Franceschilli *et al.* looked at the use of biologic mesh (porcine dermal collagen) in lieu of the standard permanent mesh for rectopexy. In their first 100 cases, patients qualified for an operation if they have a WCS ≥ 5 with rectoanal intussusception. With a median follow-up of 20 months, 92% of patients had their constipation improved with 79% cured. The WCS dropped from 18.4 pre-operatively to 5.4 at one-year follow-up. They additionally found a three-year recurrence of 16% (22). Grossi *et al.*, using a stepped-wedge randomized controlled trial in patients with internal rectal intussusception and chronic constipation, found improvement in patients at 24 and 48 weeks post-surgery compared to their baseline. The trial aimed to recruit 114 patients but only managed to recruit 28 patients (23). With the popularization of the robotic platform, one group performed a randomized trial between laparoscopic and robotic ventral mesh rectopexy on 30 patients, 22 of who had internal rectal intussusception, finding similar intra-operative case length, post-operative complication rate, and 3-month magnetic resonance defecography (24).

Recommendations

In patients with obstructive symptoms and internal rectal intussusception who have failed medical therapy, operative treatment could be considered after an appropriate risk-and-benefit discussion with the patient (weak recommendation, low quality of evidence).

If a patient can tolerate a transabdominal operation, minimally invasive ventral mesh rectopexy is the preferred operative approach for patients with internal rectal intussusception and obstructive symptoms (weak recommendation, low quality of evidence).

Personal View

While numerous papers have been published on operative treatment of patients with internal intussusception and obstructed defecation, there still exists a paucity of quality data to guide clinicians in management of this patient population. The data, by-and-large, is retrospective in nature, with a limited number of patients, and limited follow-up. Moreso, inclusion criteria vary widely across all studies, as does the use of validated metrics to assess whether interventions have a true impact on patients' quality of life.

Beyond the data limitations, much difficulty in the assessment of operative intervention on internal rectal intussusception may stem from the obstructive symptoms not arising primarily from the intussusception itself. Rising grades of rectal intussusception have not correlated with worsening constipation, and non-surgical conditions like Irritable Bowel Syndrome (IBS) and pelvic floor dyssynergia have a greater impact on the severity of symptoms than intussusception grade (4,25).

The void of quality data and disputable contribution of internal intussusception to obstructed defecation demands that clinicians, unable to practice evidenced-based medicine, instead rely on the basic guiding principle of *primum non nocere* (first, do no harm). All patients should start with a standardized medical approach with high-fiber diet and ensuring adequate hydration. They should be evaluated with manometry and electromyography (EMG). If evidence of pelvic floor dyssynergia exists, referral to EMG-based biofeedback training should occur. Similarly, if patients are found to have IBS, they should be optimized from a medical standpoint.

In patients who have normal manometry and EMG without IBS, we would then recommend for defecography to assess for intussusception. For those with rectoanal intussusception who failed medical therapy, we would counsel the patient regarding operative management. In particular, we would highlight that the data points towards use of ventral rectopexy as the first-line surgical treatment, as it shows some benefit in short-term follow-up in studies with a limited number of patients. Part of our counseling would highlight the mesh concerns around ventral mesh rectopexy. There have been two larger studies looking at long-term mesh outcomes, with one observational study that showed mesh complications in 4.6% of 919 patients (20). An additional retrospective review looked at over 2000 patients who had undergone ventral mesh rectopexy and found that 2% of the patients had mesh erosion with 40% necessitating an operation for mesh explantation due to mesh erosion (26).

Going forward, we need to strive to improve our data to provide guidance for surgeons in the treatment of outlet obstruction found in patients with internal intussusception. The numerous publications in this area show that our lack of strong evidence is not for a lack of research effort. Adequate patient enrollment has proven difficult, as has length of follow-up and standardized pre-operative

characterization of what truly drives our patients' symptoms. Alternative strategies are needed, with prospective multi-institutional quality improvement registries to track patients' functional outcomes. We have had successful initial efforts at such a registry (27) and encourage others to pursue similar efforts, so that we can start to bring evidence into the treatment of our patients and provide them the data-drive care that they deserve.

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Tables

Table 1 – PICO Table

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Patients	Intervention	Comparator	Outcome
Patients with outlet obstruction, in particular, internal intussusception	Operative management	Non-operative management	Health-related quality of life (HRQOL)

Table 2 – Study outcomes

Table 2 LRR = Laparoscopic Resection Rectopexy, BM = Bowel Movement, CCCS = Cleveland Clinic Constipation Score, ODS-S = Obstructed Defecation Syndrome Score, STARR = Stapled transanal rectal resection, LVMR = Laparoscopic Ventral Mesh Rectopexy, Patient Assessment of Constipation Quality of Life (PAC-QOL)

Study	Patients	Intervention	Outcome Measure	Results	Quality of Evidence
Hwang (6)	27 patients with rectal intussusception and constipation	Biofeedback	Symptoms improvement after >= 2 biofeedback sessions	Weekly BMs 2 -> 4.1, incompleted evacuation 17 -> 9%	Very Low
Ganio (10)	167	Delorme	Functional scores	Improvement in functional scores in majority of patients	Low
Lehur (12)	50	STARR versus Biofeedback	ODS-S	48.1% more patients at 12 months have a halving of their	Moderate

				ODS-S in the STARR patients	
Von Papen (18)	56 with obstructed defecation failing non-operative management	Laparoscopic Resection Rectopexy	Survey at 3-6 months	53% improved constipation, 38% improved incomplete evacuation	Very Low
Consten (20)	677	LVMR	Symptoms and recurrence	74% of patients had subjective symptom improvement. 14% 10-year intussusception recurrence	Low
Franceschilli (22)	100	LVMR with biologic mesh	Symptoms and recurrence	92% subjective improvement. 16% 3-year recurrence	Low
Grossi (23)	28	LVMR	Quality of life scores	PAC-QOL change of -1.3 at 24 weeks, -1.0 at 48 weeks, after surgery	Low