

Management of obstructed defecation

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Abstract

The management of obstructed defecation syndrome (ODS) is mainly conservative and mainly consists of fiber diet, bulking laxatives, rectal irrigation or hydrocolonotherapy, biofeedback, transanal electrostimulation, yoga and psychotherapy. According to our experience, nearly 20% of the patients need surgical treatment. If we consider ODS an "iceberg syndrome", with "emerging rocks", rectocele and rectal internal mucosal prolapse, that may benefit from surgery, at least two out of ten patients also has "underwater rocks" or occult disorders, such as anismus, rectal hyposensation and anxiety/depression, which mostly require conservative treatment. Rectal prolapse excision or obliterative suture, rectocele

and/or enterocele repair, retrograde Malone's enema and partial myotomy of the puborectalis muscle are effective in selected cases. Laparoscopic ventral sacral colpoproctopexy may be an effective surgical option. Stapled transanal rectal resection may lead to severe complications. The Transtar procedure seems to be safer, when dealing with recto-rectal intussusception. A multidisciplinary approach to ODS provides the best results.

Key words: Constipation; Obstructed defecation; Pelvic floor rehabilitation; Rectopexy; Rectal prolapse

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Core tip: Obstructed defecation mainly effect women and may be due both to functional and organic disorders. Some of them, *i.e.*, rectocele, are more evident and easy to detect. Two out of ten patients present with occult causes, more difficult to diagnose, which may be looked at as "underwater rocks" of an iceberg. Most patients may be treated conservatively, with fiber diet, laxatives, rectal irrigation, pelvic floor rehabilitation and psychotherapy; and a minority requires surgery, including rectocele repair, prolapse excision, rectopexy and, more rarely, transanal rectal resection. Due to its complex etiology and psychological involvement, obstructed defecation needs a multidisciplinary approach.

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SYMPTOMS AND DIAGNOSIS

Obstructed defecation syndrome (ODS) is a type of constipation characterized by fragmented stools,

need for straining at defecation, sense of incomplete evacuation, tenesmus, urgency, pelvic heaviness and self-digitation^[1,2]. Most patients are females. The aim of self-digitation is two-fold: (1) by compressing the rectocele pouch through the vagina, the patient makes the anorectum straight and facilitates the evacuation of the stool; and (2) by pushing on the perineum, the transverse muscles of the perineum are stimulated, and this elicits a reflex rectal contraction aimed at evacuating the feces^[3]. Unfortunately, self-digitation may cause anorectal ulcerations followed by bleeding and discomfort and anal fibrosis leading to a stricture. The diagnosis of ODS is based on a careful evaluation of the patient's clinical history. The severity of symptoms may be objectively evaluated using a validated score^[4].

Transanal-vaginal ultrasound (US)^[5], defecography^[6], anorectal manometry and the balloon expulsion test^[7], entero defecography, dynamic perineal US and magnetic resonance imaging defecography^[8,9], pudendal nerve motor latency^[10] and psychological evaluation^[11] may be useful for the assessment of ODS.

ODS AS AN "ICEBERG SYNDROME"

ODS has been also defined an "iceberg syndrome", as the two most frequent lesions, *i.e.*, rectocele and rectal internal mucosal prolapse, present in more than 90% of patients with ODS, are easily detectable and may be considered "emerging rocks", whereas the "surgical ship" is likely to "sink" due to the "underwater rocks", *i.e.*, the occult lesions. At least two occult lesions were present in all patients with ODS in a prospective study conducted by our group^[12].

They are more difficult to diagnose and may be either functional or organic. The former are: anxiety/depression, anismus or non-relaxing puborectalis muscle on straining, rectal hyposensation, pudendal neuropathy and spastic colon. The latter are: peritoneo- entero- and sigmoidocele, colpocele, cystocele, recto-rectal intussusception and solitary rectal ulcer. Therefore, rectocele and rectal prolapse, which are usually the target of surgery, are more effects than causes of symptoms^[13].

An excessive straining is likely to be the "primum movens", causing tissue weakness and organ descent, and often is due to long-standing anxiety, muscle tension and consequent non-relaxing puborectalis muscle. The increased straining causes pudendal nerve stretch which may lead to a pudendal neuropathy which affects rectal sensation. The stool becomes small and hard and more difficult to evacuate, as they are less effective in stimulating the rectal wall, and then eliciting the peristaltic reflex aimed at inhibiting the rectal internal sphincter and facilitating the evacuation of the stool. It is clear that surgery

has a secondary role in correcting the above-mentioned defects, as they are mainly psychological and/or muscular and/or neurological. Unfortunately, they would require long and complex treatment, *i.e.*, change of dietary regimen, psychological support, pelvic floor rehabilitation. Instead, both patients and surgeons prefer a faster solution of the problem, *i.e.*, a straightforward operation. This explains why most, if not all surgical procedures tend to fail in the long term^[14-17].

As reported by the Wexner group, many women with rectocele suffer from ODS, but only in a minority of them are the symptoms due to rectocele^[18].

Vermeulen *et al*^[19], when reporting the high failure rate after surgery for rectocele, states that "to restore anatomy does not mean to restore function".

Therefore, caution is needed prior to recommending surgery in a patient with ODS.

CONSERVATIVE TREATMENT

Fiber diet, plenty of water and bulking laxatives are the most used frequently conservative treatments of ODS^[20]. Chocolate and other foods which increase stool viscosity thus making more difficult stool expulsion "in one shot" should be avoided^[21]. Hydrocolonotherapy or lavage, consisting of retrograde large bowel irrigation with warm water through a tube gently inserted into the anorectum, also has a positive role in the treatment of ODS and there is no risk of side effects^[22,23]. Several authors are in favour of rectal irrigation, which is reported to be effective in nearly half of the patients with intestinal dysfunction^[24,25]. Nevertheless it is well known that the abuse of self-administered enemas may cause anorectal fibrosis and stricture, due to repeated microtrauma. Biofeedback is indicated in case of anismus^[26,27] and rectal hyposensation^[28].

Anismus may be also cured with yoga exercises^[29] and botulinum toxin A, (50 units injected into the puborectalis muscle), with a short-term cure rate of about 50% and minor or rare side effects, such as transient anal incontinence and hypotension^[30]. Transanal electrostimulation, which may be carried out as a home procedure using small probe inserted into the anus and connected with a portable electrostimulator, may be effective in both pudendal neuropathy and rectal hyposensation^[31].

Rectocele and recto-rectal intussusceptions, despite being organic lesions, may be successfully treated with pelvic floor rehabilitation, provided that they are not long-standing. When these lesions become larger and more significant, they become causes of the ODS symptoms and require surgery^[32,33].

Psychological counselling is helpful in patients with either depression or anxiety or both, whose psychosomatic condition may be also diagnosed

with reactive graphic tests such as the “draw-the-family” test^[34,35]. It should be noted that one-third of the females complaining of ODS and proctalgia report episodes of sexual trauma during childhood or adolescence^[36].

For the patients who are not willing to undergo formal psychotherapy, simple pelvic floor and abdominal muscle relaxation exercises taught by a psychologist may be useful to improve evacuation.

Recently a new procedure has been proposed by our group for patient with anismus and altered psychological pattern, combining guided imagery and relaxation techniques with ultrasound-guided biofeedback, namely psycho-echo-biofeedback, with is successful in half of the cases at two year^[37].

Unfortunately, in many papers on the surgical treatment of ODS, at least half of the above-mentioned therapies are not listed among the conservative measures carried out before surgery is proposed^[38,39], which shows that there is a tendency towards surgical overtreatment, *i.e.*, more than half of patients with ODS undergo stapled transanal rectal resection (STARR), compared with the lower operative rate of 14% according to other series^[40,41].

SURGICAL TREATMENT: MANUAL TECHNIQUES

Basically, the options at disposal of the surgeon who deals with ODS are as follows: (1) to perform a kind of “surgical” irrigation; (2) to perform either a resection or a plication or a pexy in case of internal mucosal prolapse; (3) to reinforce the rectovaginal septum and/or, again, resect the redundant mucosa, in case of significant rectocele; and (4) to perform myotomy in case ODS is due to a muscular disorder.

Malone and others have reported surgical procedures which are modifications of the appendicostomy performed to treat children with chronic constipation^[42,43].

Either the appendix or a segment of terminal ileum are sutured to the underskin of the umbilicus or the right iliac fossa with a flap valve mechanism, aimed at preventing the external leakage of fecal matter.

Cosmesis is good because the surgical wound is small. The patient has to irrigate his/her intestine with water through a syringe, thus carrying out an anterograde enema and facilitating defecation. The limitation of the procedure is the relatively frequent occurrence of a sliding of the bowel which affects the valve mechanism and requires a reoperation.

Rectal prolapsectomy may be carried out via a transanal route in case of significant, *i.e.*, 2nd or 3rd degree rectal internal mucosal prolapse or recto-anal intussusceptions^[44].

In case of high rectocele and large mucosal prolapse,

the whole anterior aspect of the rectal mucosa is excised transanally, followed by a “concertina”- like plication of the denuded rectal muscle^[45].

An alternative minimally invasive procedure, which is indicated when dealing with smaller prolapse and rectocele, consists of an over-running suture on the anterior midline starting from the dentate line up to the apex of the rectocele and then reversal, going back to the dentate line. The consequent plication of the rectal layers forms a kind of barrier and reinforces the weakened recto-vaginal septum obliterating both the prolapse and the rectocele^[46].

In case of mucosal prolapse, another minimally invasive procedure has been proposed by El Sibai and Shafik^[47]. It consists of cauterization and plication of the prolapse. This and other transanal, transperineal and abdominal operations have been reported by Pescatori and Zbar^[48].

Resection rectopexy, the internal Delorme procedure or circumferential rectal mucosectomy with rectal muscle plication, sacral rectopexy and ventral laparoscopic rectopexy^[49-53] have been used with satisfactory short-term outcomes when dealing with ODS due to recto-rectal intussusception, but the long-term outcomes are less encouraging, as nearly half of the patients have a recurrence of ODS symptoms at 4 years^[14].

Ventral mesh rectopexy can also be carried out robotically^[54].

Instead, nearly 90% of the patients are cured at 4 years after a combined transanal-transperineal and abdominal approach, *i.e.*, positioning of mesh at the pelvic outlet, for rectocele-internal rectal prolapse and enterocele. The reason for the high success rate is that the other occult concomitant functional diseases, such as anismus, are cured with psycho-echo-biofeedback. This novel procedure, which involves a psychologist, consists of breathing exercises accompanied by hypnotic words, while the patient strains and is encouraged to carefully watch the contraction-relaxation of the puborectalis muscle on the screen of the transanal or, better yet, the transvaginal US machine^[37].

Recently, a surgical operation has been reported as effective in patients whose ODS is due to animus.

It consists of a transperineal bilateral partial myotomy of the puborectalis muscle, aimed at favouring its relaxation on straining. According to its inventor, the operation is more effective than biofeedback conditioning and botulinum toxin A injection^[55,56].

We developed a modified Farid procedure using a semiclosed transperineal approach, with neither sepsis nor incontinence postoperatively and an 80% cure rate at one year in a small series (unpublished data).

Rectocele repair may be carried out using other

procedures than the above mentioned transanal approaches, such as transperineal or transvaginal interposition of a biological mesh of porcine collagen^[57] anterior levatorplasty, which may cause dyspareunia in sexually active females^[58] or the novel transvaginal Schwandner repair^[59]. It may be also repaired using a laparoscopic approach, as reported by Vermeulen *et al.*^[19]. Sacral neuromodulation with an implanted pace-maker, which was first proposed by Pescatori *et al.*^[60-62] in constipated patients is helpful in case of slow transit constipation, but may be also effective for ODS according to Falletto *et al.*^[63], provided that patients are carefully selected.

The advantage is that the procedure is minimally invasive as it may be performed under local anesthesia. The disadvantage is the high cost of the pace-maker, around 15000 euros.

SURGICAL TREATMENT: STAPLING TECHNIQUES

The first stapled procedure for rectal mucosal prolapse causing ODS was reported by Pescatori *et al.*^[64], using a circular stapler in a small series with good short-term results and no relevant complications. It has been replicated by Zacharakis *et al.*^[65] with encouraging results.

The first study on STARR, was published by Boccasanta *et al.*^[66], who reported good results in around 90% patients in the short term, but painful defecation at one year in 20%. Post-STARR chronic proctalgia, which may be severe and affect patients' quality of life, is likely to be due to the fibrosis around retained staples, which triggers the nerve spindles on the levator ani and puborectalis muscles^[67].

Removal of retained staples reduces pain only in a minor proportion of patients^[68].

According to the invited comment of Robin Phillips to the above-mentioned paper by Boccasanta *et al.*^[66], "to resect the rectum for constipation is like resecting a lung for asthma".

Other complications have been reported following STARR, such as severe rectal bleeding, fecal urgency and anal incontinence, recto-vaginal fistulae, retrorectal hematoma, pelvic sepsis requiring a diverting stoma, and deaths^[69-73]. A comprehensive review of post-STARR complications has been reported by Pescatori and Gagliardi^[74].

Unfortunately, the potential risks of the STARR procedure are underestimated, also in part due to a strong media campaign, as shown by the definition of STARR as a "sutureless operation" given by newspapers^[75].

Ira Kodner, the past-president of the American Society of Colon and Rectal Surgeons stated that those who report misleading messages should be

excluded from the surgical community^[76].

As far as clinical outcome is concerned, 55% of the patients still had at least 3 symptoms of ODS at 18 mo after STARR in a retrospective multicentric study of the Italian Society of Colo-Rectal surgery and 19% of the cases required a reintervention, either because of postoperative complications or recurrence of symptoms^[77]. Reinterventions after STARR are likely to fail in patients with an altered mental pattern^[78].

Some studies report lower complication rates and better clinical results^[79,80].

A high recurrence rate in the long term has been reported by Hussein^[15].

Fecal urgency and anal incontinence after STARR are most likely to be due to the reduced size of the rectal reservoir^[81,82]. The more recent Transtar procedure, carried out with the Contour device (Ethicon Endosurgery, Cincinnati, Ohio, United States), seems to achieve better results, *e.g.*, in terms of chronic postoperative proctalgia^[83]. Nevertheless, life-threatening retro-rectal hematoma has also been reported following Transtar^[84]. A recent European multicentre study reported a relief of symptoms in most patient on the short term without a significant improving of St. Mark's score quality of life, neither major complication nor post operative mortality was reported^[85].

Both clinical and functional results seem satisfactory in a large multicentre series reported by Jayne *et al.*^[86] but the follow-up is short and incomplete. However, this relatively novel procedure carried both satisfactory and unsuccessful outcomes as reported by several authors, and merits further evaluations prior to be considered a fully safe and effective operation^[86-97]. It has to be performed by colorectal surgeons specifically trained with novel instruments, such as the Contour devices^[98-100].

CONCLUSION

The outcome of surgery alone for ODS may be good in the short term, but it worsens over time, probably due to the fact that both the diagnosis and the management of the "occult" lesion(s) causing symptoms are neglected. The psychosomatic component of ODS should be recognized and managed as it affects two-thirds of the patients. Several conservative treatments are available and should be attempted prior to surgical management of ODS. The holistic approach is important, *i.e.*, psyche and soma should be considered a unique entity. The key to successful treatment of ODS appears to be a multidisciplinary approach.

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