

Surgeon's Domain: From Organic Constipation to Idiopathic Constipation.

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Abstract: Constipation is the most common disorder of defecation. Physicians have tried to treat the constipation by both pharmacologic and non pharmacologic measures in the past. Surgical intervention was sought only for the investigation of constipation or to treat the cases of constipation with an organic lesion. In recent decades the cases of idiopathic constipation in which no secondary cause is present have become the point of interest for many including surgeons. In 1990's Dr. Antonio Longo, an Italian surgeon, proposed that many patients of chronic constipation present with symptom of straining at stool trying to overcome an obstruction but the physical examination reveals no form of obstruction. Such patients were put in a separate category of Obstructed Defecation Syndrome (ODS). Dr. Longo studied the morphological abnormalities in such patients and devised the method and instrumentation for a Stapled Trans Anal Rectal Resection popularly known as STARR which he demonstrated at 2nd World Congress of Coloproctology in Rome in year 1998. This article reviews how the understanding of underlying pathophysiology in cases of obstructed defecation has revolutionized the surgical treatment of constipation.

BACKGROUND

Constipation has afflicted mankind since times immemorial. It was once called the Disease of all diseases. Approximately 80% of all individuals suffer from constipation at one point or another and nearly 33% of patients suffer from these problems more than occasionally. The symptoms of constipation include: excessive straining, hard stools, digitation, incomplete evacuation, a sense of anorectal blockage and less than three bowel movements per week. The most common causes of constipation are low fiber diet, lack of physical activity and the medical disorders such as thyroid disease, diabetes, irritable bowel syndrome, neurological disease, colon cancer and use of certain medications. In majority of patients presenting to the surgery clinics the general causes of constipation have already been ruled out and this creates a whole lot of challenges for the surgeon to provide an adequate diagnosis supplemented by proper investigation and henceforth the right treatment modality. Some of these patients are diagnosed by obvious findings on rectal examination or on colonoscopy while others still remain a dilemma. Those patients in whom no physical abnormality is detected are grouped as functional constipation or idiopathic constipation. This group of patients which was offered no surgical treatment due to lack of knowledge of underlying pathophysiology is now becoming the point of interest for the surgical fraternity.

EVOLUTION OF PATHOPHYSIOLOGY OF CONSTIPATION

The evolution of concept of constipation and investigation into understanding the pathophysiology dates back to 16th century BC. The oldest book on constipation 'Egyptian pharmaceutical papyrus' offers a basic explanation of disease as the notion of poisoning of the body by material released from decomposing waste in the intestines¹. This compelling suspicion shaped medical theory for more than three millennia; the personal physician to Louis XV of France in the 18th century was merely echoing the Ebers Papyrus when he warned that disease was the result of blood turned "faeculent" by contamination with "the depraved remains of concoction" in the intestines². From the late 1700s onward European and American physicians were convinced that constipation was becoming ever more common

because of changes in diet, exercise levels, and pace of life associated with urbanization. The late 19th century medical scientists formulated the theory of intestinal auto-intoxication, or self-poisoning from one's own retained wastes. "The constipated person", French physician Charles Bouchard declared, "is always working toward his own destruction; he makes continual attempts at suicide by intoxication. Indeed, from 1900 into the 1920s auto-intoxication was regarded by much of the medical profession and most of the public as the most insidious disease of all, since it was, in essence, all diseases. In books such as *The Conquest of Constipation*, *The Lazy Colon*, and *Le Colon* Homicide physicians on both sides of the Atlantic warned that the contents of the colon were "a burden, fermenting, decomposing, putrefying, filling the body with poisonous substances" and creating "sewer-like blood"³ that auto-intoxication "is the cause of ninety per cent of disease"; and that "constipation shortens life"⁴. A horde of device salesmen swept over the land as well, peddling an astounding collection of merchandise: enema and colonic irrigation equipment, abdominal support belts, abdominal massage machines, electrical stimulators, rectal dilators, and so on and on. Not the least intimidating of the cures for auto-intoxication was surgery, colectomy to be precise, popularised by the renowned surgeon of London's Guy's Hospital, Sir William Arbuthnot Lane. Between 1900 and 1920, Lane extirpated the colons of hundreds of constipated, maintaining that his streamlining of the human "drainage scheme" was "the most satisfactory result of surgery known to us at the present time"⁵. Throughout the 50's and 60's the generalized causes of constipation were investigated and documented. The effects of various drugs and pathological diseases on intestinal motility and consequent constipation were progressively identified. Still a large number of patients had refractory idiopathic constipation not attributed to any identifiable cause.

Until the last decade, surgeon's role was mainly limited to investigation of underlying cause of constipation, management of acute and chronic bowel obstruction and correction of anorectal causes like fissure, fistula and piles. However, with the improved understanding of anorectal pathophysiological alterations, new surgical modalities were introduced for the treatment of idiopathic constipation.

IDIOPATHIC CONSTIPATION

In the absence of secondary causes, constipation is regarded as a functional disorder affecting the colon or anorectum or both. At least three subtypes have been recognized, although overlap exists (shown in Fig 1) ⁶.

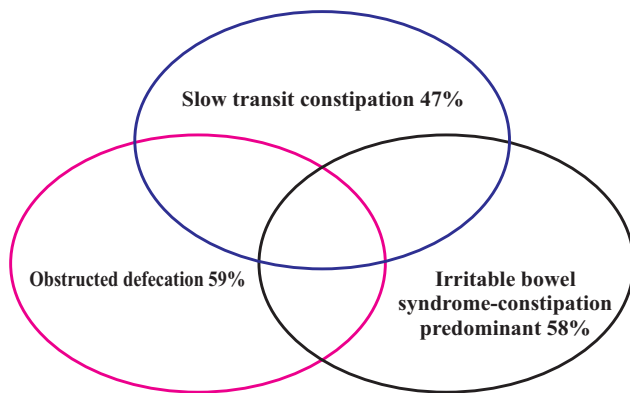


Fig 1 : Subtypes of Functional Constipation

OBSTRUCTED DEFECTION SYNDROME (ODS)

The concept of ODS came when patients' symptomatology was basically straining at stool trying to overcome an obstruction and the physical examination revealed no form of obstruction. A dynamic evaluation of the act of defecation by X-ray or MRI then demonstrated the changes occurring in the rectum, which could explain the obstructive phenomenon. This was described as ODS.

Dr. Longo who had devised method of Stapled Rectopexy for hemorrhoids observed improvement in constipation after the procedure. In 1996, he suggested that the obstructed defecation is due to the morphologic abnormalities that become accentuated during straining, such as prolapse and rectocele which can be overcome by increasing the pressure in anal canal in initial stages ⁷. In the final stage, however, the muscular tunica of the rectum is often thinned out or become nonexistent, leading to morphologic abnormalities that permanently occlude defecation. In this stage, defecation may be obstructed by an invagination or intussusception of the anterior rectum caused by genital prolapse in women, formation of separate pouch by a rectocele or an invagination of the rectum into the anal canal, thus leading to progressive worsening condition that ends in ODS. In fact, the prolapse of the rectum into the anal canal is often the initial and predominant anatomical feature in patients with defecation disorders. Dr. Longo proposed that the surgical resection of the prolapsed part of the rectum could constitute an efficacious treatment in case of mechanical obstructed defecation. The hypothesis was that the removal of the prolapsing rectum would prevent the formation of invagination, rectocele and external prolapse (if less than 3 cm) which are the causes of obstructed defecation. Furthermore, the ceasing of straining would be accompanied by the disappearance of all dynamic, morphological alterations (enterocele, deep Douglas, hyperdescending perineum) consequences of excessive

straining ⁸. Longo et al. further defined the criteria for evaluation of ODS and grading the severity of ODS on the basis of a scale known as Longo ODS Score. Dr. Longo devised the method and instrumentation for a Stapled TransAnal Rectal Resection popularly known as STARR which he demonstrated at 2nd World Congress of Coloproctology in Rome in year 1998 ⁹.

Though the surgeons in the past have sought to correct chronic constipation with rectopexy, sigmoid resection rectopexy, or transanal, transperineal, and transvaginal approaches however, there were no clear cut guidelines for treating such patients. As the concept of ODS gained popularity in western world and this entity being recognized as a disorder of defecation separate from irritable bowel syndrome constipation type the surgeons tried to formulate a protocol for treatment of ODS. In 2006 a European group of 11 experts "STARR Pioneers, gave a concept for treatment options in patients suffering from ODS in Gouvieux, France, specifically focusing on the role of the STARR procedure based on clinical symptoms and dynamic imaging ¹⁰.

As this is a newly recognized entity, many clinical trials are going on in western world to understand the pathophysiology of ODS and efficacy of various treatment modalities using ODS severity score. This includes multicentric trial by National Institute of Health (NIH U.S.A.), National Institute for Clinical Excellence (NICE, U.K.), European STARR registry, International TransSTARR Registry. Recently, Dr. B.B Agarwal reported first Indian experience and clinical outcomes of STARR procedure for ODS patients at European Association for Endoscopic Surgery, Prague (2009). However, more prospective studies are required in Indian population keeping in mind the differences in dietary, social and cultural aspects.

CONCLUSION

STARR procedure has shown encouraging results and can be an effective treatment modality for idiopathic constipation. However, long term results are not known. The ongoing studies on understanding the role of sphincteric apparatus, defecography and new ODS scoring systems will further improve the preoperative objective evaluation and hence more definitive criteria for treating the patients with a particular modality. Though surgeon has won the battle with organic lesions causing constipation, the ongoing innovations and modifications will definitely bring the idiopathic constipation into surgeon's domain.

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