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Fecal diversion in complex anal fistulas: Is there a way to avoid it?

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Abstract

Temporary fecal diversion by a diverting colostomy or ileostomy is occasionally performed for serious complex fistulas. The main indications are highly complex and extensive cryptoglandular anal fistula, anal fistula associated with severe anorectal Crohn's disease, recurrent rectovaginal fistula, radiation-induced fistula and anal fistula with associated necrotizing fasciitis. The purpose of stoma formation is to divert the fecal stream away from the anorectum and the perianal region so as to control the infective process and prevent trauma to the operated repaired tissues. Once the fistula has healed, the diverting stoma is closed. However, two questions are relevant. First, is it certain that the same disease would not relapse (or the fistula would not recur) once the colostomy is closed? Second, is there a non-surgical method which can obviate the need for a diverting colostomy? An attempt is made to answer both these questions in this review.

Key Words: Anal fistula; Fecal diversion; Diverting stoma; Colostomy; Crohn's disease; Rectovaginal fistula

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Core Tip: Fecal diversion is performed for severe and uncontrolled anal fistula disease. Though usually done as a last resort, it significantly increases morbidity and cost. We speculated on whether fecal diversion is actually the last resort, is it effective and can it be avoided? A novel non-surgical protocol [LOOP: L: Liquid diet with no fiber; O: Oral rehydration salt; O: Oral vitamins and protein powder/supplements; P: Phosphate

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(sodium phosphate) enema] prevents contact of fecal matter with the anorectum and has been successfully utilized to treat several acute anorectal conditions. LOOP can potentially avoid the need to divert the fecal stream in many fistula cases where it would be deemed necessary. This would markedly decrease the morbidity and cost incurred due to fecal diversion.

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INTRODUCTION

Anal fistulas can be simple or complex. As the name suggests, complex fistulas are complicated and pose a significant management challenge. A good proportion of fistulas in any series can be complex; at referral tertiary centers this may be as much as 50% of all reported fistulas[1]. At times, the fistula can be so complex that all routine treatment options fail to provide relief[2]. In such cases, temporary fecal diversion (diverting colostomy or ileostomy) is considered as the “last resort” management option[2]. However, this option is associated with significant morbidity which comprises physical discomfort as well as psychological distress. Diverting colostomy is quite depressing for the patient especially when performed for a non-malignant condition especially as the time of stoma closure is uncertain. Not uncommonly, patients have to live with the colostomy for the rest of their life. Last but not the least, the additional surgical procedures increase the cost of treatment significantly. Therefore, the indications and benefits of diverting stomas in perianal fistulas needs to be reviewed and an alternative less morbid (preferably non-surgical) method needs to be considered.

WHY IS A DIVERTING STOMA NEEDED IN PERIANAL FISTULAS?

A diverting stoma is needed in perianal fistulas for two reasons: (1) Uncontrolled sepsis with risk of septicemia: At times, the fistula may be associated with conditions which lead to marked sepsis like severe anorectal Crohn's disease[3,4], anal fistula with associated necrotizing fasciitis or Fournier's gangrene[5,6], anal fistula with large perirectal abscess, *etc.*[2]. It is believed that fecal diversion would prevent the bacterial load (fecal matter) from reaching the site of sepsis and would thus help in better and easier control of the fulminant infection; and (2) Highly refractory fistula: Another indication of diverting stoma is to increase the chances of fistula healing. At times, there are high perianal fistulas (supralevator or perirectal fistulas)[2], rectovaginal fistulas[7,8], radiation-induced fistulas[7,9] and Crohn's fistulas[3] which recur repeatedly and refuse to heal even after repeated surgeries. Fecal diversion can help in these patients by preventing fecal matter, hence possible infection, from reaching the fistula site (surgery site in operated patients). Secondly, the risk of physical trauma by the stool mass to the surgical site is also curtailed due to which the healing of the surgical wound is expected to be better.

These are the two main categories for which temporary fecal diversion is performed in patients of perianal fistulas.

HOW EFFECTIVE IS FECAL DIVERSION?

The important point to discuss is the efficacy of the diverting stoma in achieving the primary purpose for which the diversion is done. Unfortunately, the literature highlights that fecal diversion does not serve the purpose in a significant proportion of cases[10]. In many cases, either the disease does not improve at all[8] or it does improve with diversion but recurs once the diverting colostomy is closed, thereby necessitating permanent diversion[3,10-12].

In a study of 86 patients suffering from anal fistula due to Crohn's disease, 62% required temporary fecal diversion and out of these, 49% ultimately ended with permanent diversion[13]. In patients with refractory anorectal Crohn's disease for whom temporary fecal diversion was done, only 63.8% patients reported improvement in clinical symptoms within 3-6 mo[14,15]. The restoration of bowel continuity could only be attempted in 34.5% of these patients and was successfully achieved in only 16.6% patients[14,15]. Of patients in whom bowel continuity could be restored successfully, re-diversion was needed in 26.5% patients due to relapse of severe symptoms[14]. Improvement in the rectal and the perianal disease was the single most important and consistent factor responsible for restoration of bowel continuity[14,16]. On the other hand, there are studies which demonstrated that the quality of life seemed similar or potentially superior in diverted patients suffering from Crohn's perianal fistulas compared with patients in whom the diversion was not done[17]. A diverting stoma, therefore, has the potential to improve quality of life in patients, especially with severe perianal Crohn's disease[17]. Though medical treatment remains the mainstay of perianal Crohn's fistulizing disease, aggressive surgical management should be considered only for severe or recurrent disease[18]. Therefore, in patients with perianal Crohn's disease, both medical and surgical treatments should be used judiciously and the disease be managed by a multidisciplinary team[18].

Thus, the popular belief that fecal diversion would lead to rapid resolution of symptoms, rapid improvement in the disease process, and full recovery from the disease may not be true in all cases, and there is evidence in the literature which does not support this[14]. In one of the largest series of anal fistula patients who underwent surgery, half of the patients had high complex fistulas, and amongst these high fistulas, about 30% were supralelevator fistulas[1]. The long-term success rate of 93.5% could be achieved in this series without needing to do fecal diversion in any patient [1]. This implies that temporary fecal diversion should be done more sparingly and after much deliberation in patients of complex perianal fistulas. Moreover, whenever it is considered, the minimal impact of fecal diversion on long-term disease prognosis as well as the possibility of inability to restore the bowel continuity should be discussed with the patient in detail. This would be even more relevant for the patients who are resistant to the prospect of permanent fecal diversion from the very beginning.

IS THERE A NON-SURGICAL WAY WHICH CAN OBTAIN THE NEED FOR FECAL DIVERSION?

As discussed above, the indications of fecal diversion need to be pruned but it would be worthwhile if its need could also be curtailed by a method which is less morbid and preferably non-surgical.

One of the methods already in vogue is loose (draining) seton insertion. In patients of complex fistulas with large deep abscesses or severe sepsis, seton insertion can lead to adequate drainage and resolution of sepsis. Along with this, it can also prevent recurrence of abscess over extended periods of time. Therefore, in highly complex cryptoglandular fistulas and patients with severe fistulizing Crohn's disease, a draining seton can help prevent the need of fecal diversion in many cases[19]. However, there would be cases with severe disease in whom the passage of fecal matter through the anus and contact of fecal matter with the fistula keeps worsening the disease process. In these patients, another novel method can be helpful in many, if not all patients, to prevent fecal diversion.

The aim of temporary fecal diversion is to prevent contact of fecal matter with the anorectum and perianal tissues for a few days to weeks. If the same endpoint can be achieved by a non-surgical method, then the need of diversion might be mitigated. LOOP does precisely that; LOOP is an acronym for L - Liquid diet with no fiber, O - Oral rehydration solution (ORS), O - Oral vitamins and protein powder supplements, P - Phosphate (sodium phosphate) enema at the start of the treatment (Table 1). The basic principle behind LOOP is that the patients do not pass any bowel motions at all for few days to weeks while all their nutritional needs are taken care of.

As the diet has zero fiber, stool formation would be nil or minimal. The electrolytes (sodium, potassium, chloride, citrate) are taken care of by ORS. The proteins are given at 1 gm/kg body weight/d by oral protein powder supplement. The patient can take clear fluids (with zero fiber) like juices, coconut water, clear soups with butter, soft drinks, glucose water, tea, coffee *etc.* An oral multivitamin tablet is given daily to replenish vitamins and minerals. Along with these dietary recommendations, an enema (sodium phosphate or any other enema preferred by the patient) is given on the

Table 1 LOOP concept

LOOP concept	
L. Liquid diet with no fiber	Clear fluids (with zero fiber) like juices, coconut water, clear soups with butter, soft drinks, glucose water, tea, coffee, <i>etc.</i>
O Oral rehydration solution	The electrolytes (sodium, potassium, chloride <i>etc.</i>) are taken care by this
O Oral vitamins and protein powder supplements	The proteins are given at 1 gm/kg body weight/d by oral protein powder supplement
P Phosphate enema at the start of the treatment	Enema (whichever preferred by the patient) is given on the first day of the treatment so as to evacuate the rectum and clear the bowels. Otherwise, the residual stool in the rectum can harden and can cause problems later

first day of the treatment so as to evacuate the rectum and clear the bowels. Otherwise, the residual stool in the rectum can harden over the next few days (when the patient is on LOOP and not passing stool) and these hardened stools could cause problems and pain when the normal diet and bowel motions are resumed after a few days.

LOOP can be implemented for a few days to weeks (2-4) depending upon the patient's tolerance. If the patient can tolerate it well, then it can be extended as needed without any negative consequences as all the nutritional requirements are fully taken care of while the patient is on LOOP.

LOOP was initially developed to provide relief by a non-surgical method in anorectal conditions which get aggravated by passage of stool. These include intractable bleeding from hemorrhoids in patients on anti-coagulants that cannot be withheld[20], acute refractory anal fissure[21], acute painful thrombosed hemorrhoids *etc.*[21]. LOOP was found to be highly successful in these patients and, barring a few, it was comfortably tolerated.

The application of the LOOP protocol can be logically extended to patients requiring fecal diversion as the endpoint of both temporary fecal diversion and LOOP is the same – fecal matter should not come in contact with perianal tissues. LOOP may not be able to replace fecal diversion in all indications but can do so in conditions which require fecal diversion for a short period.

The indications of fecal diversion can be divided in three parts: (1) Acute conditions: Surgical repair of refractory rectovaginal fistula or high cryptoglandular fistulas (supralevator or pelvirectal), anal fistula with huge abscess with septicemia, anal fistula with associated necrotizing fasciitis or Fournier's gangrene; (2) Acute exacerbation of a chronic controlled condition: Abscess formation in Crohn's disease otherwise well controlled with medications; and (3) Chronic debilitating condition: Severe widespread Crohn's disease, severe radiation proctitis with anal fistula.

The first two indications require fecal diversion for a short period (days to a few weeks) and in these conditions, LOOP can replace fecal diversion in most cases. However, for the third indication (chronic debilitating conditions), it would perhaps be difficult to replace fecal diversion with LOOP. Moreover, this is the category of patients who end up having a permanent stoma.

Thus, the LOOP protocol is logical, simple, easy to execute, has no drawbacks, can be interrupted anytime, is tolerated well by most patients, and can be repeated as required. It has been shown to be effective in avoiding surgery in other acute anorectal conditions[20,21]. Against this background, it is recommended that LOOP be tried in order to avoid fecal diversion by stoma creation for the indications listed above.

CONCLUSION

Temporary fecal diversion in the management of perianal fistulas is utilized where it is intended that fecal matter should not come in contact with the anorectum and perianal tissues for a short period of time. It is done for highly complex cryptoglandular anal fistula, severe anorectal Crohn's disease, recurrent rectovaginal fistula, radiation-induced fistulas, anal fistula with associated necrotizing fasciitis *etc.* However, the main drawbacks of fecal diversion are questionable impact of fecal diversion on disease resolution, uncertainty over the time-frame and success of restoration of bowel continuity, risk of having a permanent stoma, and significant increase in morbidity and cost. Therefore, fecal diversion should be used sparingly in clinical practice. A novel protocol, LOOP (patient kept on zero fiber diet with full oral nutritional support so as to avoid passage of bowel motions for a few days to weeks), has been shown to be successful in treating several acute anorectal conditions. LOOP can be tried as a

non-surgical method to avoid fecal diversion in many, if not all, conditions where temporary fecal diversion is done. If found effective, LOOP will prevent significant morbidity and reduce cost in the management of this dreaded disease.

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