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Pouch-vaginal fistula

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ABSTRACT

Pouch-vaginal fistula is a dreaded complication after ileal pouch-anal anastomosis creation and can greatly impact patients' quality of life. Success rates with surgical closure vary in the literature and there is no single gold standard surgical method for closing the fistula. This is a complex condition that requires detailed history taking and examination. Success may not be always achieved and recurrences are common. Consideration should be given for treating this group of women in specialized centers by expert surgeons.

Introduction

Ileal pouch-anal anastomosis (IPAA) is constructed to reestablish the gastrointestinal continuity and is commonly performed in patients with different diagnoses. In the postoperative period, a wide variety of complications can risk the viability of the pouch and may eventually result in pouch failure. Pouch-vaginal fistulas (PVF), can occur in the early or late post-operative period and can be arguably listed as a "rare" complication after IPAA however it has significant impact on patients' daily life. This challenging complication may not be as rare as one believes since it has been reported in up to 16% of the patients who undergo a pouch construction.[1,2] PVFs usually manifest later in the post-operative course as diversion during pouch construction delays presentation of this complication.[3]

Initial presentation of PVF can be minimal such as gas coming from the vagina or more serious such as stool leakage from the vaginal area. Other common patient complaints include skin irritation and dyspareunia. Consistency of the bowel movement also affects this range of symptoms as loose stools are more commonly seen together with an immensely symptomatic fistula.

Factors proposed to be effective in the formation of PVF are surgical technique, underlying diagnosis or septic complications.[1,2,4] When the fistula is discovered closer to the index operation a septic complication or technical factors may be the causative factor.[5]

Due to its rare nature, studies in the literature are restricted and small in numbers with the largest case series reporting 152 patients[1]: but it is unusual to come across a series that reports more than 50 cases for a single approach, making it difficult to reach a consensus regarding the best treatment to close these fistulas. In addition, most of these patients develop a complicated history with multiple closure attempts. Each time the surgeon approaches the patient to decide on the next surgical plan, the previous surgical repairs need to be considered making the whole process of choosing the right closure method even more challenging and not easily lending the decision making to defined algorithms.

Patients with pouch-vaginal fistula represent a distinctive subgroup of pouch complications. Prior diagnosis and changes in diagnosis must enter into the decision making process. It is not uncommon for patients with ulcerative colitis to receive a change of diagnosis to Crohn's disease (CD) after PVF development.[3] Before changing the diagnosis, critical evaluation needs to be done looking at the temporal relationship of fistula presentation as those which present within 3-6 months of the fecal stream going through the anus may represent an unforeseen technical problem at the time of pouch construction. Testing such as pouchoscopy and pouch biopsies and critical evaluation of the anal area and anal transitional zone are crucial. Classic perianal morphological manifestations such painless fissures, edematous tags and waxy perianal skin may signal Crohn's disease[6] but again timing of the fistula presentation should always be kept in mind as many patients are labeled as Crohn's disease instead of considering a technical problem.

If there is a confirmed diagnosis of CD or there is high clinical suspicion, starting biologic agents before surgery can be helpful. Infliximab was reported to be effective in complete fistula closure in CD.[7] Biologics were also shown to have a role as an adjunctive for surgery in CD patients with anovaginal fistula therefore they can benefit from this therapy.[8]

How to approach the patient with PVF

Patients with PVF have a complicated history in most cases. In the first clinical visit it is important to question the complaints and

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symptoms related to the fistula in detail and inquire how they affect the patients' daily life. Next, a thorough review of the index IPAA operation, previous attempts to close the fistula, previous descriptions and symptoms of the fistula should be completed. Other past history including childbirth, stool habits, and urinary habits are discussed. All previous operations and pathology reports should be thoroughly reviewed. Having an expert (IBD) pathologist re-review the glass slides may also be helpful.

An examination under anesthesia (EUA) is suggested to delineate the anatomy. It enables the surgeon to evaluate the fistula in detail and to locate the exact opening of the fistula, assess for undrained sepsis, assess the anal transitional zone, and look at the condition of the internal opening. Vaginoscopy may also provide valuable information that can be used in planning the repair. Magnetic Resonance Imaging can also be of benefit to identify short and low fistulas[9] or undrained sepsis.

Perioperative considerations

Realistic expectations need to be set as first step. One crucial point is the nature and frequency of the symptoms. For women with limited symptoms (minimal such as gas leakage from vagina or mild irritation), conservative treatment may be recommended. The risk of a repair and the possibility of making the symptoms worse should outweigh the symptoms. Additionally, pouch failure after surgery to correct the fistula is not uncommon and can be seen in up to 30% of the patients. This should be discussed in depth with the patients who will undergo a surgical repair.[3]

Prior to surgery it is crucial to optimize the patients' condition. All sepsis must be drained. An exam under anesthesia provides important information about the pouch and allows surgical drainage. Methods to improve sepsis drainage include seton placement and proximal stoma. Hyperbaric oxygen therapy may also be tried as it can be helpful in the pre-operative period to decrease scarring and improve tissue viability. Improved tissue character will increase the chance of success, especially in patients with CD.[10]

As stated above, perioperative diversion can improve sepsis control. We also feel it should be strongly encouraged in all patients undergoing surgery for PVF. A stoma may improve tissue healing after surgery. A recent paper reported an improved rate of fistula closure with a stoma versus none (65.3% vs. 27.7%).[11]

What is the best surgical method to close the fistula?

There is no one best surgical method for fistula closure. The choice must be individualized based on multiple factors such as the previous diagnosis, previous repairs, and size/extent of the fistula. As previously mentioned, the literature has series with small number of patients and different procedures have different reported success rates. One of the latest series with 152 PVF patients, the authors emphasized an individualized approach based on patients' specific needs and fistula characteristics.[9]

When choosing the most appropriate method of surgical closure, a comprehensive discussion with the patient is an initial step. The exact degree that the symptoms interfere with the quality of life must be taken into consideration. Realistic expectations also need to be discussed including possible side effects of the various treatment options. If definitive fistula closure is not likely to be achieved due to tissue quality or other factors, patients may to undergo only a seton placement for symptomatic control or even a permanent stoma. Apart from surgical recurrence, the rationale for a possible stoma which may need to remain in place longer than intended due to recurrence or slow healing should also be discussed.

Setons and fistula plugs

Setons can be placed in the fistula tract prior to surgical closure to facilitate drainage and alleviate sepsis and at times may be recommended as the final treatment when tissues are not ideal condition for surgical closure.

Fistula plugs have been popularized with initial reports reaching 50% success rates however more recent reports suggest less likelihood of success.[12] Fistula plugs are non-invasive compared to other surgical options and as a rule do not make the situation worse. They may be an option prior to considering more aggressive approaches.

Transvaginal repair

Transvaginal repair consists an incision in the posterior wall of the vagina to include the external opening of PVF and closing the internal opening before closing the vaginal flaps.[13] One advantage of this approach is that it provides easier access to the fistula and has less risk of damaging the sphincter complex.[14]

This method may be considered in patients with an IPAA stricture which makes transanal access difficult (unless a 360 degree mobilization via the anus is planned). Success rates reaching 80% have been reported but in the more recent literature, fistula closure rate was 55% when a transvaginal approach was the initial procedure.[1,13,15] A recent series from our institution reported 25% success rate for this procedure.[11]

Transanal pouch advancement flap

Transanal pouch advancement flap is another repair consideration. Patients are typically placed prone. In this approach, a flap of pelvic pouch is raised and mobilized proximal to the internal orifice. The internal opening is closed and the pouch advanced down and sewn to the cut edge (similar to a rectal advancement flap). It is important when performing this procedure (as in rectal advancement flaps) to avoid damage the sphincter complex—particularly the internal sphincter.

In the literature, the fistula closure rate is reported to be in more than half of the patients. Especially when it is performed as a secondary procedure (66%).[1,4,14,16,17] In a more recent series from our institution this procedure achieved a 61% closure rate which when looking more critically at the data was even higher if the fistula was located at the anastomosis.[11]

Closure with tissue interposition (Martius and gracilis flaps)

Martius and gracilis flaps can be employed in selected patients. The gracilis flap is more complex compared to Martius flap and it is usually employed in patients with multiple previous closure attempts. One disadvantage of the gracilis flap is the possibility of leg edema of the donor leg which can be quite bothersome to the patient. These procedures are typically performed with plastics or gynecology surgeons unless specific expertise exists in the individual surgeon performing the PVF repair. However when there is more than one surgeon working toward closure, the anal surgeon should lead the team and directly be involved when the perineal mobilization is done and when the flap is secured over the repair of the anal opening to ensure meticulous placement. Application of these procedures for PVF treatment is rare and literature is very limited to small number of cases[18] which report mostly success. However it must be remembered that the reports are of a very select limited number of patients.

Transabdomino-transanal approach

The transabdominal-transanal approach consists of mobilizing the pouch transanally. Sometimes after a 360° mobilization of the pouch along with an anal canal mucosectomy, the pouch can be advanced down without tension to cover a repaired internal opening, and sewn to the cut edge (a diverting stoma is still advised if not already done). Many times this is not feasible, or there is too much tension. Then a laparotomy is done and a transabdominally the pouch is mobilized and disconnected. If the pouch itself is not salvageable a new-IPAA can be created. Steps required for this technique are greatly challenging and it is recommended to be employed in highly specialized centers. In the most recent report from our institution this technique had a 69% success rate. It was noted to be the procedure with highest success rate for fistulas distal to the IPAA.[11]

Failure of surgery

Surgical methods described above are not always effective in achieving definitive closure. Ultimately in order to bring symptomatic relief to the patient, the pouch may need to be excised with construction of an end ileostomy or a continent ileostomy. However before considering this, a referral to a center that performs specialized salvage pelvic pouch operations should be considered. An inability to close the fistula can occur in 30+% of the patients. Factors that seem to influence an inability to close the fistula include Crohn's disease, having a previous hand-sewn anastomosis, and obesity.[1]

Advances in technology

Future innovations are focused on closing these fistulas without a traditional surgical procedure. The most promising at the moment is stem-cell based therapy where cultivated stem cells are injected into the wall of the fistula tract. This method has achieved optimistic closure rates in patients with non-rectovaginal Crohn's related complex fistulas.[19,20] It is currently being studied in the United States for non-vaginal Crohn's fistula but may be proposed as a novel treatment option for patients with PVFs in the future.

Suggested treatment algorithm for managing the pouch-vaginal fistula

When symptoms suggest a pouch-vaginal fistula, confirmation with a meticulous office exam or EUA is an initial step. The goal is to assess the surrounding conditions and determine likely treatment options. Supplementary imaging which is usually an MRI, is done when the exact fistula route cannot be ascertained or secondary routes are suspected. If there is inflammation/infection, sepsis control is mandatory as a first step is closure is to be considered. There should be a low threshold for placing a seton or unroofing a cavity associated with the fistula tract. A stoma is strongly considered. We try to perform this laparoscopically if possible. It is *key* to plan ahead when you are placing the stoma. The goal should be to look at the bowel upstream from the in situ pouch. The place that will reach the furthest toward the anus and is about 15-20 cm upstream from where the afferent limb enters the pouch should be the point in the bowel to place the stoma. This is so in the event a new pouch needs to be constructed during future repairs, the stoma can be mobilized and it becomes the curved part of the J (otherwise a stoma placed in another spot in the bowel may hinder or prevent construction of a new pouch).

Patients must be motivated and have realistic goals and a realistic time frame before embarking on a repair. Patients that have no clinical suspicion of CD, are individually assessed and a repair that involves a transanal, transvaginal, or transperineal approach can be considered.

We strongly consider a stoma before or during a repair and rarely perform a repair with the intent to close the fistula without a stoma.

Crohn's disease is not an automatic exclusion to considering repair. Treatment with a biologic may reduce ulceration and/or inflammation thus creating an environment and tissue amendable to a repair. However patients should be appraised of the reduced closure rate and again must have realistic goals and be highly motivated.

Conclusion

Pouch-vaginal fistula is a devastating pelvic pouch complication for any woman. The main treatment goal is to close the fistula indefinitely and provide symptomatic relief. There is no one gold standard operation to achieve closure and choosing the most suitable operation for each patient depends on fistula characteristics—size, location (including where the internal opening is located in relation to the IPAA), previous diagnosis and patient comorbidities.

Literature suggests local repairs to be employed for fistulas below the anastomosis and the transabdominal approach for fistulas at/above anastomosis however recent studies report conflicting results. It is likely that as the experience grows in closing these fistulas, higher success rates may be reported. It remains that the most important aspect of fistula closure is a detailed discussion with the patient and tailoring the approach based on the local fistula conditions.

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