



Surgical Management of Deep Postanal Abscess and Horseshoe Fistula of Cryptoglandular Origin – A Review

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Abstract

Deep post anal space abscesses and horse shoe fistulae have represented a challenging problem to both patient and surgeon over the years. That concern remains true to this day. The potential morbidity of post-operative fecal incontinence and recurrent disease plague the decision making for today's surgeon as he/she considers several management options. Over time, newer sphincter sparing surgical techniques have been advocated for the management of this problem. This article reviews the current available literature on the surgical management of this ailment specifically highlighting technique, potential complications and disease recurrence.

Introduction

Anorectal abscesses are one of the commonest anorectal problems encountered by surgeons [1]. They are usually cryptoglandular in origin and are associated with an anal fistula about 30% – 70% of the time [2-4]. When the incriminating gland originates from the posterior midline and traverses the conjoint longitudinal muscle into the deep postanal space, a deep postanal abscess results. Further extension of this infective process into the unilateral or bilateral ischiorectal fossa leads to a horseshoe abscess [5]. This type of abscess accounts for about 15% – 20% of anorectal abscesses and its management remains challenging to surgeons to this very day [6].

Anatomically, the deep postanal space (DPAS) is bounded anteriorly by the posterior aspect of the deep external sphincter, superiorly by the levator any which inserts into the fourth sacral and first coccygeal bodies by way of the anococcygeal raphe, and, inferiorly by the superficial external sphincter as it inserts into the tip of the coccyx via the anococcygeal ligament [7]. This space is in continuity with both ischiorectal fossae. For this reason, lateral spread of the suppurative process goes to the ischiorectal fossae resulting in the horseshoe abscess. If untreated, further spread to the lower abdominal wall, scrotum, and perineum can result. Chronic draining sites on the buttocks (horseshoe fistulae) can also result.

DPAS abscesses almost invariably are associated with a posterior midline fistula in ano. While it is common consensus in the surgical community that drainage of the abscess cavity is essential, what to do with the associated fistula remains a dilemma. Simple incision and drainage of the DPAS abscess without addressing the fistula has been associated with an exceptionally high rate of recurrent DPAS abscesses [8]. It is thus paramount that the surgeon attempts to identify and manage the associated fistula. A major concern for surgeons is the possibility of post-procedure fecal incontinence given the amount of anal sphincter muscle involved by this transsphincteric fistula. Also, given the complexity involved in treating this condition, many patients require multiple operations. This article reviews the current surgical management options for deep postanal abscess and horseshoe fistula with particular attention to surgical technique, potential complications and recurrence.

Method

A thorough search for articles was performed using MEDLINE, PubMed and Cochrane Database of Systemic Reviews. Only articles written in English were considered. Keywords used in the search included horseshoe abscess, horseshoe fistula, and deep post anal abscess. In addition, searches of the embedded references in the articles were also conducted.

Surgical Management Modalities

Incision and drainage with primary fistulotomy

The initial approach to treatment of DPAS abscesses with horseshoe fistula required complete

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Received Date: 22 May 2017

Accepted Date: 11 Jul 2017

Published Date: 18 Jul 2017

Citation:

Umoh NJ. Surgical Management of Deep Postanal Abscess and Horseshoe Fistula of Cryptoglandular Origin – A Review. *Clin Surg*. 2017; 2: 1570.

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unroofing of the fistula tracts. This involved severance of the superficial external sphincter so the lower anal canal could shift anteriorly allowing the severed ends of the subcutaneous and deep external sphincters to separate more for adequate drainage. This technique was shown to be associated with very high rates of impaired fecal continence [9]. Subsequently, Hanley described a more conservative surgical technique at that time that included a primary fistulotomy while requiring separation of the superficial external sphincter muscle fibers as opposed to severance of this structure. In Hanley's technique, the internal opening of the fistula in the posterior midline is first identified. It is then probed to gain access to the deep postanal space. A fistulotomy is performed from the internal opening towards the coccyx severing the distal portion of the internal sphincter, the subcutaneous portion of the external sphincter, and a portion of the deep external sphincter. It is completed by separating the involved portion of the superficial external sphincter along its muscle fibers. The DPAS is then adequately drained and curetted. If a horseshoe abscess or fistula is present, counter incisions are made over it on the respective ischio-rectal fossa for adequate drainage. This resulted in minimal to no anterior displacement of the anal canal and following healing, there was minimal anatomic defect. Importantly, despite the amount of muscle involved in the fistulotomy, no significant reports of long term incontinence were observed. Hanley et al. reviewed data on 41 patients (10 acute, 31 chronic) with horseshoe abscesses or fistula over a 10 year period. The authors report that all patients were healed between 5 to 12 weeks and there were no problems with incontinence [10]. In another retrospective study, Hamilton reviewed data over a 5 year period involving 65 patients with horseshoe fistulae. Out of 57 patients who eventually followed up, there were 4 (7%) recurrences. No reports of incontinence were noted. Held reviewed their data on 69 patients over a period of 10 years. Multiple modalities were used to treat patients over this time. These included "incision and drainage alone", "incision, drainage and primary fistulotomy", "incision, drainage, primary fistulotomy and counter drainage" and "incision, drainage and insertion of seton". Incision and drainage alone was performed only in patients in whom the offending crypt (internal opening) could not be identified. Among these patients, there was 60% recurrence. Those patients, who had the abscess confined to the DPAS and an identified internal opening, underwent incision and drainage with primary fistulotomy. They were found to have an 8% recurrence rate. For the patients who had a horseshoe component in addition to the DPAS abscess, they underwent counter-drainage of the affected ischio-rectal abscess(es) in addition to the primary fistulotomy. This group of patients had a 28% recurrence rate. The authors attributed this to the possibility of premature closure of the posterior midline fistulotomy wound and suggested that prolonged drainage of this wound would lead to a reduction in the incidence of recurrence. More recently, Inceoglu and Gencosmanoglu [11] retrospectively reviewed data on 25 patients who underwent incision and drainage with primary fistulotomy for DPAS abscess. In their study, patients who had an associated horseshoe fistula had complete fistulotomy of all the fistula arms. They report no recurrences and no issues with fecal incontinence after a median follow up of 35 months.

Incision and drainage with seton fistulotomy

This is a modification of Hanley's technique but in this case, the fistulotomy is via a cutting Seton. Here, access is also gained to the DPAS by probing through the internal opening. The superficial external sphincter is separated along its fibers over the DPAS and a draining Seton placed to communicate with the internal opening in

the posterior midline. Counter-incisions are made on the ischio-rectal fossa for horseshoe abscesses. The skin and in the midline is cut to allow for subsequent tightening of the Seton on an outpatient basis to complete the fistulotomy. The presence of the Seton converts the acute abscess to a chronic draining fistula thus allowing for adequate drainage of the DPAS. Subsequently, the cutting Seton fistulotomy takes care of the fistula [12]. In the study by Held, 7 patients underwent this procedure. The authors found no recurrences and no issues with fecal incontinence in these patients.

Ustynoski et al. [13] reviewed their data on 11 patients with horseshoe abscess fistulae. Seven of these patients had posterior horseshoe fistulae and four had anterior horseshoe fistulae. All patients were treated with incision, drainage and Seton fistulotomy. The total healing time per patient was about 21 weeks. Two patients (18.1%) had a recurrence – both of which had DPAS abscesses. No information on fecal incontinence was reported in that study [13]. Pezim [14] reviewed data of 24 patients who had Seton fistulotomy for horseshoe fistula. The author reported that 21% of patients required re-operations and 96% of patients were eventually healed. By the end of follow up, only 64% said they had normal continence. Multiple other studies have consistently shown that fecal continence is preserved with this procedure with fairly acceptable recurrence rates [15-17].

Sphincter Sparing Approaches

Intersphincteric approach

This sphincter sparing approach was first described by Tan et al. [18]. It is based on the concept of the Ligation of Intersphincteric Fistula Tract (LIFT) procedure described by Rojanasakul [19]. It involves gaining access to the deep post anal space via the intersphincteric space and posteriorly over the external sphincter. The deep post anal space is drained and curetted, the internal opening of the fistula on the surface of the internal sphincter is closed, a suction drain is left in the DPA space and the intersphincteric space is then re-apposed. The authors found that for patients who primarily had this as a single stage procedure, there was 91.7% success. However, those patients who had a prior drainage prior to this approach had an 80% failure rate. This was attributed to the difficulty with dissection in the intersphincteric space and identifying the intersphincteric portion of the fistula tract following prior drainage and subsequent fibrosis. Recurrences were successfully managed with repeat drainage, placement of draining Setons and a subsequent endoanal advancement flap procedure. The authors do not present any data on incontinence rates in their study.

Advancement Flaps and Direct Closure

The use of advancement flaps usually involves a two stage procedure. The first stage entails adequate drainage of the DPAS with Seton placement and the second stage is the flap procedure to close the fistula. This method has been used to successfully manage recurrent abscesses following the intersphincteric approach. However, its success depends largely on the adequacy of the drainage of the DPAS. Koehler et al. [20] used 4 different approaches to close the internal fistula opening in patients with horseshoe fistulas. Three of these were advancement flaps - mucosa-submucosa flap (MSAF), rectal wall advancement flap (RWAF), anocutaneous advancement flap (ACAF). The last approach was direct closure of the internal opening. The flaps were constructed about 2 to 3 months following abscess drainage and Seton placement in patients who presented with

abscesses. Recurrence rates were 25% for MSAF, 35% for RWAF and 25% for ACAF. This was comparable to results historically seen in patients undergoing primary fistulotomy. The authors report a decline in continence levels in about 32% of patients. The authors therefore concluded that this approach is reasonable. In select patients, direct closure of the fistulous tract has been found to be a viable option. These are patients with a very elastic anal canal. Koehler et al. [20] reported results in 11 patients who underwent direct closure of the internal fistula opening following adequate abscess drainage and Seton placement. A closure of both the muscular defect and the overlying mucosa was performed. They note excellent results with this approach. All patients were healed with 0% recurrence.

Conclusion

In current surgical practice, the management of horseshoe abscess/fistulae and DPAS abscesses remain a challenge. As newer sphincter sparing surgical management modalities are added to the armamentarium of the colorectal surgeon, it is anticipated that there will be declining concerns for post-operative fecal incontinence. Recurrent disease will continue to remain a challenge and will be the benchmark for determining successful treatment. Finally, irrespective of the surgical technique used, the key to successful management of this complex problem remains the same - ensuring complete and adequate drainage of the DPAS.

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