

Case Report

Successful management of a rare horseshoe perianal fistula using the modified Hanley procedure: a case report

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ABSTRACT

Horseshoe perianal fistula is a rare, complex anorectal condition characterized by bilateral extension through the ischiorectal fossae, often challenging to treat surgically. We present a rare case successfully managed using the modified Hanley procedure, emphasizing sphincter preservation and complete drainage of the postanal space. The patient achieved complete healing without recurrence or continence compromise. This report underscores the value of the Hanley approach in managing complex horseshoe fistulas.

Keywords: Anorectal fistula, Horseshoe perianal fistula, Modified hanley procedure

INTRODUCTION

Horseshoe perianal fistula, also termed high horseshoe anal fistula (HHAF), represents a rare and anatomically complex variant of anorectal fistula typically comprising a posterior midline internal opening with bilateral extensions into the deep postanal and inter-sphincteric spaces, often involving the ischiorectal fossae.¹ Though anal fistulas have an incidence of approximately 8–12 per 100,000 individuals, HHAF accounts for only about 2–5%, yet it poses disproportionately high challenges due to recurrence risk and potential sphincter damage.²

Historically, complete deroofting fistulotomy achieved high cure rates but carried unacceptable rates of fecal incontinence, prompting the development of the more conservative Hanley procedure. First described in the 1960s, this procedure emphasizes drainage of the deep postanal space while preserving sphincter integrity unroofing only the primary tract and leaving lateral arms to heal or manage by seton placement.^{3,4} Subsequent modifications, such as the use of cutting or hybrid elastic setons combined with superficial fistulectomy of lateral tracts and curettage of deeper extensions into the ischiorectal spaces, have shown healing rates over 90%

with negligible incontinence.^{3,5} Contemporary comparative studies, including remodified versions of the Hanley procedure that address both deep postanal and inter-sphincteric drainage, report cure rates exceeding 95% while maintaining continence and quality of life.^{1,3} In this context, the modified Hanley procedure with strategic fistulectomy remains a sphincter-sparing yet curative surgical strategy for managing horseshoe perianal fistula.

CASE REPORT

The patient was a 28 years old male presented with a horseshoe perianal fistula. Horseshoe perianal fistula is a rare and complex form of anal fistula characterized by a fistulous tract that partially encircles the anus in a horseshoe or U-shaped configuration. It typically arises from an infection of the perianal glands located in the posterior midline of the anal canal. This infection can extend through the deep postanal space and spread bilaterally into the ischiorectal fossae before draining externally through multiple secondary openings on either side of the anus.^{6,7} Unlike simple fistulas, horseshoe fistulas are trans-sphincteric and involve multiple secondary branches, making them challenging to

diagnose and treat. Their deep and complex anatomy often leads to severe symptoms, including persistent discharge, pain and recurrent abscess formation. The fistulous tracts usually have a primary internal opening in the posterior midline near the dentate line, consistent with the cryptoglandular hypothesis of pathogenesis, where obstruction and infection of anal glands lead to abscess and fistula formation.⁶ Due to their extensive involvement of the deep postanal space and bilateral ischiorectal fossae, horseshoe fistulas carry a higher risk of recurrence and potential sphincter damage if not managed appropriately.

They are more common in males and may be associated with conditions such as Crohn's disease, which can complicate their course. The primary goals in managing horseshoe perianal fistulas are to completely eradicate all fistulous tracts and internal openings, drain any associated abscesses and preserve anal sphincter function to maintain continence. Surgical intervention remains the mainstay of treatment, with procedures tailored to the complex anatomy of these fistulas.^{6,8} In this case, the modified Hanley procedure proved effective as a sphincter-sparing approach that allowed adequate drainage of the postanal space and lateral extension without the need for complete transecting of the external sphincter muscle.

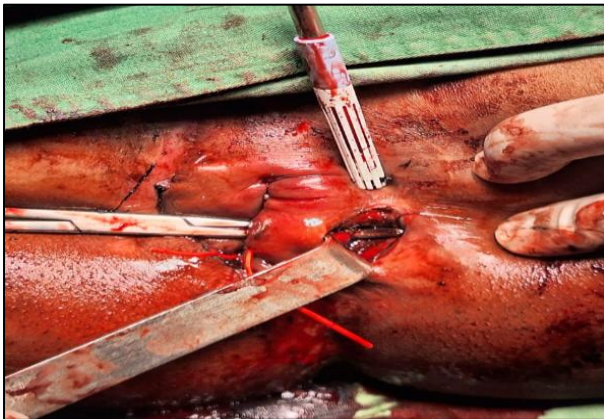


Figure 1: First fistula at 9 o'clock position.



Figure 2: Second fistula at 3 o'clock position.



Figure 3: First fistula at 9 o'clock tightened with surgical loop.

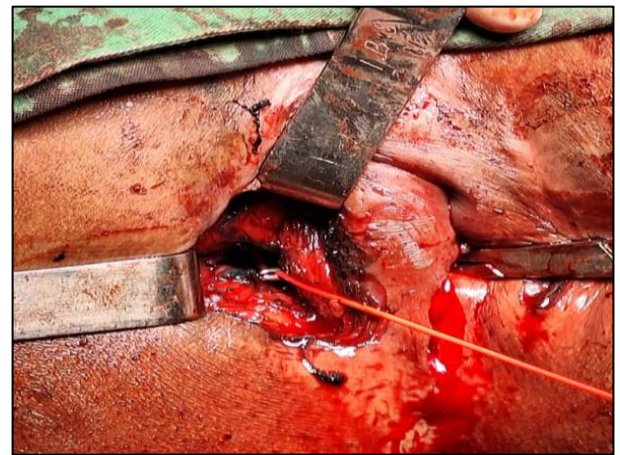


Figure 4: Second fistula at 3 o'clock tightened with surgical loop.



Figure 5: All fistulas tightened with surgical loop.

In this patient, a modified Hanley procedure was performed, involving the identification and drainage of all fistulous tracts via a posterior midline incision, followed by the placement of surgical loops to maintain

drainage and prevent premature closure. Specifically, two active external fistulas were identified: the first located at the 9 o'clock position and the second at 3 o'clock. Each was individually tightened with a surgical loop and the posterior midline space was unroofed to access and connect the entire horseshoe-shaped tract. Ultimately, all fistulous tracts were tightened with surgical loops, ensuring continued drainage and facilitating secondary intention healing.

This approach allows granulation tissue to form gradually while controlling infection. The effectiveness of this technique is supported by several studies. Leventoğlu et al demonstrated that the use of hybrid or elastic setons within the Hanley procedure improved outcomes in managing lateral fistulous arms without increasing incontinence risk.⁵ More recently, Wang et al reported healing rates of up to 95% with selective seton placement, with an average healing time of 8–10 weeks.¹ Successful outcomes in such complex fistulas depend not only on precise surgical technique but also on meticulous postoperative wound care.

In addition to surgical procedures, post-operative care also plays a crucial role in the healing process. In this case, the patient received follow-up therapy in the form of routine wound medication, including daily dressings, antiseptic irrigation and topical antibiotic-based and tissue-regenerative ointments. This wound therapy aims to prevent secondary infection, accelerate re-epithelialization and ensure complete closure of the wound without the formation of new ones (re-fistulization). The combination of the appropriate surgical approach and optimal wound management is crucial for the final outcome and reduces the likelihood of recurrence.

DISCUSSION

The modified Hanley procedure remains a cornerstone surgical approach for managing the rare and complex horseshoe perianal fistula, particularly those involving the deep postanal space and bilateral ischiorectal fossae. This technique is designed to balance effective eradication of the fistulous tract with preservation of anal sphincter function, thereby minimizing the risk of postoperative incontinence. According to Leventoğlu et al the addition of a hybrid elastic seton a seton fashioned from a surgical glove material tied under less tension than traditional cutting setons enhances the safety and efficacy of the Hanley technique.⁵

Their study of 21 patients demonstrated complete healing in all cases within approximately 8 weeks, with minimal postoperative pain and no significant change in continence scores and a low recurrence rate of 4.8% after nearly two years of follow-up.^{3,5} Further supporting these findings, a retrospective review by another group showed a 91.3% complete healing rate within 8 months using a modified Hanley procedure combined with seton

management in 23 patients. The procedure involved drainage of the deep postanal space and staged tightening of cutting setons, allowing gradual division of involved sphincter fibers while preserving continence. Patients maintained good functional status throughout treatment, with no reported fecal incontinence, highlighting the procedure's safety in complex fistulas.⁴ More recent studies have explored refinements to the classical Hanley procedure, such as simultaneous drainage of the deep postanal space and the deep posterior inter-sphincteric space (DPIS). This remodified Hanley procedure was associated with improved early postoperative pain control and enhanced drainage, potentially contributing to better healing outcomes while maintaining the minimally invasive nature of the surgery.¹

Clinical experience from a prospective study of 25 patients with posterior horseshoe fistula treated by a single-stage modified Hanley procedure further confirms its effectiveness. The surgical approach involves a transverse posterior incision to access and unroof the fistulous tracts and postanal space, excising side branches completely without cutting the postanal sphincter. This study reported complete healing in all patients within three months, with only a small recurrence rate (12%) at six months, mild postoperative pain manageable without narcotics and rapid return to normal activities within 2–3 weeks.⁷

CONCLUSION

The modified Hanley procedure remains a well-established, sphincter-preserving surgical option for horseshoe perianal fistula. It enables effective drainage of the postanal and ischiorectal compartments while avoiding total sphincter transection. Recent enhancements focusing on improved drainage of involved anatomical spaces may further optimize results. When augmented with elastic setons and meticulous wound care, it results in high healing rates and low recurrence. This case supports the ongoing relevance of the Hanley procedure as a primary approach for this rare and challenging condition.

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