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Clinical Role of Modified Seton Procedure and Coring Out for Treatment of Complex Anal Fistulas Associated With Hidradenitis Suppurativa

Yukihiko Tokunaga[1], Hirokazu Sasaki[2]

[1]*Japan Post Kyoto Teishin Hospital, Department of Surgery, Nakagyou-ku, Kyoto, Japan*

[2]*Japan Post Osakakita Teishin Hospital, Department of Surgery, Kita-ku, Osaka, Japan*

A variety of techniques have been described to treat complex anal fistulas. When complex anal fistulas are associated with hidradenitis suppurativa, the treatment has to be appropriately tailored for the severity and distribution of the disease so as to remove the external fistula tract to prevent recurrence while ensuring fecal continence. Between 2007 and 2011, a total of 10 males (ranging in age from 32 to 54 years) complained of recurrent purulent discharge in the buttocks and thigh regions. The discharge had started about 12 to 18 months prior, and had increased progressively resulting in complex anal fistulas and hidradenitis suppurativa in the buttocks. They underwent surgical operation according to a modified seton procedure for complex anal fistulas and coring out for hidradenitis suppurativa. They were discharged from the hospital in 4 to 5 days, while the seton dropped spontaneously about 6 to 8 months after surgery. They have been well without any morbidities or recurrence. The present paper demonstrates that cases of complex anal fistulas associated with hidradenitis suppurativa can be successfully treated with a modified seton procedure and coring out of hidradenitis suppurativa.

Key Words: Anal fistula – Hidradenitis suppurativa – Seton procedure

Reprint requests: Yukihiko Tokunaga, MD, PhD, Department of Surgery, Japan Post Kyoto Teishin Hospital, 109 Nishirokkaku-chou, Nakagyou-ku, Kyoto 604-8798, Japan.
Tel.: +81 75 241 7165; Fax: +81 75 252 2542; E-mail: clz07030@pop26.odn.ne.jp

The aim of surgical treatment of anal fistula is to remove the external fistula to prevent recurrence while ensuring fecal continence. Generally, a "lay-open" fistulotomy or fistulectomy is indicated for simple anal fistulas such as inter-sphincteric or low trans-sphincteric fistulas; but other complex types, including trans-sphincteric or supra-sphincteric fistulas, would require the division of a large portion of the external sphincter, thereby increasing the risk of fecal incontinence. Although many procedures have been described, including seton or innovative methods such as advancement flap, anal plugs, and so on,[1–5] no single surgical approach addresses all types of fistulas, and the results have been controversial . To solve this problem, we have used a modified seton technique that dissects out the external fistula tract while preserving the anal sphincter muscle.[6,7]

In some patients, hidradenitis suppurativa (HS) is associated with a complex anal fistula. Perianal HS is a chronic and recurrent inflammatory, suppurating, and fistulating disease of apocrine sweat glands in the anal skin and soft tissue. There is currently no known cure nor any consistently effective treatment, although a variety of therapies have been tried to treat HS. In some cases with severe HS, wide surgical excision of the affected skin and skin grafting has been applied. However, when HS is associated with a complex anal fistula, wide excision of the skin and subcutaneous tissue in the buttocks region for HS, as well as complete fistulotomy, usually results in large defects in the musculocutaneous structure with morbidities including incontinence. Therefore, the treatment has to be appropriately tailored for the severity and distribution of the disease to maintain the quality of life of the patient. We report here the clinical utility of a combination of a modified seton procedure for treatment of complex anal fistula and coring out for HS.

Patients and Methods

Between January 2007 and 2011, a total of 10 males (age range from 32 to 54 years) complained of recurrent purulent discharge in the buttocks and thigh regions (Table 1). The discharge started about 12 to 18 months prior and increased progressively, resulting in complex anal fistulas and HS in the buttocks. Their past medical history and family history were unremarkable. Physical examination showed complex anal fistulas and HS. Purulent discharge came from several secondary openings in the perianal region and more cutaneous openings of HS in the buttocks and/or thigh (Fig. 1A–1C).

Laboratory studies disclosed a normal bilirubin, and liver enzymes including aspartate aminotransferase, alanine aminotransferase, and alkaline phosphatase were normal. Their complete blood count showed a moderate leukocytosis (white blood cell count: 7900–11,600/mm^3), although hemoglobin and platelet levels were normal. Chest and abdominal x-rays were also normal.

Computed tomography showed anal fistulas in the superficial external sphincter up to the deep postanal space and subcutaneous HS abscess in the buttocks and/or thigh (Fig. 2A–2C). They underwent surgical operation according to a modified seton procedure and coring out of HS.

Surgical Procedure and Results

In the jackknife position under spinal anesthesia, the skin was incised around a secondary opening to dissect out the fistula and tunnel down to the primary abscess in the retroanal space, around which the superficial external sphincter feels scarred, indicative of chronic abscess. After dissecting out the fistula tract and the primary abscess, a rubber band of seton, placed between the primary opening and the nearest skin incision, was secured to itself with a suture in the form of a loop according to a modified method of seton.[6,7] As to surgical technique, briefly, the external fistula tract was dissected and mobilized from the external orifice through the external sphincter muscle up to the internal sphincter muscle. The fistula tract was incised partly at the level of internal sphincter muscle, and a Kelly forceps was inserted into the tract lumen to the internal primary orifice. A rubber band of seton was grasped with the forceps, and pulled through into the lumen. The rubber band was tied loosely after resection of the external fistula tract. Skin and subcutaneous tissue was approximated with sutures, allowing it to remain wide open to allow drainage of fluid. The seton, placed around the sphincter muscle, was tightened every several weeks until the internal orifice had migrated toward the anal skin and the sphincter muscle was transected, resulting in spontaneous drop of the seton. The purpose of the technique was to make the internal orifice of the fistula tract migrate to the level of anal verge, resulting in spontaneous drop of the seton. Other secondary fistula tracts, connected to the primary abscess in the retroanal space, were dissected out or curretaged followed by irrigation

Table 1 Patients characteristics, preoperative findings, and results

Case	Age, y	Anal fistula	HS	Hospital stay, d	Seton duration, mo
1	32	Trans	Bilateral sides	5 d	8
2	46	Trans	Right side	4 d	7
3	34	Supra	Left side	5 d	8
4	50	Trans	Left side	4 d	6
5	38	Supra	Bilateral sides	5 d	7
6	54	Trans	Right side	4 d	8
7	49	Trans	Left side	4 d	6
8	33	Trans	Right side	4 d	6
9	43	Trans	Left side	5 d	8
10	37	Trans	Left side	4 d	6

Trans, trans-sphincteric anal fistula; Supra, supra-sphincteric anal fistula.

with normal saline. This procedure could convert complex fistulas to a short straight tract by dissecting out the secondary fistula tracts.[6,7]

Thereafter, they underwent excision and coring out of HS. Clusters of chronic abscesses, epidermoid cysts, sebaceous cysts, or multilocalized infections were cored out entirely through multiple skin incisions. Intact skin and subcutaneous tissue were allowed to remain as much as possible in order to reproduce itself. Finally, drains were placed in the subcutaneous space after the fistulectomy as well as in the subcutaneous defect cavity of HS. The rubber band was tied loosely after resection of the external fistula tract (Fig. 3). Skin and subcutaneous tissue was approximated with sutures, allowing it to remain wide open to allow drainage of fluid. They were discharged from the hospital 4 to 5 days after surgery.

They were followed in the outpatient clinic. Careful examination of the anus confirmed the presence of adequate fibrosis around the seton and good healing of the fistulectomy site. Seton, placed around the sphincter muscle, was tightened every several weeks until the sphincter muscle was transected and the primary orifice had migrated toward the anal verge, resulting in spontaneous drop of the seton about 6 to 8 months after surgery

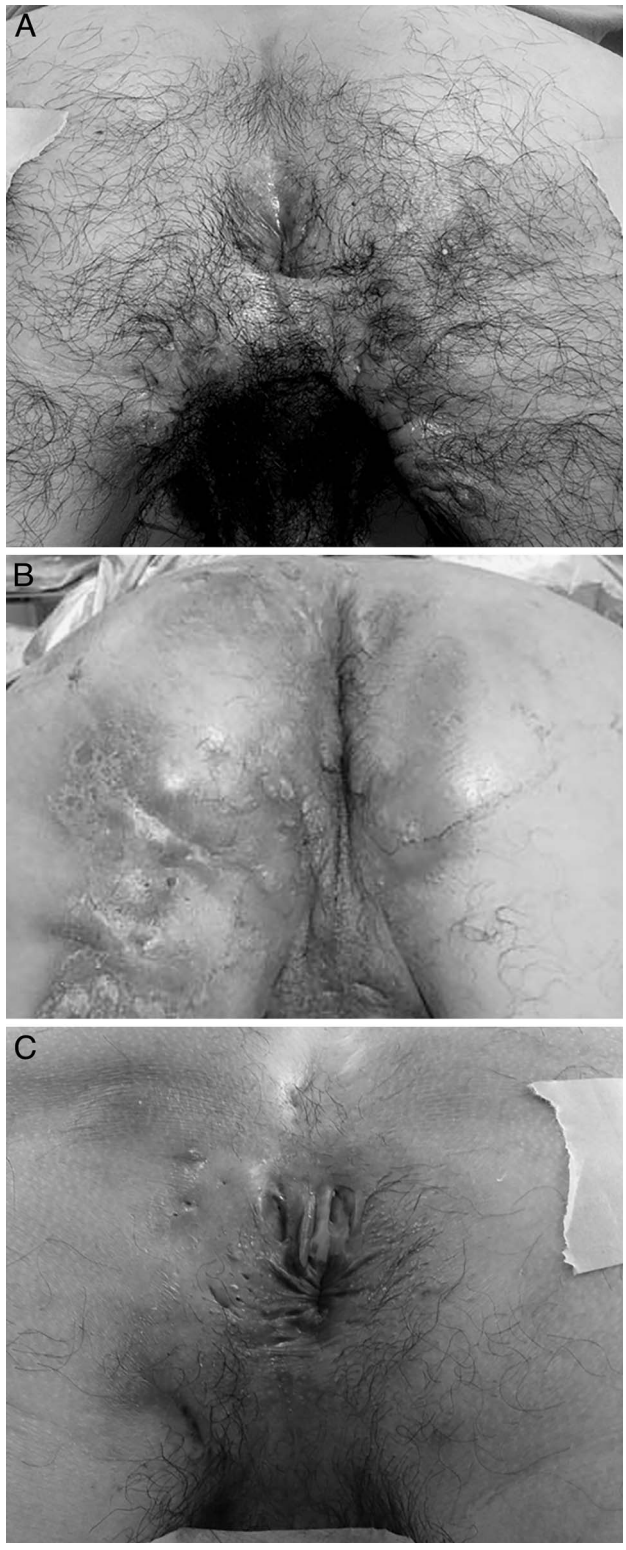

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Fig. 1 (A) Preoperative local findings (Case 1). Purulent discharge came from several secondary openings of anal fistulas in the perianal region. Thick pigmented skin and subcutaneous abscess due to hidradenitis suppurativa in the bilateral buttocks. (B) Preoperative local findings (Case 3). Purulent discharge came from several secondary openings of anal fistulas. Thick pigmented skin and subcutaneous abscess due to hidradenitis suppurativa in the left buttock. (C) Preoperative local findings (Case 4). Purulent discharge came from several secondary openings of anal fistulas in the perianal region. Thick pigmented skin and subcutaneous abscess due to hidradenitis suppurativa in the left buttock.

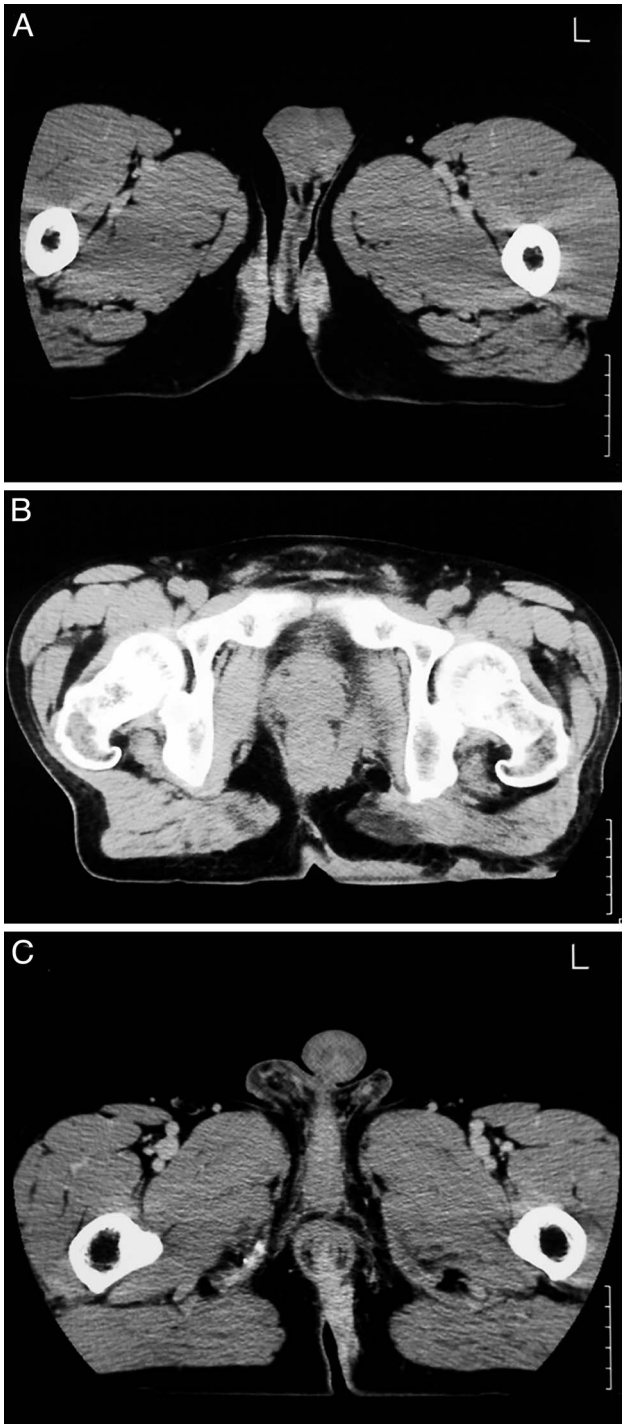

Fig. 2 (A) Computed tomography showed thick skin and subcutaneous hidradenitis suppurativa abscess in the bilateral buttocks (Case 1). (B) Computed tomography showed anal fistulas in the superficial external sphincter up to the deep retroanal space and subcutaneous hidradenitis suppurativa abscess in the left buttock (Case 3). (C) Computed tomography showed thick skin and subcutaneous hidradenitis suppurativa abscess, some of which connected to anal fistulas in the left buttock (Case 4).

Fig. 3 After coring out of the hidradenitis suppurativa and resection of the external fistula tracts, the seton was tied loosely (Case 1).

(Fig. 4). They have been well without any morbidities or recurrence.

Discussion

Surgical management of complex anal fistulas has steadily evolved over the last several decades. The classic procedure required identification of the internal opening, which was excised, and all fistulous tracts unroofed, severing the superficial external sphincter. This procedure resulted in anal deformity, and prolongation of hospitalization with

Fig. 4 Seton was tightened every several weeks until the sphincter muscle was transected, resulting in spontaneous drop of the seton (Case 1).

some degree of incontinence. In 1965, Hanley[8] unraveled the pathogenesis of complicated high anal fistulas and suggested primary fistulotomy with counter drainage as the procedure caused minimal anal deformity, and function of sphincter control was only slightly altered. In 1977, he introduced the concept of seton usage for deep anterior anal fistula in female patients.[5] He stated that the seton initially acts as a drain to divert the spread of suppuration, converting a complicated fistula into a simple anal fistula. When the anal fistula became quiescent, the seton was gradually tightened to slowly sever the incorporated sphincter mechanism. He also suggested that seton treatment of complex anal fistula would cause less incontinence than primary fistulotomy, because the seton stimulates a fibrous reaction, fixing the sphincter muscle at the site of division.

In the modified seton of the present paper, after excising the entire fistula tract and primary abscess as much as possible from the secondary opening to the internal sphincter muscle, a seton rubber band is placed between the primary opening and the nearest point of skin incision. The procedure can reduce complex fistula tracts to a simple short straight tunnel, and reduce the volume of the sphincter muscle and connective tissue to be severed, by shortening the distance between the primary opening and the skin incision.[6,7] As a result, it can minimize the injury to the anal sphincter and function.

Hidradenitis suppurativa is a chronic disease manifested by recurrent abscessing inflammation, fistulating sinus tracts, and scarring. The etiology of the disease is still poorly understood, though it is caused primarily by follicular occlusion with secondary involvement of the apocrine glands.[9] In mild cases, conservative measures with local wound care and limited incision can be successful. In severe cases, more radical surgery, such as wide excision and skin graft, is usually performed. However, wide excision and skin grafts in the anal canal may contract and result in anal stenosis. Although primary closure, grafting, or flaps have been extensively utilized, they have been associated with poor results in perianal HS.[10] Thus, Mitchell and Beck[11] indicated that perianal disease is often best managed with local excision alone, with primary closure for small defects, and either unroofing or healing by secondary intention for larger wounds. When HS is associated with a complex anal fistula, its management should be individualized according to the site and extent of the disease. Wide excision for HS, as well as complete fistulotomy for anal fistula, usually results in a large defect in musculocutaneous structure, with severe morbidity including incontinence. Therefore, we have chosen a combination treatment of a modified seton procedure for complex anal fistulas and coring out for HS.

In conclusion, a combination of a modified seton procedure for treatment of complex anal fistulas and coring out for HS has been shown to be clinically feasible and useful.

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