



Case report

Bascom II combined with VSD treatment involving the preservation of tissue bridges for recurrent complex pilonidal sinuses with a literature review

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ABSTRACT

Introduction: For patients with large and deep-seated recurrent complex pilonidal sinuses, the use of traditional open excision or flap reconstruction surgery may lead to high surgical difficulty, significant local damage, numerous complications, slow healing, and a high risk of recurrence. This article reports a case of recurrent complex pilonidal sinus and discusses the advantages of Bascom II combined with VSD treatment involving the preservation of tissue bridges.

Case presentation: The patient, a 31-year-old male, presented with recurrent swelling, pain, and purulent discharge from the sacrococcygeal region for over a year. Upon physical examination, extensive lumps and sinus tracts were observed in the lumbosacral tail area, with the lesion extending from L4 to the tip of the coccyx. Under general anesthesia, a segmental resection was performed, and the lumbosacral mass lesion was excised, preserving normal tissue bridges. The mature sinus tract at the upper part of the coccyx was removed, and Bascom II reconstruction surgery was performed. In the late stage at the site of lumbar sacral lesion excision, VSD was applied to promote wound healing.

Discussion: The combination of Bascom II with lesion tunnel-like removal can reduce the damage, elevate gluteal cleft, and lower the recurrence rate. Subsequently, with the addition of VSD, it can accelerate the elimination of necrotic tissue, reduce infection risk, and expedite wound healing.

Conclusion: This case explores the advantages and characteristics of combining various techniques in the treatment of recurrent complex pilonidal sinuses, emphasizes the utility of VSD as an adjunctive therapy for large lesions.

1. Introduction

Pilonidal sinuses are a type of infectious disease, clinically characterized by recurrent abscesses in the sacrococcygeal region that, if left untreated, can lead to the formation of chronic sinus tracts. This condition causes local pain, discomfort, restricted mobility, significantly impacting the patient's quality of life [1,2]. According to relevant statistics, pilonidal sinuses are more common in young patients, with an incidence rate of approximately 26/100,000, and they occur more frequently in males than females [3]. Treatment of pilonidal sinuses primarily involves surgical approaches, including open excision, excision followed by pouch closure, one-stage excision with primary closure, and tissue flap reconstruction [4]. Negative pressure sealed drainage

technology is superior to standard dressing changes in healing time and reduction of wound size for large-scale chronic wounds. Suissa et al. [5] confirmed this through meta analysis of 10 randomized controlled trials. However, for patients with recurrent and complex pilonidal sinuses, a single treatment approach may not yield optimal results. The surgeon should take a detailed medical history, combine preoperative imaging examinations, conduct a comprehensive assessment, and choose the appropriate surgical method to increase the cure rate, reduce complications, accelerate wound healing, and minimize recurrence.

This article aims to report a case of recurrent and complex pilonidal sinuses treated at our hospital and to discuss the advantages and characteristics of Bascom II combined with VSD treatment involving the preservation of tissue bridges in treating such patients. The work has

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been reported in line with the SCARE criteria [6].

1.1. Patient information

The patient is a 31-year-old male who has been suffering from recurrent swelling and pain with pus discharge in the lumbosacral region for over a year. He underwent two previous pilonidal sinus incision and drainage procedures at other hospitals, but postoperatively, he continued to experience recurrent pain, swelling, and abscess formation in the lumbosacral area. The other hospitals declined to perform further surgery, prompting him to seek consultation at our hospital. He had a history of allergic dermatitis for more than ten years and was allergic to eggs and milk.

1.2. Clinical findings

In the lumbosacral region, there is a large and deep lesion measuring approximately 170.63 mm × 56.26 mm. At the central lumbosacral area (L4-S2), there is a large circular mass of approximately 91.73 mm × 56.26 mm. The local skin shows pigmentation, and there are two ulcer openings with discharge at the site of the mass. The lesion narrows at the S2 level, extending into a mature sinus tract towards the tip of the coccyx. At the distal end of the buttock crease, there is one ulcer opening (Fig. 1a-b). MRI indicates the presence of a sinus tract in the lumbosacral region, confirming the diagnosis of pilonidal sinus (Fig. 2a-b).

1.3. Therapeutic intervention

Under general anesthesia, a surgery was performed to excise and reconstruct the recurrent and complex pilonidal sinus. The lesion was divided into segments, with the boundary at the mature sinus tract at the S2 level. The lumbosacral mass lesion was removed while preserving normal tissue bridges. The mature sinus tract from S2 to the coccyx was excised, and a Bascom II reconstruction was performed (Fig. 3a-c). Postoperatively, histopathological examination of the tissue specimens showed squamous epithelial hyperplasia with keratin plug formation. There was local granulation tissue formation and bleeding, and the lesion area exhibited cystic changes. The findings were consistent with pilonidal sinus (Fig. 4a-b). In the postoperative period, negative pressure

wound therapy using a VSD device was applied to the wound at the preserved tissue bridge site from L4 to S2. The parameters included a hospital center negative pressure of 0.02 kPa, and negative pressure closure for 10 days to facilitate wound healing (Fig. 5a-b).

1.4. Follow-up and outcomes

The patient could tolerate postoperative pain, with a VAS (visual analog scale) score of 3. The clinician stopped the pain pump on the second day after surgery. On the 11th day postoperatively, the local wound healing trend was good, and the patient was discharged, with regular outpatient follow-up for dressing changes. At the 9-month follow-up, there were no significant discomfort symptoms, and the MRI examination showed excellent local healing with no recurrence (Fig. 6a-b).

2. Discussion

The complexity of the pilonidal sinus treated in this paper is characterized by its extensive lesion range, a history of multiple recurrent surgeries, and the difficulty of tissue reconstruction. The lesion extends from the L4 region to the tip of the coccyx, measuring 170.63 mm in length, and the lumbosacral region has a wide lesion range of approximately 56.26 mm, with multiple openings that communicate with each other. Achieving one-stage tissue reconstruction while excising the lesion presents a significant challenge, demanding a higher level of technical expertise and surgical decision-making from surgeons.

Traditional lay open excision results in extensive local damage, a prolonged healing period, and the potential for significant scarring, undoubtedly increasing postoperative discomfort for patients. One-stage reconstruction following lesion excision not only presents a greater challenge to surgeons but also, due to the extensive tissue defect in the lumbosacral area, makes tissue reconstruction impossible. Sutured wounds can easily open due to excessive tension, increasing the risk of postoperative recurrence. Based on the extent, shape of the patient's lesion, and the pros and cons of current treatment methods, the surgeon opted for a combined approach using Bascom II and VSD with tissue bridge preservation. The lesion was divided into upper and lower segments at the S2 level and carefully designed incisions were made. The mass lesion in the lumbosacral region was excised while preserving normal tissue bridges, and the mature sinus tract in the coccyx was excised with concurrent Bascom II reconstruction. Midline suturing was performed to elevate the buttock crease. In the postoperative period, VSD negative pressure was applied to the wound in the preserved tissue bridge area of the lumbosacral region, promoting granulation tissue and blood vessel formation, thus accelerating wound healing. To date, the patient has healed well, with no complications or recurrence during follow-up.

The success of this patient's treatment can be attributed to the precise timing of the surgery, the choice of surgical procedure, meticulous incision design, precise surgical techniques, and postoperative wound care. Although the techniques used in this case are not novel, facing such a complex and challenging case, the reasonable selection of procedures combined with the favorable postoperative prognosis of the patient made this case worthy of reporting and meaningful. For this patient with extensive recurrent pilonidal sinus, the excision of mature sinus tracts was performed with the goal of preserving normal tissue as much as possible. Combining the Bascom II procedure with midline suturing to elevate the buttock crease was a pathophysiology-based approach to treat the condition. The interconnected lesion in the lumbosacral region were excised while preserving tissue bridges, which expedited postoperative healing, reduced surgical scars, and the addition of postoperative VSD with tissue bridge preservation further facilitated rapid wound healing. Overall, the treatment had a favorable outcome with minimal trauma, and the patient quickly returned to normal work and life, resulting in a high level of satisfaction.

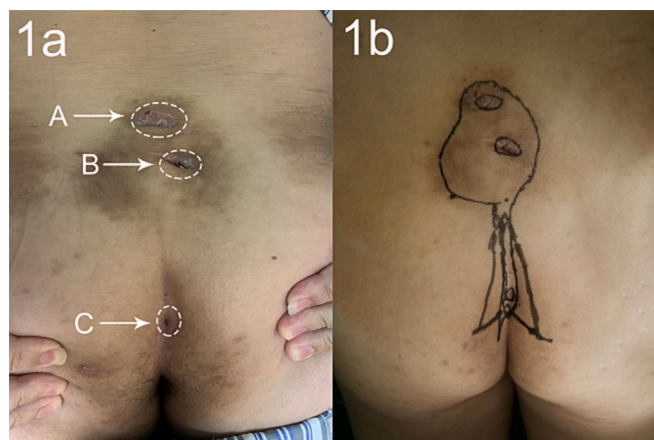


Fig. 1. a: Preoperative physical examination, a circular lesion is visible from L4 to S2, with two openings at the lesion (indicated by arrows A and B), secreting discharge upon compression, localized skin pigmentation deposition. The lesion gradually narrows from S2 to form a mature sinus tract extending to the tip of the coccyx, with one opening at the far end of the buttock crease (indicated by arrow C). b: Surgical marking, using the mature site of the S2 sinus tract as a boundary, divides the lesion into two segments for separate treatment. The mass lesion in the lumbosacral region is excised while preserving the normal tissue bridge. The mature sinus tract in the coccygeal area is excised for Bascom II reconstruction.

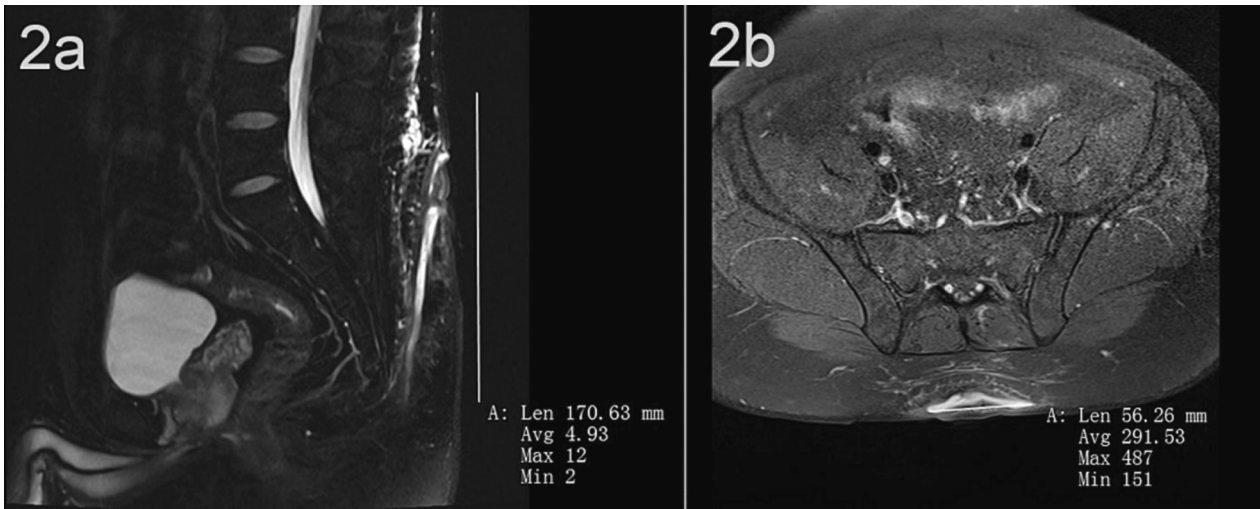


Fig. 2. a: Preoperative MRI (sagittal view) shows that the lesion extends from L4 to the tip of the coccyx, with a length of approximately 170.63 mm. b: MRI (axial view) shows that the width of the lesion in the lumbosacral region is approximately 56.26 mm.



Fig. 3. a: Excision of the mass lesion in the lumbosacral region while preserving the normal tissue bridge, probe exploration of the mature sinus tract below S2. b: Excision of the mature sinus tract from below S2 to the coccyx and mobilization of the skin flap, elevation of the buttock crease, and reconstruction. c: Placement of a negative pressure ball drainage tube, layer-by-layer closure of the lower incision.

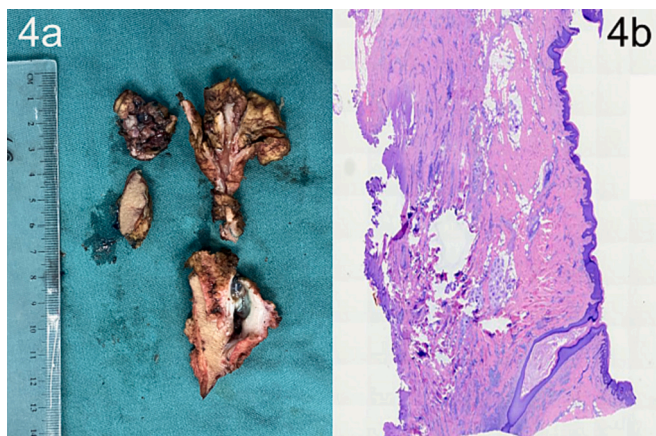


Fig. 4. a-b: Histopathological examination of the excised tissue from the coccygeal area reveals squamous epithelial hyperplasia accompanied by keratin plugging, localized granulation tissue formation, and hemorrhage. The lesion exhibits cystic changes and is consistent with pilonidal sinus.

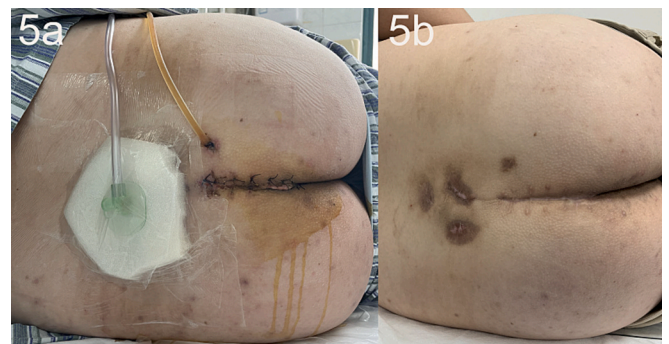


Fig. 5. a: On the 5th day after surgery, a VSD device is connected to the wound at the lumbosacral region (L4-S2), with a hospital wall-mounted central negative pressure of 0.02 kPa for a total of 10 days, with material changes every 3–5 days to promote wound healing. b: 9 months after surgery, follow-up shows excellent wound healing with no complications and no recurrence.

In terms of clinical efficacy, Bascom II not only reduces the recurrence rate and incidence of complications but also shortens wound healing time and improves patient's life of quality [7,8]. Stauffer et al. [9] randomized controlled trial analysis showed that compared to other

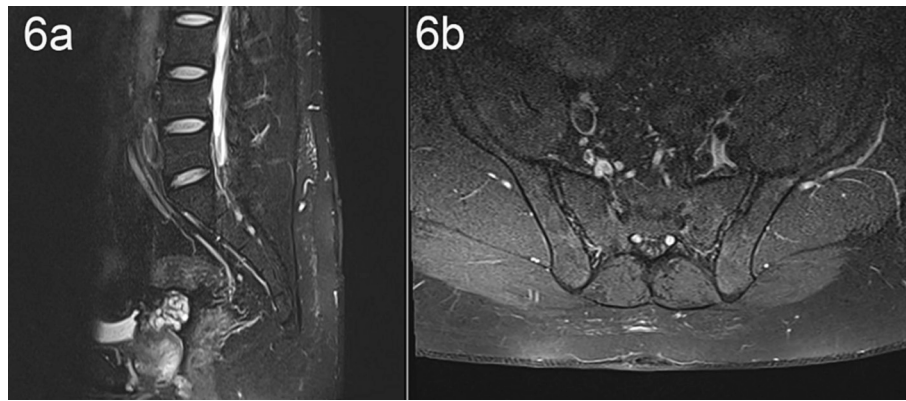


Fig. 6. a-b: Follow-up MRI, 9 months after surgery (sagittal and axial views) shows excellent local healing with no recurrence.

types of pilonidal sinus surgeries, the Bascom II procedure exhibited a lower recurrence rate at any follow-up time. The key technical points of Bascom II involve the design of the advancement flap and elevation of the buttock crease, mobilization flap reconstruction to minimize local damage, accelerate wound healing, and the use of midline suturing to maintain a tension-free closure, thus avoiding the formation of significant scars during the recovery period. It also reduces the possibility of spontaneous hair insertion into the buttock crease, thereby lowering the risk of recurrence [10,11]. Simultaneous removal of the lesion while preserving normal tissue bridges after the excision of the pilonidal sinus lesion, coupled with VSD in the later stages, not only reduces local trauma and shortens the surgical duration but also accelerates the wound healing rate in the lumbosacral region. The negative pressure suction accelerates the liquefaction discharge of necrotic tissue. Furthermore, the device's semi-permeable membrane isolates it from the environment, reducing the risk of bacterial infection in the perianal wound. The polyurethane foam forms numerous tiny folds between the wound and the negative pressure suction, promoting the growth of new blood vessels and filling with granulation tissue [12]. Therefore, VSD can be applied as an adjunctive therapy for pilonidal sinuses with a relatively large lesion area.

Considering the clear clinical effectiveness and innovation of the combined use of these two techniques in this case, but with the rarity of such pilonidal sinus patients in clinical practice, we look forward to further applications and explanations of Bascom II combined with tissue bridge preservation VSD in the treatment of recurrent and complex pilonidal sinuses.

Ethical approval

This article aims to report a case of recurrent and complex pilonidal sinuses treated at our hospital and to discuss the advantages and characteristics of Bascom II combined with VSD treatment involving the preservation of tissue bridges in treating such patients. The paper does not involve research on patients, therefore ethical approval is not required.

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CRediT authorship contribution statement

Yan Pan and Qingjun Dong wrote the initial draft of the article; Qingjun Dong and Shuang Hao operated the procedure; Qingjun Dong and Shuang Hao assisted in the follow-up treatment; Qin Qin reviewed and edited the article; Chen Wang and Lixin Yin guided the surgical procedure, all authors actively reviewed and revised the manuscript and approved the finally submitted manuscript.

Guarantor

Qingjun Dong.

Registration of research studies

Not applicable.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Statement

During the preparation of this work, the author used Chatgpt in order to embellish the translation. After using this tool, the author reviewed and edited the content as needed and take full responsibility for the content of the publication.

Declaration of competing interest

There is no conflict to be declared.

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