



## Case Report

# A Case Report of a Posterior Rectal Space Abscess and Review of the Literature

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### Abstract

The posterior rectal space abscess is a type of high-grade perianal abscess that is uncommon in clinical settings. It frequently presents as a dull pain in the sacrococcygeal area and a heavy drop sensation in the rectum. It can also cause chills, a high fever, malaise, and other systemic symptoms. The disease has an acute and serious onset and requires prompt treatment to prevent worsening the condition. This patient was misdiagnosed as “cutaneous furuncle” at the initial stage, which delayed the optimal treatment time and aggravated the condition. After being diagnosed with a “posterior rectal space abscess”, the patient underwent one-time radical surgery promptly. Following the surgical operation, the lesion healed completely and did not reoccur.

**Keywords:** Posterior Rectal Space Abscess; Perianal Abscess; One-Time Radical Surgery; Case Report

### Introduction

Perianal abscess, also known as perirectal abscess, is a purulent disease caused by acute and chronic infection of perianal tissues and interstitial space, which is a common disease in anus and intestines [1]. In Chinese medicine, it is also referred to as “anal carbuncle”, “dirty poison”, and “hanging carbuncle” [2]. The posterior rectal space perianal abscess is located in the posterior rectum, anterior to the sacrum, and both sides of the pelvic rectal space to the lateral ligament of the rectum separated by the site of the abscess, belonging to a kind of high perianal abscess, clinically less common, to the rectal drop feeling, sacrococcygeal dull pain as the main discomfort symptoms [3].

Because the infection foci are rapidly transmitted to adjoining interstitial tissues and frequently produce fever and other systemic symptoms, this disease develops quickly and causes excruciating pain. If treatment is delayed, the situation may worsen and potentially become fatal. This study reports on a case

of perianal abscess in the posterior rectal space.

### Case Report

#### Clinical Information

The patient is a 25-year-old female, admitted to the hospital with the main complaint of “right buttock erythema, swelling and hot pain for more than 15 days, aggravated with distension and pain for 1 week”. On March 7, 2021, the patient had erythema, swelling, and hot pain in the right buttock without any obvious triggering cause, without any stool abnormality, without any pain in the anus, and she was taking anti-inflammatory drugs of amoxicillin capsule on her own for 1 week, without improvement of the symptoms. On March 13, 2021, the patient went to the local hospital in Henan Province, ultrasonography can be seen in the right buttock subcutaneous soft tissue thickening, the range of about 52mm × 32mm uneven hypoechoic, the border is not clear, the morphology is irregular, the internal echogenicity is not uniform, the distance from the skin is about 25mm, CDFI: peripheral blood flow signal is rich, ultrasound: “right buttock uneven hypoechoic (consider inflammatory)”, diagnosed as “cutaneous furuncle”,

given Cephalosporin capsule+ Qingre Sanjie capsule treatment for 1 week, the symptoms did not improve and aggravated, and fever (38 °C), panic, fatigue, and other uncomfortable symptoms; In order to seek further treatment in March 19, 2021 to the local hospital in Henan Province, the Department of Anus and Intestines, and see the right buttock red, swollen, hot and painful, accompanied by swelling and pain in the groin, and there was an ulcerated hard nodule in the anus with obvious pain, and she was admitted to the hospital with the diagnosis of “perianal abscess”. Specialized examination: anal truncus visualization: there was an ulcerated hard nodule at 3.0 cm from the outer edge of the anus at the 3 o’clock position. Anal pointer: the sense of wrapping the finger in the anus was obvious, no occupying space was touched, and the finger sleeve was not stained with blood. Western medicine diagnosis: perianal abscess. The patient’s tongue was red, the moss was yellow, and the pulse was countless. Chinese medicine diagnosis: anal carbuncle, heat and toxic congestion syndrome.

## Surgical Treatment

### Preoperative Examination

The patient underwent a preoperative electrocardiogram, blood routine, and liver and kidney function tests. Twelve-lead electrocardiogram showed sinus arrhythmia. Blood routine showed: leukocyte count  $15.74 \times 10^9/L$ , neutrophil count  $12.4 \times 10^9/L$ , lymphocyte count  $2.69 \times 10^9/L$ , monocyte count  $0.62 \times 10^9/L$ , eosinophil count  $0.01 \times 10^9/L$ , basophil count  $0.02 \times 10^9/L$ , and erythrocyte count  $4.28 \times 10^{12}/L$ . Liver function and renal function showed: total protein 50.8 g/L, albumin 31.6 g/L, globulin 19.2 g/L, preprotein 146 mg/L, cholinesterase 4879 U/L, uric acid 146  $\mu\text{mol}/L$ , and rest was normal. Color ultrasound showed that the local subcutaneous fat layer of the right hip was thickened and its recovery decreased, and the visible range was about  $6.5\text{cm} \times 2.7\text{cm}$  in the upper part of the hip.

### Surgical Records

The patient took the right lateral lying position, using intrathecal anesthesia, finger method to expand the anus, probe to see the 3 points from the anal margin of 3 cm there is a red swollen hard nodule, take the scalpel in the 3 points of the hard nodule in a longitudinal incision to drain the pus, pumped into a syringe, to prepare for the drug sensitivity culture (Figure 1), take the probe from the 3-point incision into the search for the internal mouth from the same point of anal sinus to probe, along the direction of the probe incision of the skin and subcutaneous tissues, to expose and peel the fistula tube wall tissue for wound drainage (Figure 2). Virtual hanging line therapy is used to protect the anal sphincter and avoid fecal incontinence caused by large trauma (Figure 3). Methylene blue perianal closure, petroleum jelly oil gauze filling the anal wound, sterile dressings, adhesive tape fixation, and the

drained pus will be sent to pathology for bacterial culture and drug sensitivity analysis.



**Figure 1:** Drainage of the pus.



**Figure 2:** Intraoperative wound.



**Figure 3:** Postoperative wound.

### Postoperative Recovery

The patient’s abscess location was deep, about 10cm subcutaneous, and the pus was as much as 100ml, which was diagnosed as posterior rectal interstitial abscess of high perianal abscess. The patient was instructed to stay awake for 6 hours after the operation, and was given hydroxyethyl starch 130/0.4 sodium chloride injection to prevent insufficient circulating blood volume in the postoperative period and to avoid shock; levofloxacin injection combined with cefoperazone sulbactam injection was given for anti-infection and anti-inflammation; dextrose sodium chloride

injection was given to replenish energy; at the same time oxygen was administered, cardiac and electrocardiographic monitoring was carried out to monitor the blood pressure, temperature, cardiac rhythm and pulse, and the patient's physical condition was closely watched in the postoperative period.

Postoperatively, the dressing was changed twice a day, once in the morning and once in the evening, when changing the dressing, sodium chloride and metronidazole injection were given to thoroughly clean the wound to avoid anaerobic infection, gauze was placed in the wound to drain the secretion to avoid pseudo healing of the wound, and diclofenac sodium suppositories were given to the anus for pain relief. At 3 days postoperatively (March 21, 2021), bacterial culture and drug sensitivity analysis detected the pus causative organism was *Escherichia coli*, the results showed that cefoperazone/sulbactam sodium antibiotic sensitivity, MIC $\leq$ 16/8, and levofloxacin antibiotic resistance, MIC $\geq$ 8, so the levofloxacin injection was discontinued, and continued to give cefoperazone sulbactam injection to anti-inflammation, morning and evening at 8 o'clock, twice a day (Figure 4).



**Figure 4:** 3 days after surgery.

At 8 days after surgery (March 26, 2021), the blood routine examination showed: white blood cell count  $4.74 \times 10^9/L$ , neutrophil count  $3.1 \times 10^9/L$ , lymphocyte count  $1.25 \times 10^9/L$ , monocyte count  $0.36 \times 10^9/L$ , eosinophil count  $0.01 \times 10^9/L$ , basophil  $0.02 \times 10^9/L$ , red blood cell  $3.66 \times 10^{12}/L$ , ultrasensitive C-reactive protein 1.3 mg/L, C-reactive protein  $<5.0$  mg/L. Switch to cefoperazone sulbactam injection for anti-inflammatory treatment at 8:00 a.m., once a day. The trauma has more secretions, yellow in color, and a small amount of fat particles on the trauma has been wrapped by fresh granulation tissue (Figure 5). Because the trauma is open, the patient was instructed to wash the wound thoroughly with warm water after bowel movement to avoid infection and pay more attention to rest, and a high protein diet for energy. Fourteen days after the operation (April 1, 2021, Figure 6), the blood routine was reviewed again, showing: a leukocyte count  $5.2 \times 10^9/L$ , neutrophil count  $3.77 \times 10^9/L$ , lymphocyte count  $1.02 \times 10^9/L$ , monocyte count  $0.38 \times 10^9/L$ , eosinophil count  $0.02 \times 10^9/L$ , basophil count  $0.01 \times 10^9/L$ , red blood cell  $3.52 \times 10^9/L$ , ultrasensitive C-reactive

protein 2.0 mg/L, C-reactive protein  $<5.0$  mg/L. The patient's inflammation has been significantly reduced, and antibiotics are stopped to avoid the decline of the body's immunity. The patient said that during the movement of sweat, accompanied by palpitation, dizziness, fatigue and other discomfort, considering that the patient suffered from a deficiency of blood and qi due to large surgical wounds and blood loss, the patient was advised to engage in a small range of activities to enhance her physical fitness, and at the same time to facilitate the discharge of wound secretions and to promote the recovery of the wounds.



**Figure 5:** 8 days after surgery.



**Figure 6:** 14 days after surgery.

At 30 days after surgery (April 17, 2021), the secretion was reduced, the inter transdermal bridge of the wound was thickened, and peripheral scabs were visible (Figure 7). Forty-five days after operation (May 2, 2021), the wound was smaller than before, and the deep could be seen as fresh granulation (Figure 8). The patient said that there was itching in the anus, considering the growth of new granulation in the anal wound, which is a normal phenomenon. Sixty days after the operation (May 17, 2021), the wound was significantly reduced, and the periphery had healed to form a scar (Figure 9). One hundred and sixty days postoperatively (August 25, 2021), the wound at the anal margin was crusted (Figure 10). At 180 days after surgery (September 13, 2021), the perianal trauma was healed (Figure 11). Two and a half years after operation (September 13, 2023), the wound healed and formed scars without recurrence. The patient said that his bowel movements were normal once a day (Figure 12).



**Figure 7:** 30 days after surgery



**Figure 8 :** 45 days after surgery



**Figure 9:** 60 days after surgery



**Figure 10:** 160 days after surgery



**Figure 11:**180 days after surgery



**Figure 12:** 2.5 years after surgery

### Discussion

The main symptoms of perianal abscess are perianal hardness, perianal pain, or swelling, some of which may extend to the perineum, or accompanied by chills and fever, tiredness, constipation, etc. Superficial abscesses may have mild symptoms, but for deep abscesses, there will be discomfort such as abdominal pain, and pain in the buttocks or lower back [4]. The onset of perianal abscess is caused by a variety of factors, in which more than 90% of perianal abscesses are caused by infection of the anal glands, which spreads upward and downward so that it expands into the interstitial space around the anal canal, causing acute or chronic suppurative inflammation [5]. Data investigation shows that the incidence of perianal abscess is about 2%, accounting for 8% to 25% of anal and intestinal diseases, preferred in men aged 20 to 40 years old, the incidence of men is 3 to 4 times that of women[6], abscess lesions are mainly located in the truncus 3 and 9 o'clock position, showing obvious lateral distribution, probably due to the thick subcutaneous adipose tissue on both sides of the anus, which is conducive to the propagation of the infection, and fewer anus cisternae in the anterior wall of the rectum, and the anal columns are more widely spaced[7].

According to the location of perianal abscess can be divided into low-level abscess and high-level abscess. Low-level perianal abscesses located in the interstitial space below the anal raphe muscle, the abscess infection extends to the sciatic-rectal space, perianal subcutis, and sphincter space; high-level perianal abscesses located above the anal raphe muscle, the abscess infection involves the posterior rectal space, the rectal submucosal space, and the pelvic rectal space [8, 9]. For the posterior rectal space perianal abscess often invades the anus lifting muscle, located in the deep intestinal cavity, far away from the anal verge distance, and the initial period in the perianal region outside the obvious symptoms, therefore, this kind of perianal abscess is easy to misdiagnosis, and delayed treatment, resulting in the proliferation of pus, and even the emergence of sepsis, necrotizing fasciitis and other serious complications [10].

The treatment of perianal abscess is mostly surgical, and the commonly used surgical treatments are abscess incision drainage thread and abscess incision and hanging thread, among which abscess incision drainage is recognized as the main treatment, and the incision of is mostly close to the anal verge, to shorten the length of the fistula that may be formed, to achieve the drainage patency, and to prevent the formation of anal fistula [11, 12]. A study [13] confirmed that after simple incision and drainage, the recurrence rate of abscess and the formation of anal fistula was as high as 40%, and still required a second operation with a longer course. After incision and drainage of pus from the abscess, the abscess is incised and drained, the internal opening of the primary infected lesion is found through the probe, and a rubber band is introduced to hang the drainage, which can effectively prevent the occurrence of postoperative anal fistula and avoid secondary surgery [14].

For high perianal abscess in the posterior rectal space, the abscess involves the higher position of the anal muscle layer, and if simple low incision drainage is used, it is difficult to achieve complete drainage, so the necrotic abscess cavity and the infected interstitial space are not completely treated, and a complex anal fistula is formed, so the abscess incision and hanging wire operation is commonly used in clinical practice [15]. This surgical method, using a rubber band from the internal opening to lead out without tightening, postoperative dressing change depending on the tissue healing situation in stages to remove the rubber band of the virtual hanging line method, can effectively ensure the integrity of the sphincter, so that the patient's postoperative pain can be alleviated, and inflammation is easy to be absorbed after the oozing, which is conducive to the healing of the trauma [16].

The patient was misdiagnosed as having "cutaneous furuncle" at the initial stage and only took heat-clearing and anti-inflammatory drugs without a timely surgical incision to drain

the pus, which delayed the optimal time for treatment, spreading the inflammation of the anal glands and increasing the amount of pus, and the abscess was found to be in a deeper location during the operation. Abscess incision and hanging surgery are used to ensure that the incision is large enough to provide adequate drainage conditions for complete drainage of pus while protecting the patient's anal function and avoiding complications such as anal dysfunction or formation of anal fistula in the future.

Postoperative dressing change is the key to postoperative recovery, the wound should be flushed in time, and problems be found to be handled in time, the patient's postoperative dressing change in the early stage of the operation, saline was given to clean the wound, metronidazole injection was given to fight against anaerobic infections, and gauze strips were placed for drainage to avoid pseudo healing of the wound at the same time; in the middle and late stage of dressing change, gauze strips were given to be coated with Ma Ying Long Musk hemorrhoid ointment and placed in the wound, which could promote healing at the same time of drainage and reduce the pain of the patient. The patient's pain will be minimized. Ma Ying Long Musk hemorrhoid ointment is a commonly used drug in anorectal department, has the effect of pain relief and astringency, removes the decay of muscle and promotes the growth of traumatic granulation, improves local blood circulation, reduces the occurrence of postoperative complications [17].

Most pathogens cultured from perianal abscesses are a mixture of aerobic and anaerobic organisms, and the common causative organisms are *Escherichia coli*, *Staphylococcus aureus*, *Mycobacterium avium*, and *Streptococcus*. Of these, *Escherichia coli* is the most common causative organism of perianal abscesses [18]. Some researchers have concluded that once an abscess develops in the perianal area, antibiotic treatment is ineffective and delays surgery, allowing the septic process to continue to develop and aggravate the condition [15]. Clinical practice guidelines of the American Society of Colorectal Surgery recommend that antibiotics can be given after incision and drainage of abscesses in patients with perianal abscesses with systemic symptoms of infection such as fever and elevated white blood cells. It has been reported that antibiotics can reduce the incidence of fistula in surgically treated patients and can shorten the course of the disease [7]. The patient's pathogenic bacteria and drug sensitivity test found that the causative organism belongs to *Escherichia coli*, which is the most common pathogenic bacteria, and antibiotic treatment can be anti-inflammatory and bactericidal.

Traditional Chinese medicine believes that the occurrence of anal carbuncle is mostly due to external six obscurities, internal injuries to the seven emotions, damage to the internal organs, dietary indiscipline, overeating spicy and thick flavors, resulting

in internal dampness and heat, heat and toxin agglomeration; or congenital endowment insufficiency, weakness of the internal organs, the lungs, spleen, kidney Yin deficiency, dampness, heat and blood stasis down the anus [19]. People with a damp-heat constitution are susceptible to perianal abscess, in which obesity, spicy food, and poor sleeping habits are the influencing factors for the formation of a damp-heat constitution, and also the risk factors for the development of perianal abscess [20]. After inquiring about the patient's medical history, we learned that the patient was recently stressed and overworked, coupled with a sedentary bad habit, the patient was instructed to avoid sedentary after surgery, take proper rest strengthen exercise; pay attention to emotions and moods, avoid anger and depression; regulate the diet and increase nutrition; keep the stools smooth and clean, so as not to be infected.

In summary, the posterior rectal hiatus abscess is easy to be misdiagnosed in the clinic due to the deeper site of the abscess and the lack of obvious local symptoms in the perianal area at the initial stage. In the treatment, it is necessary to consider the clinical symptoms and at the same time, combine with the imaging and physical examination for a comprehensive diagnosis and treatment, and pay close attention to the patient's condition changes, and when the abscess is serious, it should be promptly operated to incise and drain the pus and remove the necrotic material completely, to avoid systemic infection and endangering the life of the patient.

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