

REVIEW COMMENTS:

Reviewer #1:

1. I suggest giving a more detailed description of this surgical procedure in the article.

Thank you for your suggestion.

Please review the revised detailed description of multiple incisions and thread-dragging therapy as following.

Treatment

... During the surgery, the main incision between the previous wound and the internal opening was completely excised and debrided. It was used probe and clamp to explore the infection area as well as scissors and diathotomy to remove the necrotic tissues. Multiple incisions were performed in the epidermis within a distance of 5cm to 8cm from the main incision. Later, other incisions were performed in the epidermis within a distance of 5cm to 8cm from the former ones until the outermost incision enveloped the entire area of infection. Rubber catheters were used as loose setons for adequate drainage between the incisions on two ends. Finally, the incision outside the level of the bilateral symphysis pubis reached outward of the skin on both sides of the ischium nodules and a total of 21 loose rubber setons were used for these incisions. It is important to keep the skin at the base of the scrotum intact to avoid extensive damage and postoperative sexual dysfunction (Figure 2). ...

2. The major remark – the abstract should be rewritten so as to provide essential information about the necrotizing fasciitis, the patient, treatment, and results achieved.

Avoid duplications.

Thank you for your guidance.

The abstract has been revised based on your suggestion. Please review the revised abstract as below.

Abstract

Necrotizing fasciitis is a fulminant necrotizing soft tissue disease with a high fatality rate. It always starts with impact on the deep fascia rapidly and might result in secondary necrosis of the subcutaneous tissue, fascia and muscle. Thus, timely and multiple surgical operations are needed for the treatment. Meanwhile, the damage of

skin and soft tissue caused by multiple surgical operations may require dermatoplasty and other treatments in consequence. We are here to report a case of 50-year-old male patient who was admitted to our hospital with symptoms of necrotizing fasciitis caused by cryptoglandular infection in the perianal and perineal region. The symptoms of necrotizing fasciitis, also known as the cardinal features, includes hyperpyrexia, excruciatingly painful lesions, demonstration gas in the tissue, an obnoxious foul odor and uroschesis. The results of postoperative pathology met the diagnosis. Based on the premise of complete debridement, multiple incisions combined with thread-dragging therapy (a traditional Chinese medicine therapy) and intensive supportive therapies including comprising antibiotics, nutrition and fluids were given. The outcome of the treatment was satisfactory. The patient recovered quickly and achieved ideal anal function and morphology. Timely and effective debridement and multiple incisions combined with thread-dragging therapy are an integrated treatment for necrotizing fasciitis.

3. The minor remark – look through the text of the article and correct the typing errors.

I am so sorry for the typing errors. I went through the text and get all the typos corrected. Please let me know if there are still any specific findings. Thank you.

Reviewer #2:

1. Add a picture of preoperative and postoperative CT scan

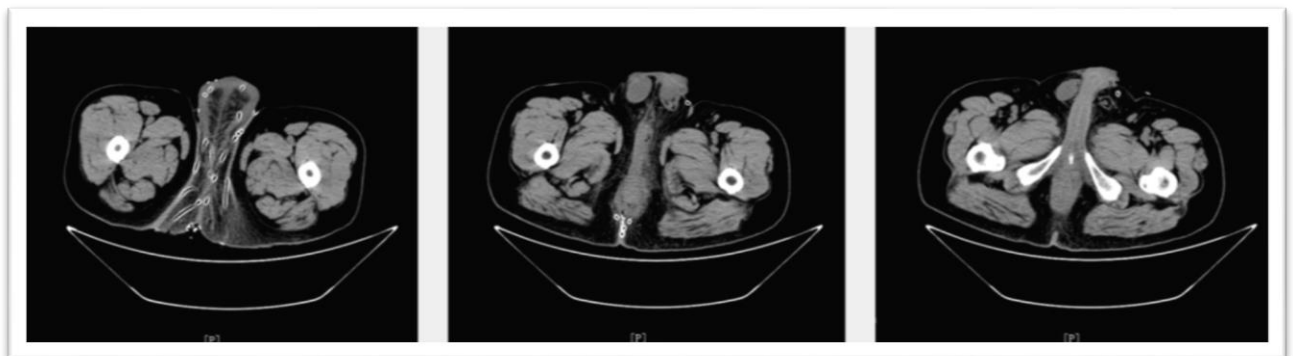
Thank you for your review.

Each 3 preoperative and postoperative CT images have been intercepted and presented in the article. The pictures are selected on the same transverse plane for comparison. (Figure 2, 3)

Fig. 2. A lower abdominal and pelvic computed tomography (CT) scan on admission



Fig. 3. A lower abdominal and pelvic computed tomography (CT) scan on 3 days postoperation



Unfortunately, although the perianal MRI was performed one week postoperation, it can't be presented in the article due to the blurred image display. And after discharge, because of economic burden the patient rejected further imaging examination.

2. As stated in the Discussion the fistula should be identified and the infected internal opening treated while there is no mention of this treatment in the case description.

Thank you for your review.

I am sorry but I had mentioned the internal opening was debrided and treated in the primary article, only in a brief description. After revision, the treatment of infected internal opening and the procedure of multiple incisions and thread-dragging therapy have a more detailed description in the Treatment.

Treatment

... Under a lithotomy position, an obvious defect was found in the anal gland near the posterior dentate line, which was considered to be the primary opening, and the defect was connected to the previous wound. Therefore, it was inferred that the internal opening was the resource of this infection, which means the case was caused by cryptoglandular infection and aggravated by the poor drainage.

During the surgery, the main incision between the previous wound and the internal opening was completely excised and debrided. It was used probe and clamp to explore the infection area as well as scissors and diathotomy to remove the necrotic tissues. Multiple incisions were performed in the epidermis within a distance of 5cm to 8cm from the main incision. Later, other incisions were performed in the epidermis within a distance of 5cm to 8cm from the former ones until the outermost incision enveloped the entire area of infection. Rubber catheters were used as loose setons for adequate drainage between the incisions on two ends. Finally, the incision outside the level of the bilateral symphysis pubis reached outward of the skin on both sides of the ischium nodules and a total of 21 loose rubber setons were used for these incisions. It is important to keep the skin at the base of the scrotum intact to avoid extensive damage and postoperative sexual dysfunction (Figure 2). ...

3. It is not clear the relationship between a large skin incision at the base of the scrotum and sexual dysfunction, the authors should explain this statement

Thank you for your commentary.

According to the literature review, the relationship between a large skin incision at the base of the scrotum and sexual dysfunction is focused on the two points. First, a large scar at the base of the scrotum may cause erection difficulties due to scar contracture, which need further scrotal skin flap or dermatoplasty ^[15]. Second, Even skin grafting

was used, the penis and scrotum may still lose normal shape and form artificial deformity. It means the patient may lose the normal erection function, or get barely erection with no normal intercourse ^[16]. Therefore, we insist that attention should be paid to the protection of scrotal skin at the first time.

All above has been explained in the revised discussion.

References

15 Guo L, Zhang MH, Zeng JZ, Liang PF, Zhang PH, Huang XY. Utilities of scrotal flap for reconstruction of penile skin defects after severe burn injury. *Int Urol Nephrol* 2017;49(9): 1593-1603.[PMID: 28589215 DOI: 10.1007/s11255-017-1635-6]

16 Ying J, Yao DH, Cheng KX, Ren XM, Shu MJ, Yao MJ. Reconstruction of extended skin defect after the radical resection procedure for penile scrotum skin cancer. *Zhonghua Wai Ke Za Zh* 2007;15(48): 1257-1259.[PMID: 18067739]

4. There is no mention of patient's approval for publication.

Thank you for your reminding.

The patient had provided the consent form to give his consent for materials in the report to appear in academic journals and associated publications. And the consent form had been uploaded as an attachment.

5. The discussion needs a major revision

Appreciate your commentary.

Combine with your other suggestions, the discussion had a major revision. Pleased review the revised manuscript.

6. It needs to be more focused on comparison with other treatments such as drainage through larger perineal wound.

Combined with the third suggestion, a more in-depth explanation had been given in the revised discussion. In our experience, although larger perineal wound is conducive to adequate oxygen, extensive skin damage caused by surgery may generate other side effects, such as increasing the risks of postoperative hypoproteinemia, wound bleeding, slow healing and dermatoplasty consequently. Mallikarjuna suggested debridement should be stopped when separation of the skin and the subcutaneous is

not performed easily, because the cutaneous necrosis is not a good marker ^[14]. Keeping as much normal skin tissue as possible may avoid large scale scar. Excessive scar may lead to further treatment, such skins graft, pain and sexual dysfunction, which had been explained.

References

14 Mallikarjuna MN, Vijayakumar A, Patil VS, Shivswamy BS. Fournier's Gangrene: Current Practices. *ISRN Surgery* 2012;3:942437. [PMID: 23251819 DOI: 10.5402/2012/942437]

7. The role of appropriate antibiotic regimen, of hyperbaric oxygen therapy should be also discussed

Thank you for suggestion.

The role of appropriate antibiotic regimen, of hyperbaric oxygen therapy had be discussed in the revised manuscript as below, but as a discussion in the case report, it is concise and direct.

Discussion

...Since necrotizing fasciitis is always caused by anaerobic bacteria, complete debridement is one of the treatment principles. Drainage of the impacts makes the oxygen in the air to react with anaerobic bacteria. The physiological effects have the ability to enhance leukocyte to kill aerobic bacteria, stimulate the formation of collagen and increase the levels of superoxide dismutase, resulting in better tissue survival ^[10]. Hydrogen peroxide is also used to achieve this effect in dressing change. Sometimes, patients will even be placed in an environment of increased ambient pressure for breathing 100% oxygen to take hyperbaric oxygen therapy. Adequate oxygenation has the benefits of optimal neutrophil phagocytic function, inhibition of anaerobic growth, increased fibroblast proliferation and angiogenesis, reduction of edema by vasoconstriction, and increased intracellular antibiotics transportation ^[11]. More and more studies demonstrated that hyperbaric oxygenation is an important therapeutic adjunct in the treatment of necrotizing fasciitis ^[12], including improving the effectiveness of several antibiotics, such as vancomycin and ciprofloxacin.

When it comes to antibiotics, empiric broad-spectrum antibiotic therapy should be instituted as soon as possible according to the guidelines. Since the pathogens of

necrotizing fasciitis also include staphylococcal and streptococcal bacteria, gram-negative, coliforms, pseudomonas, bacteroides, and clostridium, third or fourth generation cephalosporins, aminoglycosides, metronidazole and penicillin are all recommended, which is called a classically triple therapy^[2]. Fourth-generation cephalosporin and metronidazole were given in this case. And some clinical guidelines recommend the use of carbapenems or piperaziline-tazobactam to replace the classically triple therapy for the advantages of larger distribution and lesser renal toxicity^[13]....

References

- 2 El Benjelloun B, Souiki T, Yakla N, Ousadden A, Mazaz K, Louchi A, Kanjaa N and Taleb KA. Fournier's gangrene: our experience with 50 patients and analysis of factors affecting mortality. *World J Emerg Surg* 2013;8:13.[PMID: 23547796 DOI: 10.1186/1749-7922-8-13]
- 10 Chennamsetty A, Khourdaji I, Burks F, Killinger KA. Contemporary diagnosis and management of Fournier's gangrene. *Ther Adv Urol* 2015;7(4):203-215.[PMID: 26445600 DOI: 10.1177/1756287215584740]
- 11 Capelli-Schellpfeffer M, Gerber GS. The use of hyperbaric oxygen in urology. *J Urol* 1999;162:647-654. [PMID: 10458334 DOI: 10.1097/00005392-199909010-00002]
- 12 Jallali N, Withey S, Butler PE. Hyperbaric oxygen as adjuvant therapy in the management of necrotizing fasciitis. *Am J of surg* 2015;189(4):462-466.[PMID: 15820462 DOI: 10.1016/j.amjsurg.2005.01.012]
- 13 Jimeno J, Brito VDD, Parés D. Antibiotic treatment in Fournier's gangrene. *Cir Esp* 2010;88(5):347-348.[PMID: 20851388 DOI: 10.1016/j.ciresp.2010.06.009]

8. Spell mistakes

I am so sorry for the spell mistakes. I went through the text and get all the typos corrected. Please let me know if there are still any specific findings. Thank you.