



Trauma and reconstruction

Successful penile replantation after macroscopic repair using vein blood-letting therapy

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ARTICLE INFO

Keywords:

Penile
Amputation
Replantation
Blood-letting

ABSTRACT

Although penile amputation is a rare injury, it may occur caused by self-mutilation with psychiatric disturbances and sexual need, or due to accidents, iatrogenic injuries or revenge and marriage breakdown. A case of successful penile glans replantation by macroscopic repair using vein blood-letting therapy is presented. This case report shows the surgical procedure and postoperative care which may be critical for successful replantation.

Introduction

Penile amputation is a rare male genital injury. Microsurgical replantation is considered to be an effective treatment for penile amputation. There is still no any routine standardized management for dealing with this emergency condition.¹ There have been some cases about penile amputation and successful penile replantation by microsurgical repair.^{1,2} But successful replantation by macroscopic repair is relatively few.³ We described our experience with a case who received vein blood-letting therapy after penile amputation, which may be critical to accelerate the recovery of the sensation function and sexual function.

Case report

A 31-year-old male was assaulted with scissors by his wife because of his betrayal when he was sleeping. His penile glans was almost completely cutoff. There was massive bleeding after penile amputation. He had been sent to two medical center, but finally he was transferred to our urological center. Warm ischemia had lasted 6 hours and surgical preparation had lasted 1 hour, total warm ischemia time was 7 hours since amputation. Then, emergency surgery was performed immediately under general anesthesia. His vital signs were stable and his hemoglobin level was 13 g/dl (reference range 11–18 g/dl). Tetanus antitoxin was

injected and intravenous cephalosporin antibiotics was given before surgery.

Firstly, we cleaned the wound using saline water and povidone-iodine for 3 times, and removed blood clots and foreign bodies. The distal urethra and the bilateral corpus cavernosum were completely severed (Fig. 1A), but the testicles and scrotum remained intact. The amputated glans had a skin flap connected with penis (Fig. 1B). The microsurgical team was invited to do microscopic exploration, but no suitable size of artery, vein and nerve for anastomosis was found. A 16F catheter was inserted through the severed penis portion, extending inward the normal penile and passed into the bladder. Then, an end-to-end anastomosis of the urethra and corpus cavernosum was performed using interrupted 4-0 absorbable suture. Replantation was completed by closing the fascial layers and skin (Fig. 1C). After surgery, he was anticoagulated with intravenous heparin and transferred to general ward.

The obvious edema of amputated penis was observed 12 hours after surgery because of venous congestion (Fig. 1D). We used a thick needle from 20ml injector (Fig. 1D) to pierce the skin of edema area to let black blood flow out (Fig. 1D). Then, we squeezed the penile using proper pressure to let more venous blood out to make the edema relieve. The depth should be 5mm. At the second day, we repeated vein bloodletting therapy (Fig. 1E). Three days later, the bleeding stopped. His hemoglobin level was 11 g/dl. The patient had morning erection and felt painful. On the seventh postoperative day, the prepuce was edematous

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<https://doi.org/10.1016/j.eucr.2019.101069>

Received 28 September 2019; Received in revised form 31 October 2019; Accepted 3 November 2019

Available online 5 November 2019

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Fig. 1. (A) Penile amputation. (B) The urethra and the bilateral corpus cavernosum were completely severed. (C) The view of the penis after replantation. (D) Using a needle to pierce the skin of edema area to relieve vein congestion 12 hours after surgery. (E) The edematous penis when 2 days after surgery. (F) The black scab. (G) The pink granulation tissue was showed up after removing of the black scab 19 days after surgery. (H) The catheter was removed 1 month after surgery.



Fig. 2. The view of an intact penis without urethral stricture. The yellow arrow shows the external orifice of urethra.

due to paraphimosis. We performed a semi-circumcision to release the edema under local anesthesia. The patient was discharged 2 weeks after operation (Fig. 1F). Nineteen days after surgery, the black scab was removed and the pink granulation tissue was showed up (Fig. 1G). The catheter was removed one month after surgery (Fig. 1H). Three months later, the patient reported that he could complete sexual intercourse with effective erectile function, and had good urinary pattern without urethral stricture, intact glans and adequate esthetic acceptance (Fig. 2). The glans had obvious sense of touch and mild pain sensation.

Discussion

Penile amputation is a rare and emergency urological condition which caused by many reasons. There is no a standardized method to treat penile amputation.¹ The microsurgical repair is thought to be the best effective method which can achieve a good erectile function and

sensation.

The first macroscopic penile replantation was reported by Ehrlich in 1929.⁴ This method may lead to skin necrosis, edema, urethral stricture and poor functional recovery. In 1977, Cohen et al.² reported their microsurgical techniques which decreased the risk of necrosis of the skin. However, the skill and equipment for microsurgery may not be available in some centers with few resources, especially in emergency situation. In our hospital, the urological team cooperates with the microsurgical team to manage these situations if microsurgery is needed. In this case, the site of penile amputation was very close to the distal end, so the microsurgical doctor found no suitable size for re-anastomosis of the blood vessels and nerves.

Without vein anastomosis, venous congestion caused obvious edema 12 hours after surgery. We took the vein blood-letting therapy by using a needle to pierce the skin of the edema area to reduce the vein congestion. With the action of heparin, the bleeding made the hemoglobin level

decrease 2 g/dl. The bleeding stopped 3 days later. There are some reports about postoperative leech therapy to treat venous congestion which may be a kind of vein blood-letting therapy.⁵ In addition, our nurse team played a very important role in his recovery. They helped to change wound dressings every day and followed the patient after discharge. The wound care is also important. We removed the scab every two or three days for a good skin growth.

We think there are some key points for a successful replantation which contain microsurgical repair if possible, short warm ischemia time, anastomosis of the corpus spongiosum which may play an important role in arterial supply, venous return and penile erection. Moreover, good wound care and follow-up are needed.

Although we got a successful penile replantation with the good function and the patient's satisfaction, there is a limitation that we still need more time to monitor long-term effect, like erectile function and urethral stricture.

Conclusion

Although microsurgical replantation is thought the standardized method for the treatment of penile amputation, the macroscopic repair combining with vein blood-letting therapy may also achieve a successful penile replantation.

Ethical statement

Written informed consent was taken from the patient for publication of this case report and the associated images.

Authors' contribution

Dr. Kunlin Yang drafted the article and Dr. Xuesong Li is the corresponding author; Dr. Yu Liu and Dr. Kunlin Yang performed surgery. Mrs Wei Wang gathered the photos; Dr. Yunxiang Xiao and Prof. Liqun Zhou revised the article critically. All authors approved the final version of the manuscript accepted for publication.

Declaration of competing interest

None declared.

Acknowledgments

We thank to all people including surgical staff and nurses who taken care of patient.

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