

## *A CASE REPORT: A SCROTAL FLAP FOR PENILE PARAFFINOMA RECONSTRUCTION*

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### Highlights:

1. The single-stage scrotal flap technique can be used for paraffinoma cases where the lesion does not involve the scrotum.
2. The therapy addresses concerns related to restoring the penile function as a sexual organ with the best appearance.
3. The V-Y plasty can be used not only to form the penile shaft but also to minimize penile shortening.

### INTRODUCTION

Penile paraffinoma is a case of penile mass due to subcutaneous liquid paraffin injection. This case is also known as a sclerosing lipogranuloma. Sclerosing

lipogranuloma (SL) affecting the male external genitalia is an uncommon chronic inflammatory condition characterized by the presence of subcutaneous masses. The fundamental pathological mechanism

involves a persistent granulomatous response to deteriorating internal or external lipids. The Austrian surgeon, Robert Gersuny, introduced paraffin injections for cosmetic purposes in 1899. He injected this substance into a man's scrotum for testicular replacement after castration due to tuberculous epididymitis. Vaseline, paraffin, and mineral oil remained popular in Europe and the United States until the early 1900s. He subsequently published what appeared to be the initial documentation of genital reconstruction using a foreign substance.<sup>1-3</sup> However, this procedure can also have negative complications including skin necrosis, decreased erectile function, and pain during intercourse.<sup>4,5</sup>

The use of paraffin injections for penile girth enhancement is an outdated and obsolete procedure. Paraffin is used in these injections to increase the girth or length of the penis or to create a perceived enhancement in sexual pleasure. The procedure of penile injection is still common in Southeast Asia, Korea, the Middle East, some Eastern European countries, and Indonesia which is done by non-medical personnel or the patient himself.<sup>6</sup> In Asian and Eastern European cultures, a large penile size has been frequently considered as a symbol of masculinity for many men.<sup>2,4,7</sup>

The treatment choices for this case include non-surgical and surgical treatments. The non-surgical treatment which involves antibiotics, non-steroidal anti-inflammatory drugs, steroid injection, and topical cream was reported to be ineffective. The only effective treatment is a surgical approach. Performing penile reconstructive surgery is the mainstay treatment of penile paraffinoma that can achieve cosmetic and functional effectiveness.<sup>8,9</sup> This scientific report aims to learn more about the surgical technique with a scrotal flap in the management of penile paraffinoma.<sup>10-12</sup>

## CASE ILLUSTRATION

A 29-year-old unmarried man came to the Plastic Surgery Department with complaints of penile enlargement and hardened skin three months before his admission to the hospital. One year prior to admission, the patient claimed to have increased the size of his genitals by injecting an unknown high-viscosity liquid into the shaft of his penile, with the assistance of non-medical personnel. The patient reported experiencing pain during erections and a reduction in penile length. There were no complaints related to urination, and the patient had not experienced a fever. The patient mentioned being sexually active despite being unmarried.

The patient's vital signs and general physical examination were within normal range. The genital examination revealed a circumferentially enlarged penile shaft that was firm on palpation (Figure 1). The patient underwent a comprehensive examination to prepare for general anesthesia, including routine blood tests, hepatitis B surface antigen screening, and a chest X-ray. The results were all within normal limits.



Figure 1. Before Reconstructive Surgery. (A) Ventral View, (B) Dorsal View.

During the preoperative examination, the patient received intravenous prophylactic antibiotics (Ceftriaxone). The surgery was performed under general

anesthesia. Reconstructive surgery can be performed into two stages: wide excision of the fibrotic tissue and the use of a scrotal flap. A circular incision was made on the distal coronal section of the penile shaft to expose the fibrotic tissue. The fibrotic tissues on the penile shaft were excised from the distal penile region to the upper part of the scrotal area. The wide excision continued until no fibrotic tissues remained (Figure 3). Subsequently, the exposed area was closed using a scrotal flap. The scrotal flap procedure was carried out immediately after the wide excision because the scrotal skin was found to be suitable for reconstruction. A transverse incision was first made at the center of the scrotum, with the same horizontal length as the penile diameter and a vertical length equivalent to the length of the penile. The penile was then inserted into the skin, with the glans positioned to protrude through the incision. The wound was closed by suturing the coronal and dorsal parts. The final stage of the reconstruction involved an incision made on the ventral part of the penile shaft and the scrotum, with a V-Y flap design. Suturing was performed to close the wound (Figure 4).

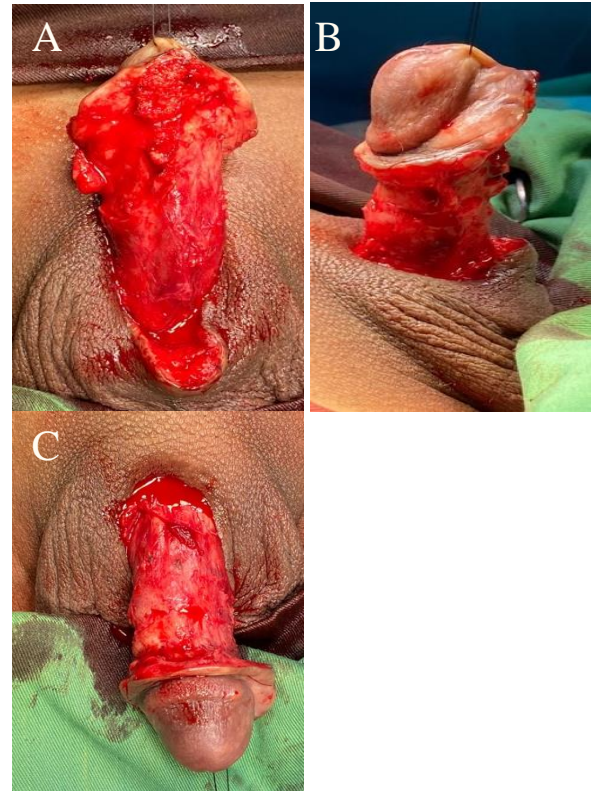


Figure 3. Intraoperative Appearance, Post-Wide Excision of The Fibrotic Tissue. (A) Ventral View, (B) Lateral View, (C) Dorsal View.

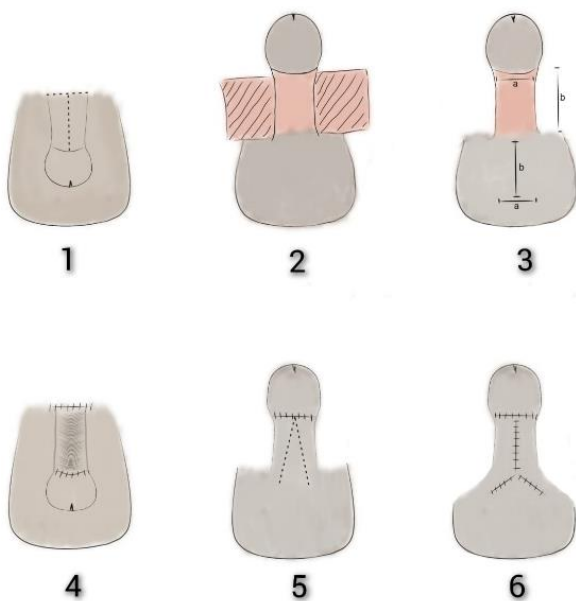


Figure 2. Illustration Step of Wide Excision (1-3) and Scrotal Flap (4-6).



Figure 4. Post-Reconstruction Appearance with Scrotal Flap. (A) Dorsal View, (B) Lateral View, (C) Ventral View.

An evaluation two weeks after the surgery showed positive results. The patient reported being able to achieve an erection successfully without pain. However, there was a suture breakage in the dorsal area of the penile shaft, necessitating an operation to repair and close the wound (Figure 5).



Figure 5. Evaluation Two Weeks Post-Reconstruction Surgery.



### DISCUSSION

Paraffinoma, also known as sclerosing lipogranuloma, can develop following the injection of liquid paraffin or a similar substance. This procedure remains an option for many men, despite its well-documented side effects. The substance is typically injected into the subcutaneous tissue of the penile shaft, with variations in its distribution, ranging from the distal shaft to the mid-shaft or the entire penile shaft, often with the migration of the substance to the infra-pubic area, scrotum, and/or glans. Paraffinoma can be confined to either a partial or complete layer of Dartos fascia or may infiltrate the skin and extend deep into the deep fascia (Figure 6).<sup>4,9</sup>

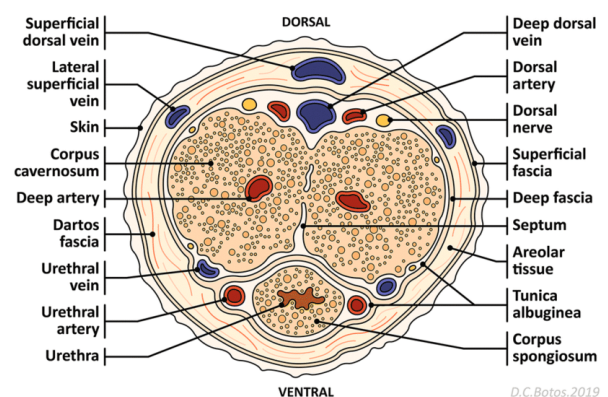


Figure 6. Vascularization of Penile.<sup>10</sup>

Most people believe that paraffin injection can provide the effect of changing the penile contour, increasing the size of the penile, solving the problem of sexual dysfunction, and providing satisfaction in

sexual intercourse. However, in the long term, this foreign substance can develop into sclerosis lipogranulomas which is a subcutaneous inflammatory response to the breakdown of the foreign substance. Since the human body has no enzymes to metabolize the foreign substance, an induced granulomatous reaction and irritation of the subcutaneous tissue can occur. Subsequently, this can stimulate the nerves in the penile and cause pain, especially during erection.<sup>11</sup>

In this case, the treatment option should aim to restore the penile function as a sexual organ with the best appearance. For this to be achieved, surgical removal of the foreign material and granuloma is the best option. This surgery can be followed by skin grafting or a scrotal flap to cover the raw surface.<sup>6,8</sup> This patient underwent surgery to remove the formed fibrotic tissue and foreign material. The damaged tissue is excised deep enough that all the layers of skin along the penis are removed. According to Zhao, et al., in deeper infiltrations with severe paraffinoma, the excision can be followed by a scrotal flap procedure to reconstruct the raw surface because the scrotum is easily available, extensible, and has the same color as the penile skin.<sup>12,14</sup> The researchers performed the reconstruction with a scrotal flap. This procedure can be done in a single stage of surgery due to the good condition in which the existing scrotal skin was in and there was a sufficient amount for a scrotal flap. Tunneling was done from the scrotum to cover the penile shaft area. The V-Y flap design is done on the ventral side of the penile to provide a better shape of the penile shaft and scrotum aesthetically and can also help the penile reach full erection. The blood supply to the organ is critical for safe and reliable flap elevation and transfer. The arterial supply of the scrotum is from the posterior scrotal branches of the perineal artery, the anterior scrotal branches of the deep external pudendal artery, and the cremasteric artery. The

penile is supplied by the internal pudendal artery, a branch of the internal iliac artery.<sup>1,15-17</sup>

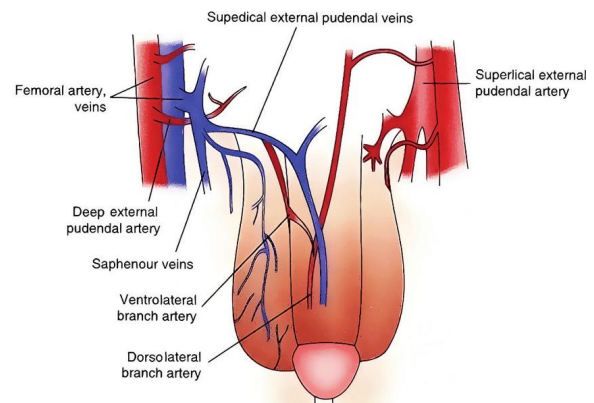


Figure 7. Blood Supply of Penile and Scrotum.<sup>15</sup>

Boyke Subhali classifies penile paraffinoma based on the availability of scrotal skin. This case is a category 2 where the lesion is only on the shaft of the penis, without wide migration of the scrotum or suprapubic area. The scrotal skin is still in good condition and can be used to cover the defect with only a single stage.<sup>18</sup>

This technique has numerous advantages including the color of the penile skin being greatly matched, the size and skin sensitization of the penile looking natural, and of course easy to apply. However, the technique caused the scrotal hairs to be moved into the penile shaft resulting in a hairy penis and the scar line along the shaft may develop into a hypertrophic scar or keloid. Thus, good techniques should be considered.<sup>14,17,19</sup>

The article discusses various substances used for penile injections, not limited to paraffin, which broadens the scope of the research and provides a comprehensive overview of potential complications. The use of a scrotal flap in this context focuses on different techniques for penile reconstruction. This research specifically addresses the complications associated with paraffin injection, which may set it apart from studies that examine a broader range of penile enlargement

procedures. The inclusion of a detailed case illustration provides valuable insights into the clinical application of the described surgical technique.

The strength of this case is the case illustration addresses a common issue related to penile enlargement procedures using high-viscosity liquids, providing valuable clinical insights into the complications associated with such practices. The description of the surgical technique involving wide excision of fibrotic tissue and the use of a scrotal flap for closure provides a practical solution to address the problem in a single-stage surgery, which can be beneficial for both patients and healthcare providers. The case of a 29-year-old male who underwent non-medical penile injection procedures adds authenticity to the discussion and highlights the real-world consequences of such practices. However, the research is based on a single case illustration, which may limit the generalizability of the findings. The case does not provide comparative data or a control group for assessing the effectiveness of the described surgical technique in comparison to other methods. The case involves a procedure performed by non-medical personnel, which is a critical issue but may not be representative of all cases.

The use of a scrotal flap for penile reconstruction in cases of paraffinoma is a novel approach that may differ from traditional methods. It is a unique approach not widely explored in existing literature. This technique's novelty could make this study stand out.

### CONCLUSION

Penile paraffinoma occurs as a result of the injection of a high-viscosity fluid into the penile area with the aim of enlarging the penis. However, this procedure has been reported to produce side effects that can damage both the function and appearance of the penile. The best treatment option is to surgically remove the

fibrotic tissue and close the exposed area with a scrotal flap to restore the function and shape of the penis. Additionally, managing penile paraffinomas can pose significant surgical complexity. An integrated surgical strategy involving both urology and plastic surgery enhances the preservation of both function and appearance.

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### CONFLICT OF INTEREST

The authors have no conflict of interest to declare in this article.

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This research has no financial interest or affiliation concerning material.

### AUTHOR CONTRIBUTION

RTRLI conceptual the manuscript and content revision. JM was content revision. KYH was grammar and content revision. MAUH was written conceptual, data analysis collection, and final approval.

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