

# Functional outcome of the one-stage scrotal tunnel + ventral inverted V incision + inverted Y anastomosis technique to treat penile paraffinoma: A single center retrospective study

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**Summary** *Introduction and objective: Penis enlargement through substance injection is common in many countries of Southeast Asia and Eastern Europe. The definitive therapy involves removing the entire skin and the subcutaneous tissue and resurfacing the penile shaft via a single-stage or multi-staged procedure. This study aimed to report the functional outcome and esthetics of treating penile paraffinoma patients using the scrotal tunnel + ventral inverted V incision + anastomosis inverted Y technique.*

*Materials and methods: This study was a single-center retrospective descriptive analysis of patients who underwent one-stage scrotal tunnel + ventral inverted V incision and inverted Y-shaped anastomosis procedures from January 2013 to December 2023. The following data were collected: chief complaint, reason for the injection, type of fluid injected, duration of surgery, duration of hospitalization, length of follow-up, and results after surgery.*

*Results: Of the 32 patients included in the study, 78% injected liquids in the form of oil and the goal of the majority of patients was penis enlargement (71%). The average age was 36.84 years, and the main complaint was pain in the penis during erection (53%). The average operation time was 130 minutes, hospitalization duration was 2.21 days, primary wound healing was 91%, patient satisfaction level was 97%, and Scale 4 erection hardness was 91%.*

*Conclusions: One-stage surgery for penile paraffinoma produced promising results when the granuloma was limited to the penis and healthy scrotal skin was available to cover the penis.*

**KEY WORDS:** Penile paraffinoma; Surgery; One stage; Scrotal flap; Functional outcome.

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## INTRODUCTION

Penis enlargement through the injection of substances (paraffin, oil, cod liver oil, petroleum jelly, silicone, methacrylates, hyaluronic acid, or collagen patches) is common in Southeast Asian and Eastern European coun-

tries (1, 2). This procedure can be performed by patients, non-professionals, or medical personnel and can present severe consequences in cases of complications (3), including penile deformity, skin necrosis, limited erection due to pressure, and pain during sex (4).

The definitive therapy is to remove the entire skin and subcutaneous tissue and resurface the penile shaft (5). The technique can be single-staged (simple excision and primary closure, bilateral scrotal flap, one-sheet spiraling full-thickness skin graft, scrotal tunnel + inverted V incision and anastomosis inverted Y technique), or multi-staged (6-8).

Erectile function is assessed by measuring erection hardness using the *erection hardness score* (EHS), which provides specific and readily monitored results (9).

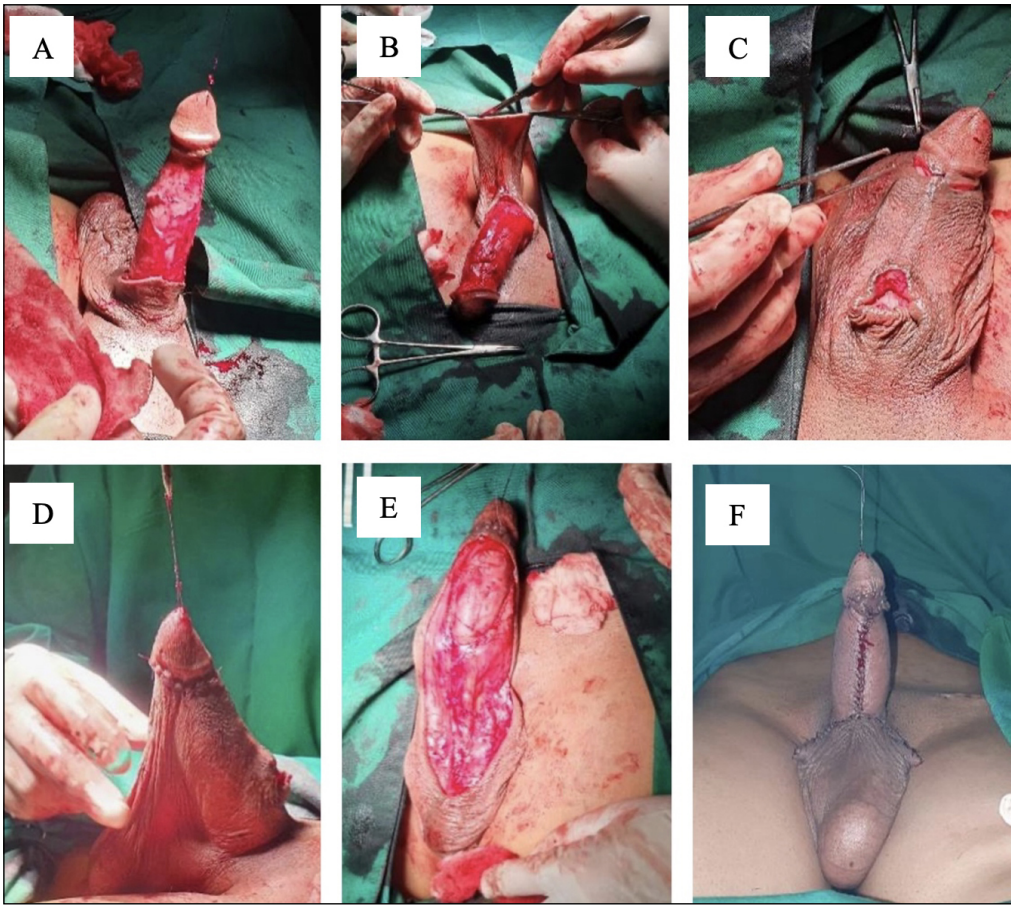
In this study, we report our experience in performing treatment on penile paraffinoma patients using the scrotal tunnel + ventral inverted V incision + anastomosis inverted Y technique, along with the esthetics and functional outcome of the procedure.

## MATERIALS AND METHODS

We performed a single-center retrospective descriptive study using data collected from January 2013 to December 2023 from patients who underwent single-stage scrotal tunnel + ventral inverted V-incision and anastomosis inverted Y-shape procedures (Figure 1). Figure 2 provides a conceptual illustration of the technique.

Data on the chief complaint, reason for the injection, type of fluid injected, duration of surgery, duration of hospitalization, length of follow-up, and results after surgery were collected.

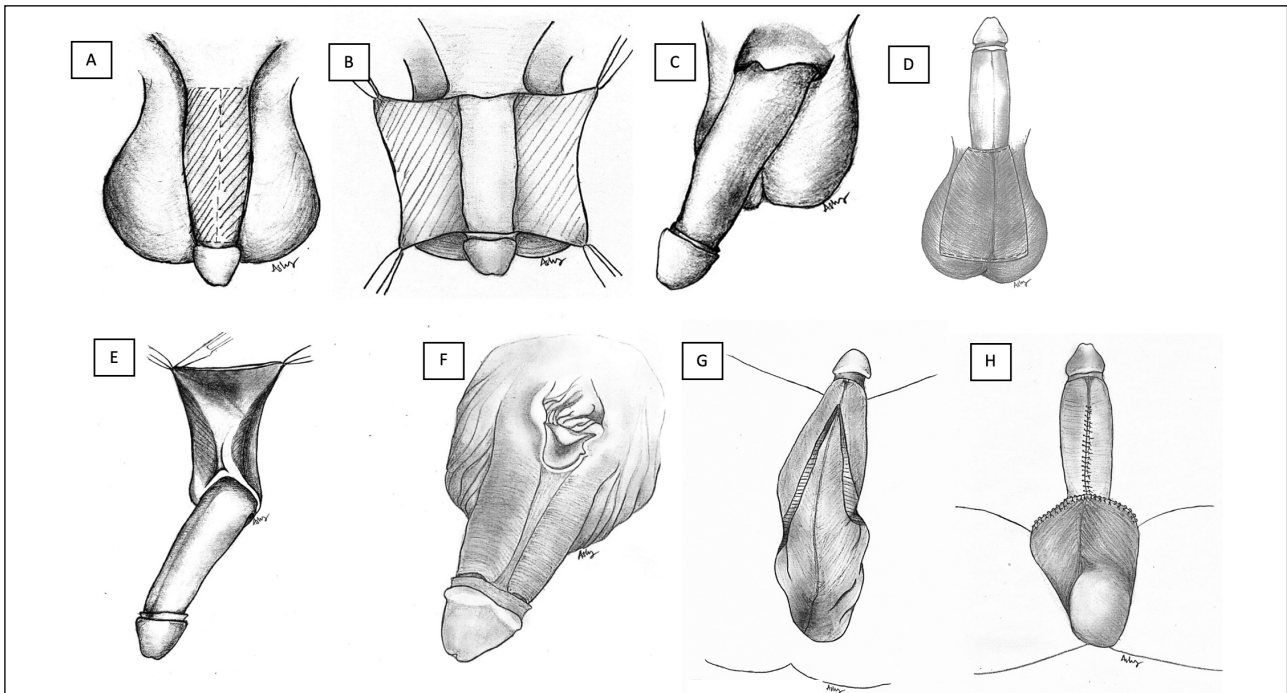
The inclusion criteria were as follows: [1] new patient and [2] penile paraffinoma performed in a single stage. Exclusion criteria were [1] penile paraffinoma that affected the skin of the penis and greater than half of the skin of the scrotum, [2] presence of malignancy, and [3] penile paraffinoma coexisting with diabetes mellitus.



**Figure 1.** Step-by-step representation of the operative stage. One-stage surgical excision steps with scrotal tunnel + ventral inverted V-incision and anastomosis inverted Y-shape. A) After the skin of the penis is removed, B) the creation of the tunneling exit hole, C) after the penis is passed under the skin and the glans protrudes from the prepared hole (penile scrotal invagination), D) appearance after suturing, E) inverted V-incision, and F) after suturing into inverted Y-shape.

**Figure 2.**

A conceptual illustration of the one-stage surgical excision steps with scrotal tunnel + ventral inverted V-incision and inverted Y-shaped anastomosis. A) Paraffinoma in the shaft of the penis, B) excision of the entire paraffinoma in the penile shaft, C) naked penile shaft after the skin is excised, D) measurement of the scrotal tunnel for scrotal flap creation, E) creation of a hole in the scrotum, F) insertion of the penis into the scrotum hole to cover the penis with the skin of the scrotum (penile scrotal invagination), G) inverted V-incision on the ventral penis, and H) inverted Y-shaped suture.



This study followed the *Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)* reporting guideline. Informed consent was obtained from all patients and this study was approved by the *Ethics Committee of Hasanuddin University, Makassar, Indonesia* (no. 304/UN4.6.4.5.31/PP36/2024) with protocol no. UH24040277.

The five-grade EHS was used to assess erection rigidity [Grade 0 (no enlargement of the penis), Grade 1 (penis enlarges but does not become firm), Grade 2 (penis is hard, but not hard enough to penetrate), Grade 3 (penis is hard enough for penetration but not completely hard), and Grade 4 (penis is completely stiff and firm)]. A score of two or less was considered an abnormal EHS (10).

## RESULTS

The 32 patients included in this study had an average age of 36.84 years and an average length of hospital stay of 2.21 days. Most patients had a history of silicone, oil, or paraffin injections with the main aim of enlarging the penis. The characteristics of the data are listed in Table 1.

**Table 1.**  
*Clinical characteristics of patients.*

Characteristic	N (%)
Patient (n)	32
Mean age (y)	36.84
Reason for injection (n)	
- enlarge the penis	23 (71)
- increase self-confidence	5 (16)
- satisfy sexual partner	4 (13)
Foreign body type (n)	
- vaseline	3 (9)
- oil	25 (78)
- paraffin	4 (13)
Location	
- the entire shaft of the penis	27 (84)
- part of the shaft of the penis	4 (13)
- the entire shaft of the penis + a small part of the scrotum	1 (3)
Reason for treatment	
- pain during erection	17 (53)
- chronic wound	5 (16)
- difficulty during sex	7 (22)
- phimosis	2 (6)
- penile deformity	1 (3)
Mean operation time (min)	130
Mean length of stay (d)	2.21
Mean follow-up period (mo)	3.4
Results after operation (n)	
- good healing	29 (91)
- wound infection	2 (6)
- scar contracture	1 (3)
Satisfaction status	
- satisfied	31 (97)
- not satisfied	1 (3)
EHS	
- 3	3 (9)
- 4	29 (91)

EHS: Erection Hardness Score.

## DISCUSSION

The outcomes we obtained from the 32 patients were positive, whereby 29 patients recovered completely, 2 patients experienced wound infection, and 1 patient presented contractures, which we successfully excised several months later. No erection problems were noted according to the EHS, and no sexual activity issues were reported after surgery. A one-stage penile paraffinoma excision is faster and easier than a two-stage procedure (requires only one operation, which generally reduces the time for recovery and degree of pain). In addition, this method is more cost-effective (the cost is usually more affordable than a two-stage surgery), has less risk of complications (fewer incisions and tissue manipulations), and allows for a thorough evaluation (the surgeon can perform a comprehensive assessment of the penile tissue during surgery to evaluate any other problems that need to be addressed). The disadvantages of the one-stage technique are long recovery times (despite only requiring one surgery), swelling and bruising (swelling and bruising are common side effects after surgery), infection (infection is a minor but serious risk after any surgery), nerve damage (nerve damage may occur, which can cause numbness or tingling of the penis), and penile deformity (particularly when the silicone implant is large or has been in place for many years).

Granulomatous reactions resulting from the injection of a foreign body can accumulate in parts of the penis or spread to the entire penile shaft, supra-pubic area, and scrotum (11, 12). When complications occur, the entire foreign object and related skin should be removed to prevent the recurrence or graft loss that can occur if some residue remains (13). Simple excision and primary suturing may be performed in selected cases (14); however, if the penile paraffinoma involves the entire penile shaft without extension to the suprapubic area (84% of the cases in this study) or a small amount of the scrotal area (3% of our cases), then the treatment therapy should involve a radical excision of the fibrotic tissue and the associated skin and the use of scrotal skin to close the open area.

The skin of the scrotum has high elasticity, which makes it suitable for covering the penis, despite the presence of hair. Most of the surgeries are successful without any complications, and the reconstructed penis has an immediate post-operative tactile sensibility (1, 2, 6, 13).

The two-stage procedure for paraffinoma involves exposing the penis and inserting it into the previously created scrotal tunnel while leaving the glans exposed for urination. After a few weeks, the penis is removed from the scrotum (13). In all our cases, we performed a single-stage scrotal tunnel and inverted V incision + inverted Y anastomosis after removing all parts of the penile skin along with the underlying granulomatous tissue (Figure 1). This action is possible because sufficient skin in the scrotum is available to cover the penis. The average time required for this procedure is 130 minutes, while the average length of hospital stay is 2.21 days and the average follow-up is 3.4 months.

*Lumbiganon et al.* found no significant difference in surgical wound infection, wound dehiscence, or reoperation rate in the one-stage group compared to the two-stage

group; however, the two-stage group had a longer length of stay and lower complication rate. Therefore, these two techniques can be considered for reconstruction in penile paraffinoma cases (15). In addition, Dellis *et al.* recommended one-stage surgery after the procedure was performed on 10 patients with safe and effective results (16). This study had several limitations. As a retrospective cohort study, it was subject to inherent selection and information biases. In addition, the study was conducted at a single center, which may limit the generalizability of the findings. Further multicenter, prospective studies are required to validate these results and confirm whether the one-stage scrotal tunnel + ventral inverted V incision + inverted Y anastomosis technique is safe and effective and can provide the appropriate functional and esthetic outcome post-surgery.

## CONCLUSIONS

Single-stage surgery on penile paraffinoma can be effective when the granuloma is limited to the penis and healthy scrotal skin is available to cover the penis.

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**Conflict of interest:** The authors declare no potential conflict of interest.