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Penile sclerosing lipogranuloma caused by hair oil (*Eclipta alba* oil): A case report

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Abstract
Introduction and significance: Penile sclerosing lipogranuloma, a condition resulting from the body's reaction to foreign substances injected into the penile area, is a rare occurrence. Its clinical manifestations may appear one to several years after injection. The resulting reaction can lead to both cosmetic and functional disturbances, necessitating appropriate therapy to restore the anatomical appearance, maintain penile function, and prevent further complications for a better prognosis. Here, we present a case of penile sclerosing lipogranuloma treated surgically by excision of the penile shaft skin extended with a flap from the proximal one-third of the lesion, including circumcision.
Case presentation: A 31-years-old man presented with a complaint of a nodular mass appearing on his penis following an injection of hair oil performed by an unqualified non-medical individual three years prior to presentation. The penile lipogranuloma was managed by a fairly extensive excision and extraction, involving approximately two-thirds of the penile shaft that had been infiltrated by the foreign substance. The healthy skin from the proximal one-third of the lesion was then used as a flap to reconstruct the exposed penile shaft. Postoperatively, the patient experienced positive aesthetic and functional outcomes, leading us to consider the procedure successful.
Clinical discussion: Restoration of penile function both cosmetically and in performance is a key determinant in selecting therapy for penile sclerosing granuloma. Treatment involves the complete removal of the foreign substance or granuloma from the affected areas. For similar cases, the recommended simple reconstruction for the penile shaft is excision of the penile shaft skin extended with a flap from the proximal one-third of the lesion as a sleeve, including circumcision.
Conclusion: Proper management of the penis and surrounding areas in cases of penile lipogranuloma is crucial for preserving both the cosmetic appearance and functional performance of the penis while preventing further complications.

Keywords: Penis, sclerosing, lipogranuloma, augmentation, reconstruction

Introduction

Penile augmentation has been reported in literature since the 19th century and can be safely performed by professional medical personnel; however, many cases performed by non-medical individuals have resulted in complications, one of which is penile sclerosing lipogranuloma [1, 2]. Penile sclerosing lipogranuloma is an uncommon mass in the male genitalia, arising either from the breakdown of endogenous lipids or as a reaction to foreign materials. The injected materials can include silicone, hydrocarbons (paraffin tumors), methacrylate, hyaluronic acid, mineral oil, or vaseline. The primary purpose of using such injectable materials is usually to enlarge the penis and improve its shape [3, 4]. Typically, after the injection of the foreign substance, reactions may occur within one to two years and can be accompanied by chronic inflammatory sclerosis that leads to decreased penile function. Other manifestations, such as foreign body granulomas (known as paraffinoma or siliconoma), may develop years after the injection. Since the body lacks enzymes to break down exogenous materials or lipids, the injected substance cannot be metabolized or degraded, leading to a chronic inflammatory reaction that culminates in penile sclerosing lipogranuloma [4, 5]. The risk of penile cancer is also increased, due to both residual symptoms and the aforementioned manifestations [6]. The type or composition of the foreign substance, the quantity injected, the injection site, depth, and the time elapsed since injection are factors influencing the clinical manifestations and symptoms [7, 8]. Erythema, swelling, and edema of the penile skin are common initial symptoms occurring soon after the injection. Clinical manifestations and symptoms may appear without pain and can persist for years. The penis may become hard, painful, and even ulcerative due to gradual fibrosis at and around the injection sites [8, 9]. Subsequently, the skin becomes sensitive and often darkens at

the injection site. Because these manifestations and the aggregation of clinical symptoms can lead to complications years and sometimes even weeks after the injection [9, 10], if the patient is unwilling to reveal the exact substance injected, biochemical analysis is necessary to determine the composition and origin of the substance [3, 8]. Given that the volume of the injected substance is usually large and its viscosity low, it can spread to other areas, including regional lymph nodes [8, 11]. In uncircumcised patients, phimosis may occur because the foreskin can retain the injected substance [3, 12]. To decide on the surgical procedure, a biopsy is necessary to differentiate the granuloma from potential malignancy [9, 13]. Ultrasonography (USG) and Magnetic Resonance Imaging (MRI) can assist in diagnosis and surgical planning, with MRI being the preferred modality to visualize the soft tissues or adjacent areas involved [7, 12, 14]. One medical treatment option is the use of steroids; however, there are reports of patients who are nonresponsive to steroids, leading to recurrence, thereby necessitating surgical management [13, 15]. When complete excision is performed to remove the entire granuloma thus preventing recurrent scarring or skin necrosis reconstructive surgery becomes the best treatment option [7, 16]. Here, we report a case of penile sclerosing lipogranuloma caused by hair oil (*Eclipta alba* oil) that was treated in a single-stage surgical excision using the technique of extended penile shaft skin excision, including circumcision. This case report is presented in accordance with SCARE criteria [17].

Case report

A 31-year-old man presented with a complaint of a nodular mass on his penis following an injection of hair oil (containing *Eclipta alba* extract) (see Fig. 1). He injected the oil himself three years prior, encouraged by a co-worker who was non-medical and untrained. Two weeks after the injection, he developed an abscess at the base of the penis extending to the suprapubic region, along with swelling of the scrotum. The symptoms subsided after the abscess spontaneously ruptured, discharging pus for about two weeks, and he remained asymptomatic until he presented to the surgical outpatient clinic two weeks ago with complaints of uneven penile swelling, darker skin coloration around the penis, and reduced pain during erection when at rest. He did not experience erectile dysfunction or premature ejaculation; however, the pain during erection disrupted his sexual activity. He had no history of oral medication use, prior medical procedures, surgeries, or systemic diseases, and there was no history of fever or urinary tract infections.

On physical examination, vital signs were within normal limits. Local examination revealed an irregular, well-circumscribed nodular mass encircling the penile shaft, minimal tenderness on palpation of the swollen area, fibrosis at the base of the penis, and no involvement or enlargement of the inguinal lymph nodes. Preoperative laboratory evaluations, including complete blood count, blood chemistry, and urinalysis, were all normal. Radiological examinations such as chest X-ray and abdominal ultrasonography were unremarkable. MRI was not available as the diagnostic procedure was conducted at a primary general hospital. He was diagnosed with penile sclerosing lipogranuloma induced by *Eclipta alba* oil (Soebhali classification 2) with subsequent reaction and penile pain. The surgical procedure was scheduled and performed by a general surgeon assisted by another general practitioner.

Fig 1: Penile sclerosing lipogranuloma; demonstrating darkened skin discoloration on the penis with an irregular nodular mass encircling approximately two-thirds of the penile shaft

Given that only two-thirds of the penile shaft was involved, and with no involvement of the scrotum or suprapubic area, extended excision of the penile shaft skin was chosen for better cosmetic and functional outcomes compared to a scrotal flap or skin graft. A one-stage surgical excision of the lipogranuloma was performed using the technique of extended penile shaft skin excision, including circumcision. Excision was carried out using Metzenbaum scissors and monopolar cautery; the sclerotic lipogranulomatous tissue was carefully removed from the entire area affected by the injection of *Eclipta alba* oil. Because the lesion was circular, extending from the dorsal to the ventral aspect of the penile shaft, two circumferential incisions were made: the first incision approximately 0.5 cm proximal to the coronal sulcus, followed by a second incision about 0.5 cm from the proximal edge of the lesion. Excision was performed carefully from the skin to the level of Buck's fascia to avoid damage to the penile neurovascular bundles and injury to the urethra. After complete removal of the sclerosing lipogranulomatous tissue, the remaining healthy proximal penile shaft skin was mobilized. All tissue that could potentially cause tethering was carefully debrided. Once the connection of the skin to the penoscrotal junction was released, the mobilized skin formed a flap serving as a sleeve. Finally, the created "sleeve" was carefully advanced toward the coronal sulcus and sutured in a circular fashion, along with the placement of a surgical drain created using a modified sterile glove (see Fig. 2).

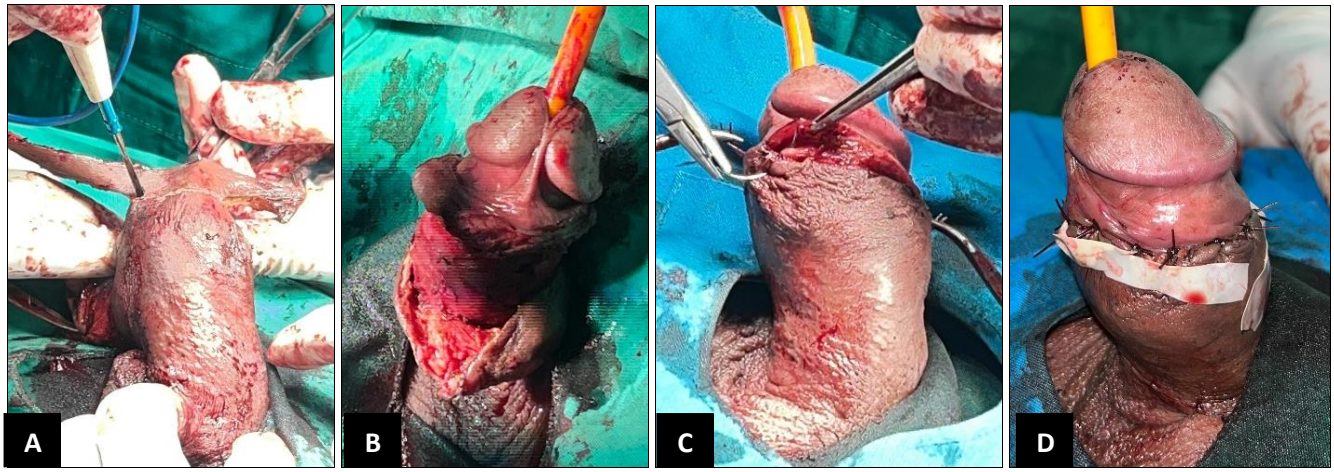

Fig 2: Intraoperative view of extended penile shaft skin excision with a flap from the proximal one-third of the lesion as a "sleeve"; A. Complete excision of the two-thirds of the penile shaft skin affected by sclerosis; B. Mobilization of the remaining healthy proximal penile shaft skin, which after releasing the penoscrotal attachment forms a flap as a "sleeve"; C. Suturing of the "sleeve" flap to the mucosa of the circumcised coronal sulcus; D. Closure of the exposed area with circular sutures and placement of a surgical drain fashioned from a modified sterile glove

Postoperative management included maintenance intravenous fluids, antibiotics, and analgesics. The dressing was changed and the drain was removed two days postoperatively, and the patient was discharged on the third day. He was scheduled for two follow-up visits at one- and two-week intervals, during which no signs of surgical site infection, recurrent pain, or stiffness common complications following excision of lipogranuloma were noted. The surgical procedure was successful, with the patient reporting immediate positive results in both genital aesthetics and function; he stated, "I am glad that the pain during erection has disappeared and that the surgical wound feels similar to that of a circumcision." The patient expressed satisfaction and provided positive feedback regarding the procedure.

Discussion

Penile injections remain common in Southeast Asia, Korea, the Middle East, certain Eastern European countries, and Indonesia, often performed by non-medical personnel or self-administered. In Asian and Eastern European cultures, a larger penile size is frequently regarded as a symbol of masculinity. However, injections can result in complications such as pain during erection, urinary retention, and other issues stemming from complications like penile sclerosing lipogranuloma. The incidence of penile sclerosing lipogranuloma is relatively low, with clinical manifestations that may occur at the early stages of the disease or even one to two years or longer after injection [4, 18, 19]. Early reactions such as erythema, swelling, and edema are common and often painless [7, 8]. Progressive manifestations such as pain, ulceration, stiffness, and fibrosis may develop later. Other complications include local migration of the injected substance, skin gangrene, sepsis, and even death [4, 8, 20].

For the surgeon, histopathological examination can confirm the presence of foreign substances and help identify the injected material. The early histological findings typically include acute inflammatory reactions with thickening of the reticular dermis of the penis [3, 8, 9]. MRI is the best imaging modality to evaluate the soft tissue or adjacent structures that may be involved. Both USG and MRI can be used to guide diagnosis and treatment [7, 14]. Oral corticosteroids may be used as a conservative treatment option, although regression after steroid therapy is rare, leading many patients to prefer definitive surgical management [13, 15]. Surgical excision has shown good regression results in most cases, whether partially or completely [7, 15, 16]. Therefore, surgical management is generally the preferred treatment for penile sclerosing lipogranuloma [9, 15, 16].

Pain in the granulomatous area, which worsens during erection or sexual intercourse, is often the primary indication for surgery. In this case, the main indication for surgery was pain exacerbated by erection, which interfered with sexual activity [5, 7, 20]. Other surgical indications in similar cases include functional impairment due to skin hardening, lesions or ulcerations at the injection site, phimosis resulting from edema in uncircumcised patients, and poor cosmetic appearance due to penile deformity [16, 18].

To prevent recurrence, infection of ulcerated areas, or skin necrosis, complete excision of the granuloma is necessary during surgery. For an optimal prognosis, all granulomatous tissue must be removed [15, 16]. Skin grafts, skin flaps, or extended excision of penile shaft skin are viable reconstructive options for damaged penile skin [16, 20, 21]. While the abdomen or inguinal regions are potential donor sites for split-thickness or full-thickness skin grafts [18, 22], these procedures may lead to larger surgical sites (donor and recipient), contracture, and less favorable cosmetic outcomes due to color mismatches between the penis and the donor site. If more than two-thirds of the penile shaft is involved, a skin flap can better maintain the shape of the penis, reduce the incidence of contracture, and yield favorable cosmetic results; however, if the flap is taken from the scrotum, the penile shaft may become hairy due to the presence of hair follicles [5, 18]. Considering that in this patient only two-thirds of the penile shaft was involved, with no involvement of the scrotum or suprapubic area, the extended excision of the penile shaft skin was selected for superior cosmetic and functional results compared to a scrotal flap or skin graft [5, 16].

The extended excision of the penile shaft skin also employs the principle of a flap, using the remaining healthy penile skin not affected by the granulomatous process. This design and incision technique is simpler than that of a scrotal flap. In this case, extended excision was feasible because there was sufficient healthy penile skin remaining after granuloma excision. To reduce the risk of penile shortening, incisions

were made to mobilize the residual proximal penile skin, with all tethering tissue removed; once the penoscrotal connection was released, a flap was created as a "sleeve", thus mitigating penile shortening [5, 16]. Drainage was instituted to prevent hematoma formation in the suprapubic and scrotal regions [7, 18].

According to Soebhali, the classification of penile sclerosing lipogranuloma is as follows [15];

1. **Classification 1:** Minimal or no visible lesion; less than one-third of the penis is involved, with no involvement of adjacent areas such as the scrotum or suprapubic region.
2. **Classification 2:** Lesion on the penile shaft with more than one-third involvement of the penis, without involvement of the scrotum or suprapubic region.
3. **Classification 3:** Lesion on the penile shaft involving the suprapubic area and less than half of the scrotal area.
4. **Classification 4:** Lesion involving the entire penile region, with concomitant involvement of the suprapubic area and more than half of the scrotal area.

In this case report, the patient was diagnosed with penile lipogranuloma and classified as Soebhali 2. Extended excision of the penile shaft skin with a flap from the proximal one-third of the lesion as a "sleeve" is considered the best option for reconstruction in this classification, given that less than two-thirds of the penile shaft is involved. Restoring or preserving both the cosmetic appearance and functional performance of the penis is critical for determining the appropriate treatment for penile sclerosing granuloma. Thus, timely selection of the appropriate therapy is essential to prevent adverse outcomes and further complications [5, 16].

Conclusion

Penile sclerosing lipogranuloma is a rare end-stage reaction and a serious complication resulting from the injection of foreign substances into the penis, particularly when performed by unqualified individuals. Prompt surgical intervention is crucial to remove the granulomatous tissue, thereby restoring penile function both aesthetically and functionally and preventing further complications. Extended excision of the penile shaft skin with a flap from the proximal one-third of the lesion used as a "sleeve", combined with circumcision, is a simple reconstructive surgical procedure that yields excellent functional and cosmetic outcomes.

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Not available

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