Sclerosing lipogranuloma of the penis: a review of management and classification

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ABSTRACT

Enlargement of penile girth is has always long been a subject of extensive debate and controversy. Genital injection of high-viscosity fluids like paraffin and mineral oil has been performed for more than 100 years. The debilitating effect has been long known, and the procedure has been abandoned by most medical practitioners. Injection often performed by non-professional persons or by the patients themselves, in a non-standardized way. The mineral oil contains foreign lipid that cannot be metabolized by human body, thus foreign body reaction will occur. The inflamed tissue and foreign body reaction will result in sclerosing lipogranuloma. This disorder also known with the injected materials names, e.g. paraffinoma, siliconoma or vaselinoma of the penis. Complications of the injection vary from inflammation, swelling, pain, hardened penile skin, to disastrous effects like ulcers, skin necrosis, pain in erection, sexual disability caused by pain either the patient or the sexual partner, and death by embolism. After injection of the mineral oil, in many patients the symptoms will occur almost instantly. Swelling, inflammation of the penile skin, redness, oedema (that will give an impression of larger penile girth) are among the symptoms occurred. Surgery is the best viable option to treat this disorder. Complete excision of the affected area, followed by covering the healthy area either by grafts or flaps. If available, scrotal skin is a good choice to cover the affected area. A good classification system of sclerosing lipogranuloma of the penis will be helpful in reporting and treating the disease.

Keywords: sclerosing lipogranuloma, self-injection, penis, penile augmentation, paraffinoma, siliconoma.


INTRODUCTION

Enlargement of penile girth is has always long been a subject of extensive debate and controversy.1 Foreign materials such as mineral oils, paraffin oils, paraffin balm and silicone have been used in order to improve penile shaft contour and dimensions.2 Genital injection of high-viscosity fluids like paraffin and mineral oil has been performed for more than 100 years.3 Warmed Vaseline is also known as injected material in Europe.4 The liquid is injected subcutaneously, in the hope that it will add the girth diameter of the penis.5 Injection often performed by non-professional persons or by the patients themselves, in a non-standardized way:6 Later, the destructive consequence of the injection was widely recognized. Nodules, skin ulcers, necrosis, blindness, and death has been known as a side effect of such procedure.6,8 Inability to perform sexual activities, penile deformity, acquired phimosis, painful intercourse that can lead to emotional distress are common among these patients with complications.6,8 Cellulitis or transmission of diseases such as HCV, HBC and syphilis can also lead to complications.5 Sclerosing lipogranuloma first got its name in 1950 when Smetana and Bernhard introduce the name. The abnormality also can be named according to the injected materials (vaselinoma, siliconoma, paraffinoma), table 1 summarize the injectable material and various name of penile sclerosing inflammation.10,11 Actually, sclerosing lipogranuloma does not always develop following the injections. Dissimilar reactions perhaps due to varying degrees of purity of the injected material. Apparently, the determining factor of sclerosing lipogranuloma formation is the sensitivity of the patient's tissue.12 This practice of penile injection is still continued in some countries in Asia, especially South-East Asia, Korea and Middle East, and some Eastern European countries.6,13,14 In the author's experience, in Indonesia many of the affected persons were soldiers, sailors or coal miners.

Historical Standpoint

The size of the penis and scrotum has been a source of worry to men for a long time. The presence of a large male sexual organ was regarded as a symbol of strength, especially with regard to physical fitness and sexuality.2,4,13 Discussion of the penis often deemed taboo, socially unacceptable. In other times, it was the topic of light-hearted conversation and jokes.15 It has various psychological and social ramifications, such as lack of self-assurance, fear of connection and social estrangement.16 In some primeval tribe, foreign body injection to augment the penile contour was a part of cultural
In the Dayak Borneo tribe, a ritual of piercing the glans and insertion of items into the resultant holes to stimulate was widely practiced in the past. The Topinama of Brazil, have a tradition of having poisonous snake to bite their penis to make it bigger.

The use of mineral oil for genital augmentation in modern time was first performed by Robert Gersuny he injected Vaseline to a boy who had undergone bilateral orchectomy because of genital tuberculosis. The success of the procedure stimulated him to use Vaseline as filling material for other soft tissue defect. Different body organs (e.g., the penis, breast, cheek, eyelids, muscles and nose) was injected with foreign materials. Successful results were reported. Later, paraffin injections were also used to treat urinary incontinence.

Problems from this type of procedure were reported as early as 1906 by Heidingsfield. Two patients underwent mineral oil injection for facial wrinkles, then developed bad nodules on the face. Because of the complications, this practice was subsequently abandoned in many countries. It was true that some patients had no complications, most of the time the injected materials cannot be metabolized. Human body lacks the enzyme to break down exogenous lipid. Therefore a foreign body reaction arises. Delayed sequelae presentation may include foreign body granulomas, and increased risk of penile cancer. Life-threatening adverse reaction was also described, including pneumonitis and embolism. This is due to inadvertently intravascular administration of the mineral oil.

In Indonesia, there are so-called “traditional health practitioner” that claimed to have the ability to enlarge the penis using massage, natural oil and spiritual power. Some of them will show bamboo shafts with different diameter and ask the patient to choose the penis size they expect according to the bamboo size. The ritual for penile enlargement includes massage of the body (including the penis), mostly with eyes closed. After the massage, the traditional health practitioner will perform “acupuncture” to the penis, then continue the massage. Most likely the “acupuncture” is injection of mineral oil, and the massage was performed to help divert the pain and to distribute the injected mineral oil evenly. The author’s clinic receives many patients with sclerosing lipogranuloma of the penis after treatment from such traditional health practitioner.

### Clinical Appearance

Clinical appearance of sclerosing lipogranuloma of the penis differs depending on the quantity of injected material, composition, site of injection, depth and duration since the injection. After injection of the mineral oil, in many patients the symptoms will occur almost instantly. Swelling, inflammation of the penile skin, redness, oedema (that will give an impression of larger penile girth) are among the symptoms occurred. There will be painless mass at first, in many patients it will stay that way for years (Figure 1). The lesion has lag time from weeks to years before disastrous symptoms come. The lag time can be from 2 days up to 30 years. Since many of the patient will try to conceal or deny any injections to the genital, a thorough analysis of the lipid after removal is mandatory to at least demonstrate its exogenous origin.
Confronting the patient with proof of identified exogenous lipid may sometimes result in admission of its injection. The fluid injected materials and the tendency of the patient to massage the injected parts enable the injected materials to migrate over other areas of the external genital, including regional lymph nodes that can cause clinical confusion with a neoplasia. Acquired phimosis can develop on uncircumcised patients, as the preputium can act as a storage for the injected materials. The migration is due to the large-volume, low-viscosity materials which do not allow encapsulation of the injected material. The injected materials can also fill the suprapubic area and the scrotum. When the injected materials fill the scrotum, it will make the same clinical appearance like the one in the penis. Migration of the mineral oil to the scrotum will make reconstruction of the deformity more difficult, because the scrotum is a very good source for skin to close the defect after excision of the scarred area.

After some time, in some patients the painless mass will become fibrous, harder, painful sometimes ulcerative (Figure 2). Sometimes the patient call it ‘woody penis’. The skin becomes sensitive at the injection site, often with pigmentation or dark, yellowish discoloration. Lengthy inflammatory reaction may result in abscess formation, lymphangitis and inguinal lymph nodes enlargement. Deformed penis is usually observed because of the hardened skin. Pain in erection also reported, because the hard skin of the penis will limit the penile erection. Usually the glans and cavernous body are not involved, but sometimes the sulcus coronarius is affected. Complains also included difficult intercourse and coital pain for both the patient and the female partner.

Most of the patients who underwent mineral oil injection to the penis are unsatisfied with the result. Even in the no complication cases, the patients complained about discomfort and decreased sexual potency.
Histology
In the acute phase, acute inflammatory cells, neutrophil granulocytes can be observed in and around the vacuoles, along with abscesses and phlegmonous appearance.\textsuperscript{10} Histology findings usually showed marked thickening of reticular dermis with aggregates of vacuoles in varying size, surrounded by chronic inflammatory changes.\textsuperscript{30,31}

Treatment choices
The key purpose of treatment is to restore penis function as a sexual organ with adequate cosmetic appearance.\textsuperscript{2} Many options have been offered as the treatment of sclerosing lipogranuloma of the penis. A conservative approach using antibiotics is proposed to reduce the fever and swelling.\textsuperscript{14} This approach will not cure the disease, and only for very selected cases, mostly for patients with communication difficulties or fear of surgery.\textsuperscript{32} There is no spontaneous regression of paraffinoma have been reported.\textsuperscript{19}

So far, surgery is the best viable option to treat this disease.\textsuperscript{2,25,33} The surgical treatment are deemed complex reconstructive procedures, time-consuming and sometimes require staged procedures.\textsuperscript{9,21} For definitive treatment, complete excision is necessary to remove all the granuloma and involved regional lymph node.\textsuperscript{25} Usually a plane between the hardened inflamed tissue and the corporal body exist.\textsuperscript{9} This plane makes the separation of the inflamed tissue from the penis possible. If complete excision cannot be achieved, recurrence of the symptoms will most likely occur.\textsuperscript{14} Every attempt to excise the granulose nodules alone subcutaneously to preserve the skin in many cases will end with even worse scars or skin necrosis (Figure 3).\textsuperscript{26} In some cases that involved the sulcus coronarius, the corona has to be excised too, otherwise the patient will complain of “hard band” around the shaft penis after surgery because the hard tissue leftover.

In our centre, we prefer to perform surgery at least 6 months after injection. Inflammation and induration make it very difficult to find the demarcation of the granulomatous tissue, and infection can lead to flap/graft procedure failure. Early after injection, a lot of tissue look reddish and oedematous. We prefer to give antibiotics and Nonsteroidal Anti-inflammatory Drugs (NSAID) and wait until the inflammation resolved. After 6 months, the good tissue will be easier identified.

The surgical options after complete excision vary, depend of the location and size of the defect. Small and isolated lesion (up to one-third of the penis) most of the time can be treated with primary closure or circumcision (Figure 4). Wider defect must be closed with skin from other location. Split Thickness Skin Graft (STSG), Full Thickness Skin

Figure 4 Simple incision and primary closure for minimal lesion (from author’s personal archive).

Figure 5 Inner thigh flap. The granuloma was filling almost all penis, scrotum and suprapubic area (Figure 5.1). The Inner thigh flap and abdominal undermining were performed to close the defect (Figure 5.2) (from author’s personal archives).

Figure 6 The first stage of Cecil’s scrotal flap. First clinical appearance (Figure 6.1). A circular incision was made followed by a longitudinal incision up to the suprapubic area (Figure 6.2), then the penis was degloved (Figure 6.3). Notice in this picture, the hardened corona is still in place. In Figure 6.4 the granulomatous part was excised. Figure 6.5 showed the denuded penis, with the corona still intact. Further exploration in Figure 6.6 showed the lipogranuloma at the suprapubic area being excised, and the granulomatous corona was cut. Figure 6.7 showed the corona had been excised, and the scrotal skin was covering the penis. Drain after surgery is very important (Figure 6.8) to prevent hematoma (from author’s personal archive).
Graft (FTG), Inner thigh flap (Figure 5), scrotal flap and Cecil's scrotal implantation are some of the choices of procedures for this disorder. Most of the procedures are complex plastic reconstructive surgery, which mostly requires a special training/fellowship. For non-reconstructive surgeon/urologist, Cecil's two-stage scrotal flap is a good choice because it is a relatively simple procedure. The two-stage procedure consists of: (1) complete excision of the granuloma and covering of the denuded penis shaft with available scrotal skin, and (2) V-Y incision of the scrotum after 3-6 months to reconstruct the penis. This technique can still be performed even if half of the penile skin is involved. For a properly trained surgeon/urologist, simple tips and tricks will help to perform this procedure (Figure 6 and 7).

Although a relatively simple procedure, there are some things that one must always keep in mind, in order to achieve good surgery outcome of the technique. The main principle is to remove all the lipogranuloma. Small pieces of granuloma will be enough for the patient to claim failure, also will make new granulomas. Sometimes the corona is involved. In this case, the corona must also be excised to prevent "hard-band" around the glans after surgery. We always use drain in the procedure. In the first stage we will use up to two vacuum drains. One vacuum drain is placed in scrotum, other drain is in the suprapubic space if the lipogranuloma extent to the suprapubic area. In our early experience, without drains some patient will develop hematoma after surgery. Later the hematoma required other surgery to fix. In the second stage, we place a Penrose drain in the scrotum. We usually put Foley catheter and compression dressing for 3-4 days, and the drains will be taken out along with the compression dressing.

The Cecil's two-stage scrotal flap has some advantages. It is a relatively easy procedure to perform, with no special training needed for surgeons/urologists. The dartos layer in the scrotal skin will make the penis "slide", giving a "real penis skin" feel. Unlike the skin grafts, which will stick to the corporal body, the scrotal skin can be moved and "pinched" after being placed on the penis. The results are very good. In the author's hospital in Samarinda, Indonesia, from May 2008 to December 2017 we have performed surgery on 356 cases of sclerosing lipogranuloma of the penis. From that cases, 21% of the patients refused to undergo the second procedure, because they are satisfied with the first stage surgery.

Beside the advantages, Cecil's two stages scrotal flap also have its disadvantages. The main drawback is actually the two stages, which means two surgeries, thus has psychological and economic disadvantages because the time spent to wait for
the second surgery. Hairy penis is also a ‘relative’ disadvantage (Figure 8). We call it ‘relative’ because in our experience the patients usually refuse to get treatment for the hairy penis. They refuse further treatment because to most of them, hairy penis is something ‘fancy’ for them and the sexual partner. Some patients also complain about the shortening of the penis, but this complaint usually can be treated by performing a simple V-Y plasty to elongate the penis.

**Classification**

Sclerosing Lipogranuloma of the penis is not a common condition. Most of the data are from case reports. There has been no widely-accepted classification of sclerosing lipogranuloma offered. Sejben in 2012 proposed classification into local, locoregional and systemic forms. This classification also reflects the incidence of each category. In our hospital we use another classification that can be used as a guidance for the management approach of this disorder. In many cases, the disorder is localized in the penis, with or without scrotal and suprapubic fat involvement. The involvement of the surrounding area of injection become the main aspect of the classification, as can be seen in Table 2.

The classification mainly depends on the availability of scrotal skin (Figure 9). Category 1 of sclerosing lipogranuloma of the penis consists of small lesions in the shaft penis, without other areas involvement (suprapubic or scrotal skin). The lesion must be smaller than one-third of the penile shaft. Most of the time, category 1 lesions can be treated with simple excision and primary closure. Complications usually minimal in this category. Category 2 consists of lesion in the shaft penis, without involvement of the scrotum or suprapubic area. In this category the scrotal skin is still in a very good condition, and can be used safely to cover the defect. One stage scrotal usually can be performed, with very good results. Category 3 involves not only the penis shaft, but also the suprapubic area, and not more than half of the scrotum. For this category, Cecil’s two-stage scrotal flap is the safe option. Skin grafting, either full or split-thickness, or mesh graft, can also be considered. Category 4 lesions, involve all the penis shaft, suprapubic and more than half of the scrotum. In this category, scrotal flap will be impossible to be used. Skin graft, with flaps from the thigh possibly the best option to correct this abnormality.

**CONCLUSION**

Penile injection with mineral oil mostly performed by non-medical persons. The effect can be disastrous. The injected materials cannot be metabolized by human body, thus foreign body reaction will occur, producing sclerosing lipogranuloma. Chronic sclerosing inflammation will lead to hard nodules, cellulitis, skin ulcer, penile deformity, painful erection, and inability to perform sexual activities.

Surgery is the best viable option to treat this disorder. Complete excision is necessary to remove all the affected tissue and involved regional lymph node. Leftover of the granuloma will be the source of recurrence. After the complete excision, the exposed area an be covered by grafts or flaps. In our opinion scrotal flaps (direct or staged procedure) is the best choice to cover the defect.

Sclerosing lipogranuloma of the penis is not a common condition. Most of the data are from case reports. A classification system can be used to be a guidance for treating the patient.

**CONFLICT OF INTEREST**

The author declares there is no conflict of interest regarding publication of current article.

**REFERENCES**


