CASE REPORT

Complications of Penis or Scrotum Enlargement Due to Injections with Permanent Filling Substances

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For as long as people can remember, the size of the penis and the scrotum has been a source of worry to men. Through the ages and across cultures, all kinds of means have been used to increase the length and girth of this symbol of fertility, masculinity, and power.¹,² This tendency is currently still visible whenever, soon after each introduction of a new injectable filler material for the improvement of contour defects or wrinkles, such a “filler” is also being injected under the skin of the genitals to increase girth.³–⁵

Based on their active duration, these injectable filling agents are classified into three groups⁴:

1. Absorbable or short-acting fillers that are broken down by the body and have an effect for a few months at most, such as collagen and hyaluronic acid;

2. Semipermanent or medium-acting fillers that can also be broken down but continue to have an effect for 6 months to 1 year, such as cross-linked hyaluronic acid and 8% polyvinyl alcohol;

3. Permanent or long-term fillers that are not broken down by the body or that contain components that remain in the injected area, such as silicone oil and 4% polyalkylimide. Chronic cellulitis or infections, granuloma formation or excessive capsule formation, and migration of the injected material may occur after injection with such fillers.

Over the last 2.5 years, we have seen six patients with such complications as a consequence of injections with permanent filling substances in the penis or scrotum (Table 1). To illustrate the extent and complexity of these complications, we describe the case histories of three of our patients in this article.

Patient A, a 38-year-old man, presented 2 months after injection with 4% polyalkylimide (Bio-Alcamid, Polymekon, Milan, Italy) with a 6-week-old skin defect on the penis shaft (Figure 1A). The wound had arisen after a local infection, and the injected material had been partially discharged. Magnetic resonance imaging (MRI) revealed residual deposits of the foreign body (Figure 1B, C).

The patient was treated a number of times with a broad-spectrum antibiotic at our outpatient clinic,
after which the skin defect temporarily healed. Skin cultures showed commensal flora. Because of the recurring infection, 8 months after injection, a debridement was performed in which a gentamicin-containing pellet (Garacol; EUSA Pharma, Oxford, UK) was implanted. After removal of this implant 3 weeks later, the wound healed well. Pathohistologic examination of the excision material revealed an erosive infection with a granulomatous component and rejection of the injected material (Figure 1D).

Patient B, a 54-year-old man, was seen 1 year after injections of 2.5% polyacrylamide (Aquamid;
Contura, Soeborg, Denmark) under the skin of the penis shaft. Some months after these injections, the patient experienced wounds and wound granulations. The doctor who had injected the material had, in a surgical manner, “removed hard spots” a number of times. The patient presented to us with a wound at the level of the edge of the preputium, a 6-week-old infection, and a number of subcutaneous scar adhesions around the penile shaft. Skin cultures showed commensal flora. There was erectile dysfunction as a result of pain due to these adhesions.

In addition to repeated antibiotic therapy, our treatment consisted of a number of surgical procedures. Because the patient initially objected to a more radical procedure, it was attempted at first only to close the deep wound in the preputium by means of a circumcision, but after this first procedure, further infections and fistulas occurred, and the whole penile shaft was denuded and covered with a partial-thickness skin transplant (Figure 2A, B). Pathohistologic examination of the excision material revealed an erosive infection with granulomatous component and rejection of the injected material (Figure 2C).

Part of the skin transplant did not grow in as a result of the residual foreign body reaction, and the patient underwent a new skin transplant. A number of transposition flaps were performed to improve skin contractures. After treatment for longer than a year, the patient still has scarring of the corpus cavernosum that causes contracture and skewing of the penis during erection.

Patient C, a 43-year-old man, had been referred to the urologist for a 2-month-long, moderately painful, major and progressive swelling of the left scrotum and penis and persistent fever (38.5°C). There were no complaints of micturition or sexually transmitted disease. The left testicle was not palpable because of edema (Figure 3A). Additional ultrasound and radiologic examination did not provide a decisive answer, but MRI and computed tomography showed two spherical structures caudal to the left testicle that may have been the result of infection (Figure 3B, C). Urine sediment and tumor markers in the blood were normal. Epididymitis was initially suspected, but a course of antibiotics did not lead to any clinical change. At the request of the patient, an exploratory surgical procedure was performed on the scrotum, during which 450 g of scrotum tissue with an obdurate tumor approximately 15 cm in diameter was removed. Pathohistologic examination of the material revealed reactive tissue associated with deposits of silicone (Figure 3D). The patient had up to that time concealed the injection of this silicone and even after this refused to provide information about it. During a second surgical procedure, a further 185 g of scrotal tissue were removed. Although there was good healing of the wound without complications after the two procedures, during his last outpatients examination 1 year after the first procedure, the patient stated that he was not satisfied with the result (Figure 3E).
Discussion

The use of foreign material fillers in the male genitalia has a long history. The first report of this in modern medical literature was in 1899, when the Viennese surgeon Robert Gersuny reported how he corrected the loss of both testicles due to a castration of tuberculous epididymitis by injections of petroleum jelly into the scrotum. Since then, a diversity of injectable fillers has been introduced to the market, particularly after the recognition of silicone oil as a physiologically inert substance in 1948. In this article, we restrict ourselves to discussion of the consequences of injection with permanent fillers. In The Netherlands, such fillers are generally introduced to the market only with a CE quality mark as an endoprosthesis (Table 2). There is often, therefore, marginal animal experimentation data and clinical data available on the safety of these products in the short term. Adequate data on the safety in the longer term are not available for all fillers either. In addition, most fillers were introduced so recently that it is

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name</th>
<th>Manufacturer, Location</th>
<th>Introduction</th>
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</thead>
<tbody>
<tr>
<td>Polydimethylsiloxane (silicone)</td>
<td>PMS</td>
<td>Bausch &amp; Lomb, Germany</td>
<td>1960</td>
</tr>
<tr>
<td>Polydimethylsiloxane (silicone)</td>
<td>Biopolymer</td>
<td>Alcon Labs, USA</td>
<td>1960</td>
</tr>
<tr>
<td>Poly(methylmethacrylate) + collagen</td>
<td>Artecoll</td>
<td>Rofil, The Netherlands</td>
<td>1991</td>
</tr>
<tr>
<td>Hyaluronic acid + acrylic hydrogel</td>
<td>Dermalive</td>
<td>Dermatech, France</td>
<td>1997</td>
</tr>
<tr>
<td>2.5% polyacrylamide</td>
<td>Aquamid</td>
<td>Ferrosan, Denmark</td>
<td>2001</td>
</tr>
<tr>
<td>4% polyalkylimide</td>
<td>Bio-Alcamid</td>
<td>Polymekon, Italy</td>
<td>2001</td>
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not possible to make any predictions as to the results, complications, and side effects over the long term.4

Data Available from the Literature

For the three patients described above, 4% polyalkylimide, 2.5% polyacrylamide, and silicone oil were injected. The other three patients all presented with complications from injections with silicone oil. Given the nature of these types of treatments, it was not always possible to retrieve all of the required information, such as injected volumes and the injection technique used. The fact that the majority of our patients received their treatment abroad added to this problem. In only one case was the patient aware of the amount of silicone oil injected into the scrotum (patient D). Because these treatments were mainly performed outside regular hospitals, the incidence figures, and the corresponding complication percentages, cannot be determined. A simple search of the literature with the aid of PubMed found no studies on the use of 4% polyalkylimide or 2.5% polyacrylamide gel as injectable fillers for the penis, although a description was found of the case history of a 34-year-old patient who had aesthetically and functionally debilitating scarring from complications after injections with 5% polyacrylamide (Formacryl; Bioform, Moscow, Russia) in the penile shaft.5

In addition, we found 14 articles on the use of silicone oil as a permanent filling agent for the penis. Only Yacobi and colleagues10 reported not having seen any severe complications from injections of silicone oil for penis girth enlargement in a series of 324 patients with an average follow-up period of 20 months (range 1–36 months), although they emphasized the importance of the “microdroplet technique” of injection instead of injecting greater volumes such as with our patients. All other articles indicated that the use of silicone oil might lead to many complications that may in particular also occur after the customary follow-up period.3,11,12

The first articles on such complications appeared as early as 1973,3 and it may therefore be expected that these complications are commonly known within the profession.

Guidelines

With a view to the ignorance of the effects of most permanent fillers in the longer term and knowledge of the complications from injections with silicone oil, the Swiss and the Dutch associations of plastic surgeons have taken the standpoint that the use of permanent fillers for aesthetic purposes is not without danger and is therefore not desirable.13,14 The Dutch Association for Plastic and Reconstructive Surgery advises restraint in the use of fillers and that the use of these for specific aesthetic or reconstructive indications is responsible only under strict conditions. They consider that such conditions should be even stricter in the case of the use of semipermanent or permanent fillers for purely aesthetic indications.14 Despite this position, it is apparent from our case histories that permanent fillers are also used in Dutch practice for aesthetic purposes with genitalia. From additional research, it is apparent that penis girth enlargement procedures are being offered at three of the 45 Dutch and Flemish websites of aesthetic private clinics and independent treatment centers that we investigated.15 In all three, the cases were in Dutch clinics.16–18 On one of these websites, the procedure and the filler material used were not further described, and on the other two websites the clinics concerned stated that polyacrylamide was used to perform penis girth enlargement.

Conclusions

Although penis girth enlargement with permanent fillers may in general be able to yield good results in the short term, the possible severe complications in the longer term, such as migration, granulation, and infection, cannot be ignored. The fillers referred to above and other permanent fillers are also used elsewhere in the body for cosmetic purposes and for medical indications (e.g., lipoatrophy based on highly active antiretroviral therapy or atrophic facial defor-
mites as a result of Romberg’s disease),4,7,19,20 and unfortunately with the same type of complications.21–24

Injections of permanent fillers into the penis introduce additional risks that are inherent to the anatomy of the penis. The skin of the penis is thin, and subcutaneous fat is lacking, so the injected material has little protection. In addition, the penis has a great deal of mobility between the skin layer and the underlying corpora, so that the penis can vary in size. Sexual intercourse causes many small traumas at the location of the deformed filler deposits, so the risk of infection is high.5 In one case, the complications resulted from vigorous sexual intercourse, after which skin defects formed (patient F). In all other cases, the complications resulted in painful and problematic sexual activity. Our experience is that, in the event of complications after the injection of permanent fillers in the male genitalia, excision of the tissue involved is the only solution. In some cases, the skin and a large part of the Buck’s fascia of the whole penis must be replaced using a skin transplant. One of our patients (patient D) sought treatment elsewhere after we did not deem possible the skin-saving treatment he demanded for painful granulomas and edema after injection of 200 mL of silicone oil into the scrotum. In the other cases, multiple surgical procedures were required to treat the complications. The results of these procedures were still cosmetically disappointing. In conclusion, morbidity from complications from injections of permanent fillers into the penile shaft or the scrotum is sufficient that we advise against their use in this region for aesthetic reasons.

References


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