

LETTER TO THE EDITOR

Combined treatment of penile keloid: a troublesome complication after circumcision

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Dear Editor,

We herein present three rare cases of penile keloids that formed after circumcision and were effectively treated with a combined modality. We also discuss their possible causes. The current complication rate for male circumcision is 2%–4%.¹ Hematoma, edema, infection and incision dehiscence are encountered more often, while keloid formation, a common complication after skin injury or surgery, is rarely seen after circumcision. This complication may result from improper circumcision and postoperative management.

Penile keloids are more difficult to manage than those on other body sites because mechanical pressure and silicone sheeting, which comprise the normal treatment modality for keloids, are generally considered difficult to apply to the penis.^{2–5} Using a novel dressing method that enabled the use of the normal treatment modality, three cases of penile keloids secondary to circumcision were effectively treated.

All patients have given their informed consent prior to their inclusion in the study. One patient was a 32-year-old Chinese man who had a large, pruritic scar with pain on the penis. Two years prior, he underwent circumcision. Infection occurred on the third postoperative day and resulted in incision dehiscence. The wound healed in 1 month. Shortly before wound closure, the scar started to elevate and became hypertrophic and prominent; growth was slowly progressive for more than 16 months. Physical examination revealed a 2.5-cm-diameter circumferential scar cord with a colon-like, reddish surface along the coronal sulcus at the circumcision site. The patient also complained of embarrassment (such as that experienced in public lavatories and bathhouses) and the inability to have intercourse. He also had several hypertrophic scars on his lower abdominal wall and left deltoid region that had formed following dermatitis about 20 years prior. His 9-year-old son developed a hypertrophic scar after trauma. No additional family history was found. The scar on the deltoid region had been resected 5 years previously, but resulted in a much larger scar. He had undergone six intralesional steroid injections for the penile scar, but only minor regression was noted.

The other two patients had a history of circumcision and incision infection. One was a 10-year-old Chinese boy who had a large, pruritic scar on the penis that had slowly developed over 2 years; the other was a 12-year-old boy whose penile scar had continued to grow for 10 months. Neither had a family history of keloids.

None of the patients had any other physical diseases, and they underwent serial treatment. The entire scar was first excised, and an intradermal triamcinolone acetonide injection was administered at the incisional margin immediately after the excision (1 ml of 40 mg ml⁻¹ triamcinolone acetonide mixed with 0.6 ml of 2% lidocaine hydrochloride injection, 0.1 ml mixture per centimeter of margin; the total length of the incisional margin in each case was 16, 9 or 12 cm). Injections were continued twice a month. Meanwhile, a well-fitting tubular elastic net dressing (Stülpa-fix; Hartmann, Heidenheim, Germany) was set on the penis, providing constant pressure. After removing the stitches, a silicone film (Mepiform; Mölnlycke, Gothenburg, Sweden) was placed along the incision and kept in place by the dressing. Administration of steroids and maintenance of the net dressing and silicone film were continued for 3 months.

During treatment, no infection, incision dehiscence or hormonal side effects were observed. All patients were followed up for 6–12 months postoperatively and showed no local recurrence (**Figure 1**). The diagnosis of keloid was based on the invasive growth behavior of the scar and the histopathological findings.

Infection, inflammation, excessive tension on skin closure, repeated operations and presence of foreign material are, alone or in combination, associated with a susceptibility to keloid formation. The laxity of penile skin seems to be the only explanation for the rarity of penile keloids. Therefore, we infer that a genetic scar susceptibility and infection caused the keloids in our patients. Prevention of excessive tension on skin closure and incision infection should be ensured in circumcision.

Surgical excision, intralesional steroid injection, mechanical pressure, silicone sheeting and radiotherapy are the most common treatments for keloids. According to the few reports of penile keloids, surgical excision and intralesional steroid injection are the preferred treatments, while radiotherapy is considered inappropriate.^{2,5} Surgical excision alone results in a local recurrence rate of up to 100%. When combined with local steroid injection, the rate decreases to <50%.⁶ Local steroid injection is often effective in treating keloids, is easy to perform and can be repeated regularly. For our patients, however, simple intralesional steroid injection was not preferable. This treatment method would have been time-consuming because of keloid size. In addition to the pain and side effects of steroids, long-term sexual abstinence would have been unbearable. The best treatment

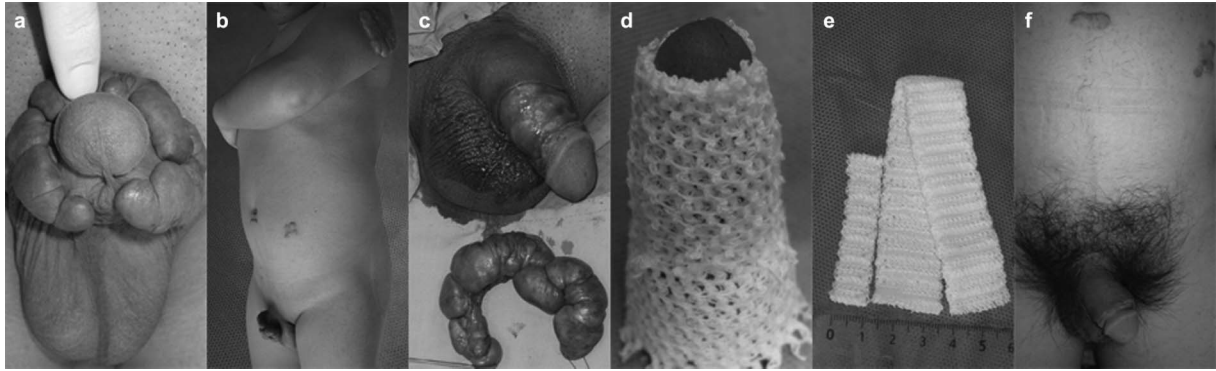


Figure 1 An enormous keloid that formed after circumcision: (a) preoperative view of the penile keloid; (b) keloids on the lower abdominal wall and left deltoid; (c) the penile keloid was excised, and normal skin was preserved as much as possible; (d) a well-fitting tubular elastic net dressing was placed on the penis; (e) the dressing; (f) no recurrence at 11 months postoperatively.

choice in such cases is excision of the keloid and minimization of the initial keloid-forming factors.⁷ To prevent recurrence, we prefer a combination of precautions, including local intradermal steroid injection, constant pressure and silicone sheeting.

Mechanical pressure and silicone sheeting are considered to be impractical to apply and sustain on the penis.^{2–5} We often use tubular elastic net dressing to cover the penis after hypospadias surgery or circumcision. It fits the erect or flaccid penis well and provides constant pressure. Meanwhile, the silicone film is tightly fixed.

These cases show that penile keloid formation after circumcision can cause somatic discomfort, sexual dysfunction and psychological anxiety. Keloids should therefore be completely removed. A combined treatment including local mechanical pressure, steroid injection and silicone sheeting contributes to the prevention of recurrence after surgical excision. However, an additional unique dressing method is needed to maintain pressure and silicone film placement *in situ*. This novel dressing method is also helpful in other penile surgeries.

COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interests.

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