

CASE REPORT

# A Case Report of Scrotal Rejuvenation: Laser Treatment of Angiokeratomas of the Scrotum

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## ABSTRACT

Scrotal rejuvenation encompasses not only the functional quality but also the aesthetic appearance of the scrotum. It includes medical therapy and procedural interventions to improve scrotal conditions that require morphologic restoration and/or aesthetic alteration. Rejuvenation of the scrotum may be appropriate for aging-related and non-aging-related changes concerning the hair (alopecia and hypertrichosis), the morphology (laxity and wrinkles), and/or the vascularity (angiokeratoma) of the scrotum. Angiokeratomas—typically small, asymptomatic, purple papules—may occur on the scrotum. However, these benign vascular lesions may be of cosmetic concern to the affected individuals; in addition, the angiokeratomas can become an issue of medical importance if they begin to bleed. Multiple locally destructive modalities are available for the treatment of scrotal angiokeratomas; indeed, several lasers have effectively been used to treat angiokeratomas of the scrotum. A 70-year-old man with numerous scrotal

angiokeratomas experienced scrotal bleeding in the absence of prior trauma to the area or sexual activity. He presented for treatment to prevent future episodes of spontaneous bleeding from his scrotal angiokeratomas, but he also had not liked the aesthetic appearance of the previously asymptomatic angiokeratomas on his scrotum. His angiokeratomas were successfully treated with three sequential 532-nm potassium titanyl phosphate (KTP) laser sessions, which led to not only functional but also cosmetic improvement of his scrotum. In conclusion, men can develop scrotal changes due to either intrinsic (aging) or extrinsic (trauma) causes, but nonsurgical interventions and surgical procedures are available for the management of these conditions in individuals who desire to rejuvenate their scrotum.

**Keywords:** Angiokeratoma; Genital; Laser; Rejuvenation; Scrotal; Scrotum; Vagina; Vaginal; Vulva; Vulvar

## INTRODUCTION

Scrotal rejuvenation refers to medical and cosmetic conditions of the scrotum that can appear with aging and may be amenable to medical treatment and/or surgical intervention [1]. Angiokeratomas of the scrotum present as small purple to red papules that are usually

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asymptomatic, although spontaneous bleeding occurs in some men [2–7]. A man with bleeding scrotal angiokeratomas that were successfully treated with only a 532-nm potassium titanyl phosphate (KTP) laser is described here. While the lesions had previously been asymptomatic, he did not like their aesthetic appearance on his scrotum but had not realized that there were potential interventions that could be used to resolve the angiokeratomas. To the author's knowledge, this is the first case report of a 532-nm KTP laser being used as monotherapy for this purpose. Informed consent was obtained from the participant for inclusion in

the study. The patient also signed a consent form providing permission to include relevant clinical photographs in this article.

## CASE REPORT

A 70-year-old man presented for evaluation of multiple lesions that had been present on his scrotum for more than three decades. The lesions had been asymptomatic, but he was unhappy with their appearance. Earlier that day, one of the lesions had bled; there had been



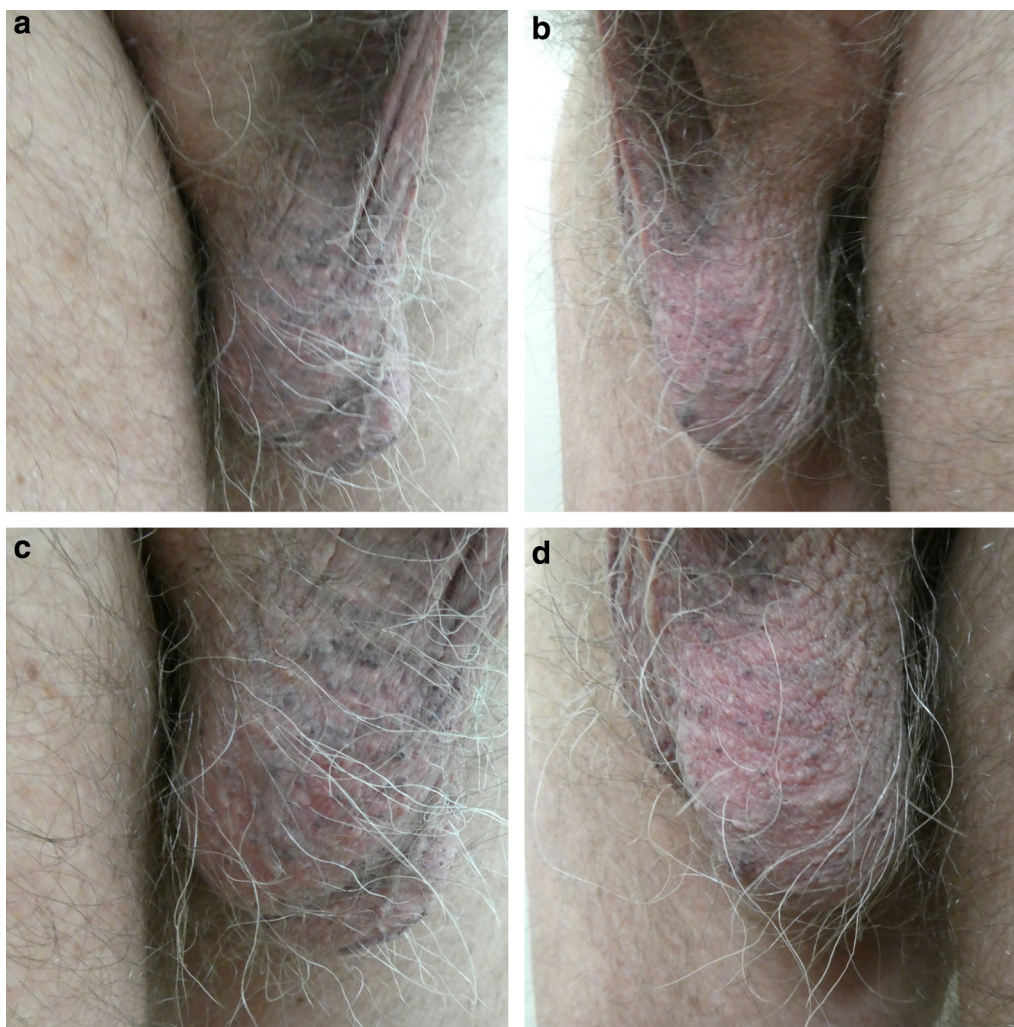
**Fig. 1a–d** Distant (**a, b**) and close-up (**c, d**) views of the right (**a, b**) and left (**b, d**) sides of the scrotum of a 70-year-old man show numerous angiokeratomas presenting as

small purple papules. He had experienced spontaneous bleeding of his scrotal angiokeratomas

no prior trauma or sexual activity. He compressed the site and the bleeding ceased.

Cutaneous examination showed more than 50 purple papules 2–3 mm in size on each side of his scrotum (Fig. 1). All of the lesions were painless. There was no evidence of varicocele, testicular tumor, or inguinal hernia. Correlation of the clinical presentation and lesion morphology established a diagnosis of angiokeratomas of the scrotum.

In order to prevent future episodes of spontaneous bleeding, the patient decided to have laser treatment of his scrotal angiokeratomas. A 532-nm KTP frequency-doubled neodymium-doped yttrium aluminum garnet (Nd:YAG) laser (Excel V; Brisbane, CA, USA) was applied in three monthly treatments. The treatment parameters were as follows: wavelength 532 nm, fluence 11 J/cm<sup>2</sup>, spot size 3 mm, pulse duration 10 ms, cooling 10 °C, and an endpoint of vessel darkening.



**Fig. 2a–d** Distant (a, b) and close-up (c, d) views of the right (a, c) and left (b, d) sides of the scrotum of the 70-year-old man show fewer and less prominent scrotal angiokeratomas after three sessions carried out at 1-month intervals using a 532-nm potassium titanyl phosphate (KTP) frequency-doubled neodymium-doped yttrium

aluminum garnet (Nd:YAG) laser. The treatment parameters were: wavelength 532 nm, fluence 11 J/cm<sup>2</sup>, spot size 3 mm, pulse duration 10 ms, cooling 10 °C, and an endpoint of vessel darkening. There were no subsequent episodes of scrotal bleeding



**Table 1** Features of angiokeratomas of the scrotum

## History and nomenclature [11–16]

Scrotal angiokeratomas, also known as Fordyce angiokeratomas, were initially described on the scrotum of a 60-year-old man by John Addison Fordyce in 1896

Angiokeratomas of Fordyce also refer to genital angiokeratomas at other sites such as the glans and shaft of the penis in men and the vulva in women

## Prevalence [9, 10, 13, 14]

They were noted not only in young men who underwent intense physical activity, but also in debilitated older men. Their prevalence has been described to be 0.6% in 16- to 20-year-old men, with the rate increasing to 16.6% in men over 70 years of age

## Clinical presentation [5, 7, 13]

Angiokeratomas of the scrotum are usually asymptomatic

Often the patient is unaware of their presence, and is initially informed of their presence during a total body skin examination

They are occasionally discovered by the individual's sexual partner, and the man presents for evaluation concerned that the vascular lesions represent a sexually transmitted disease

## Morphology [13, 14, 17]

They typically appear as multiple dome-shaped papules, with or without overlying scale

They are usually small and range in diameter from 1 or 2 mm to 3 or 4 mm, but they can be as large as 6 mm

They are often dark red or purple, but they may appear blue or black

## Associated conditions [9, 10, 14, 17–20]

Concurrent varicoceles have been described

Less commonly, they elicit sensations of heaviness and tension

Accompanying irritation may also occur

Infrequently, excoriations with impetiginization or bacterial infection may be present

Acute onset of scrotal bleeding may require urgent treatment; often there is no antecedent history of trauma and the bleeding is unprovoked, but bleeding may follow sexual intercourse

## Treatment [1–8, 12–14, 21–31]

Immediate interventions for bleeding: cauterization using a silver nitrate stick, electrofulguration, electrocautery, and/or tamponade by tight gauze binding of the scrotum

Methods for asymptomatic angiokeratomas: cryotherapy with liquid nitrogen, electrosurgery (such as electrocautery and electrofulguration), excision, lasers, and sclerotherapy

He received 215 pulses during his first treatment. His second and third treatments were performed one and two months after the initial session, respectively. The same parameters were used during the subsequent sessions, during

which he received 201 pulses and 225 pulses, respectively. He tolerated the procedure well, with minimal redness or swelling and no bruising.

A follow-up cutaneous examination performed 3 weeks after his third laser treatment showed a significant decrease in both the number and the size of the angiokeratomas on his scrotum (Fig. 2). He was extremely pleased with the cosmetic appearance. He has had no further episodes of scrotal bleeding.

## DISCUSSION

Genital rejuvenation includes vaginal rejuvenation and scrotal rejuvenation [8]. Rejuvenation of the scrotum includes not only the management of vascular lesions (such as angiokeratomas) but also alterations to the hair (alopecia and hypertrichosis) and morphology (laxity and wrinkles) [1]. Medical and surgical interventions can be used to potentially treat these conditions of the scrotum [1, 8].

Angiokeratomas are benign vascular lesions (Table 1) [1–31]. The incidence of scrotal angiokeratomas remains to be determined. Local destructive methods, including lasers (Table 2) [13, 14, 22–31], have traditionally

**Table 2** Laser treatment of angiokeratoma of the scrotum

Wavelength (nm)	Laser	Reference(s)
	Argon	[23]
532 <sup>a</sup>	KTP	[24], CR
532	Nd:YAG	[25]
578	Copper vapor	[26]
585	Pulsed dye laser	[27]
595	Pulsed dye laser	[13, 14]
940	Diode	[28]
1064	Nd:YAG	[13, 29–31]

CR current report, *KTP* potassium titanyl phosphate, *Nd:YAG* neodymium-doped yttrium aluminum garnet, *nm* nanometers

<sup>a</sup> To the author's knowledge, this is the first case report of a 532-nm KTP laser being used as monotherapy for the treatment of scrotal angiokeratomas. In a previously reported patient, a 10,600-nm ablative carbon dioxide laser was used to remove the epidermal hyperkeratosis prior to treatment of the angiokeratomas with the KTP laser [24]

been used to treat angiokeratoma of the scrotum [1–4, 6, 12–14, 21–31].

The reported patient had not been pleased with the aesthetic appearance of the angiokeratomas on his scrotum, but was unaware that cosmetic intervention to remove angiokeratomas was available. Indeed, his scrotal angiokeratomas were successfully treated with a 532-nm KTP frequency-doubled Nd:YAG laser. The 532-nm wavelength is produced by placing a KTP crystal in the path of a 1064-nm Nd:YAG laser beam, which results in a frequency-doubled 532-nm wavelength, which is absorbed well by oxyhemoglobin. The laser allows contact cooling through a sapphire window [22, 32].

The 532-nm KTP laser has been used in the management of acne vulgaris [33], rosacea [34], and skin rejuvenation [35]. In addition, the 532-nm KTP laser has been used to treat angiokeratomas of not only the scrotum (in combination with a 10,600-nm ablative carbon dioxide laser to remove the epidermal hyperkeratosis) [24], but also the glans penis (in combination with a 2,940-nm ablative Er:YAG laser to eliminate hyperkeratosis of the epidermis) [36]. Finally, the 532-nm KTP laser has successfully treated nongenital angiokeratoma [37] and other vascular lesions [32, 34, 38–41].

## CONCLUSION

Scrotal rejuvenation may be appropriate not only for aesthetic concerns but also for conditions that may require functional restoration. Changes that are either aging-related or non-aging-related may result in issues concerning the hair, the morphology, and/or the vascularity of the scrotum. Medical therapy and procedural interventions may be appropriate for men desiring rejuvenation of their scrotum.

Angiokeratomas are benign vascular lesions. Although they are usually asymptomatic, they may be of either cosmetic concern and/or medical importance (if bleeding) to affected individuals. Several lasers have effectively been used to treat angiokeratomas of the scrotum.

Successful management of a man's spontaneously bleeding scrotal angiokeratomas with three sequential 532-nm KTP laser treatments

provided not only functional but also aesthetic improvement of his scrotum. To the author's knowledge, this is the first case report of a 532-nm KTP laser being used as monotherapy for this purpose. Based on this case report of the clinical success of using the 532-nm KTP laser to treat angiokeratomas of the scrotum and the patient's satisfaction, it is reasonable to suggest that this laser may have potential for the treatment of men with either bleeding or asymptomatic scrotal angiokeratomas.

In conclusion, either intrinsic (aging) or extrinsic (trauma) causes can result in men developing scrotal changes. There are nonsurgical interventions and surgical procedures available for the management of the conditions associated with these scrotal changes for men who desire to rejuvenate their scrotum.

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