

# Treatment of Pearly Penile Papules with Fractionated CO<sub>2</sub> Laser

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## ABSTRACT

**Objective:** Pearly penile papules are asymptomatic, benign growths distributed around the corona of the penis that can frequently be a source of significant psychological distress for the patient. Various treatment options are limited mainly by their complications. **Design:** Two case reports and a review of the literature. **Setting:** University academic setting. **Participants:** Two subjects of skin types I and V. **Measurements:** Visual inspection and photographs were used to determine clearance. **Results:** Two cases of pearly penile papules that were successfully treated using a fractionated CO<sub>2</sub> laser. **Conclusion:** The fractionated CO<sub>2</sub> laser is a well-tolerated treatment for pearly penile papules. Importantly, this modality is useful even in darker skin types. (*J Clin Aesthet Dermatol.* 2015;8(5):50–52.)

Pearly penile papules (PPPs) are small, smooth, dome-shaped papules distributed in multiple rows around the corona of the penis. Although they are asymptomatic, benign, and cause no functional impairment, they can be a source of significant psychological distress for the patient. In one study of 95 men with PPPs, 36 men (38%) had been concerned or worried at some time by their presence and 14 men (17%) wished to have them removed.<sup>1</sup> Reported therapies for PPPs include cryosurgery,<sup>2,3</sup> electrodesiccation and curettage, shave excision, erbium-doped yttrium aluminium garnet (Er:YAG) laser,<sup>4</sup> pulsed dye laser,<sup>5</sup> nonablative fractionated 1550nm laser,<sup>6</sup> and nonfractionated CO<sub>2</sub> laser ablation.<sup>7–9</sup> To the authors' knowledge, their case reports are the first to demonstrate the successful treatment of PPPs using a fractionated CO<sub>2</sub> laser.

## CASE 1

A 24-year-old African American man (Fitzpatrick skin type V) with no significant past medical history presented for evaluation of previously untreated papules on the corona of his glans penis (Figure 1A). The patient was aware that the papules were benign and of a noninfectious nature, but desired treatment due to cosmesis. On presentation, he had approximately fifty skin-colored, smooth, dome-shaped, 1 to 2mm pearly papules circumferentially on the penile corona.

He received a total of three treatments using a fractionated CO<sub>2</sub> laser (Ultrapulse, Lumenis Inc.; Santa Clara, California). Prior to each treatment, the glans penis was anesthetized using a topical 30% lidocaine gel under

occlusion for 45 minutes. Treatments were done using the DeepFX handpiece (0.12mm spot size) with a 3 or 4mm square scanner size, an energy fluence of 100 to 125 mJ/cm<sup>2</sup>, and frequency of 125Hz for a total of two passes (Table 1). He tolerated the procedures very well using only petrolatum jelly 1 to 2 times per day post-treatment. He was prescribed cephalexin prophylactically, but chose not take it. Treatments were spaced at three weeks and two months apart. After the first treatment session, the remaining papules were much smaller. Two weeks after the third treatment, he returned to clinic clear of his PPPs and satisfied with the results (Figure 1B). The patient had no complications and reported complete healing within five days after each treatment.

## CASE 2

A 20-year-old Caucasian man (Fitzpatrick skin type I) with no significant past medical history presented with multiple rows of asymptomatic, skin-colored, 1 to 2mm papules circumferentially on the posterior penile corona that were cosmetically bothersome (Figure 2A).

He received a total of two treatment sessions using a fractionated CO<sub>2</sub> laser (Ultrapulse, Lumenis Inc.). Prior to each treatment, the glans penis was anesthetized using 30% lidocaine gel under occlusion for 45 minutes. Treatments were performed using the DeepFX handpiece (0.12mm spot size) with a 4mm square scanner size, an energy fluence of 125 to 150mJ/cm<sup>2</sup>, and frequency of 125Hz for a total of two passes (Table 1). He tolerated the procedures

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**Figure 1A.** Case 1 before treatment with multiple rows of 1 to 2mm skin-colored papules present around the penile corona.



**Figure 1B.** Three treatments with the fractionated CO<sub>2</sub> laser completely cleared the papules.



**Figure 2A.** Case 2 prior to treatment demonstrates several rows of 1 to 2mm skin-colored papules circumferentially on the posterior penile corona.



**Figure 2B.** Two sessions with the fractionated CO<sub>2</sub> laser successfully treated the papules.

well. After each treatment session, he was instructed to apply petrolatum ointment to the area 1 to 2 times per day. The two treatments were spaced two months apart. After the first session, he reported three days of uneventful healing. Following the second treatment, the lesions were cleared completely without complications after one week (Figure 2B).

## DISCUSSION

Pearly penile papules are acral angiofibromas<sup>10,11</sup> that can appear in up to 38 percent of men during the second to third decades.<sup>12-16</sup> Despite reassurance of their benign and noninfectious nature, PPPs can be a source of significant psychological distress to the patient and his sexual partner. Their appearance may be easily mistaken for a sexually transmitted disease, such as genital warts. Although several therapeutic options have been documented, anecdotal reports tout the nonfractionated CO<sub>2</sub> laser as the most effective treatment strategy.<sup>7</sup> Cryotherapy offers only a partial 80- to 90-percent cure rate despite multiple

treatments.<sup>13</sup> Electrodesiccation and curettage and shave excision are operator-dependent modalities that have the potential risk of scarring and disfigurement. The authors' two cases demonstrate that the fractionated CO<sub>2</sub> laser treatment is a durable, safe, and well-tolerated therapy for individuals with PPPs.

The CO<sub>2</sub> laser is preferred when treating these types of cutaneous tumors due to its ability to ablate a textural defect. Thermal injury is limited to the epidermis and dermis, where the target chromophore water resides. Unlike conventional nonfractionated ablative lasers that target the entire skin surface in contact,<sup>17</sup> fractional photothermolysis induces small columns of thermal damage called microscopic treatment zones (MTZs) that spare normal intervening tissue. The noninjured skin serves as reservoirs for epithelialization that facilitate the healing process. Because the overall downtime and post-treatment erythema is relatively less with the fractionated ablative laser compared to the nonfractionated ablative laser, the former is the preferred treatment modality.

**TABLE 1. Treatment parameters utilizing the DeepFX handpiece of the UltraPulse laser**

	FLUENCE, MJ/CM2	FREQUENCY, HZ	SQUARE SIZE, MM	DENSITY	PASSES
<b>CASE 1</b>					
Treatment 1	125	125	3	4	2
Treatment 2	100	125	4	8	2
Treatment 3	100	125	4	6	2
<b>CASE 2</b>					
Treatment 1	125	125	3	4	2
Treatment 2	100	125	4	8	2

Both of our cases of PPPs were successfully treated with a fractionated CO<sub>2</sub> laser (Ultrapulse, Lumenis Inc.). Treatments were very well-tolerated. Dyspigmentation, erosions, ulcerations, and scarring did not occur. Both patients were pleased with the cosmetic outcome, with clinical clearance of PPPs observed after 2 to 3 treatment sessions. Notably, pain control was achieved with only topical 30% lidocaine for 45 minutes without need for a more invasive procedure, such as a nerve block. A potential risk for any ablative laser is unwanted postinflammatory hyper- or hypopigmentation, particularly in darker skin types. Case 1 exemplifies the safety of the fractionated CO<sub>2</sub> laser in treating darker skin types without residual dyspigmentation.

Another consideration with any ablative laser is herpes simplex virus and bacterial prophylaxis. In the authors' cases, they did not prophylax for herpes, because neither patient reported a prior herpetic outbreak. However, in individuals with a history of genital herpes, the authors recommend a five-day course of valacyclovir 500mg twice daily starting the day before the procedure. Bacterial prophylaxis was offered to the patient presented in Case 1. Despite his nonadherence, no bacterial complications resulted. The patient in Case 2 did not receive antibiotics and also had an uneventful recovery. Concern for bacterial contamination due to the "unclean" anatomic location and prophylaxis with a first-generation cephalosporin is at the discretion of the clinician.

These two cases demonstrate the efficacy, safety, and tolerability of the fractionated CO<sub>2</sub> laser in the treatment of PPPs of varying skin types.

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