



MASSACHUSETTS

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Medical Policy

Fractional Carbon Dioxide (CO2) Laser Ablation Treatment of Hypertrophic Scars or Keloids for Functional Improvement

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Policy Number: 039

BCBSA Reference Number: 2.01.107 (For Plan internal use only)
NCD/LCD: N/A

Related Policies

Negative Pressure Wound Therapy in the Outpatient Setting, [#543](#)
Electrostimulation and Electromagnetic Therapy for Treating Wounds, [#655](#)
Noncontact Ultrasound Treatment for Wounds, [#657](#)

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO BlueSM and Medicare PPO BlueSM Members

Carbon dioxide (CO2) fractional laser ablation treatment of hypertrophic scars or keloids for functional improvement is considered [INVESTIGATIONAL](#).

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	This is not a covered service.
Commercial PPO and Indemnity	This is not a covered service.
Medicare HMO Blue SM	This is not a covered service.
Medicare PPO Blue SM	This is not a covered service.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following CPT codes are considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code Description
0479T	Fractional ablative laser fenestration of burn and traumatic scars for functional improvement; first 100 cm ² or part thereof, or 1% of body surface area of infants and children
0480T	Fractional ablative laser fenestration of burn and traumatic scars for functional improvement; each additional 100 cm ² , or each additional 1% of body surface area of infants and children, or part thereof

Description

Hypertrophic Scars and Keloids

Hypertrophic scars and keloids are cutaneous lesions resulting from abnormal wound healing. Hypertrophic scars present as raised lesions that do not exceed the limits of the original skin injury. They tend to regress spontaneously within 1 year.¹ Keloids present as raised, firm lesions that extend beyond the margins of original injury. Keloids do not regress spontaneously, are often refractory to treatment, and have a high probability of recurrence after excision. The highest prevalence of keloids is in people of color, with an incidence of up to 16% in Black Africans.² Keloids can occur months or years after injury.³

Consensus-based clinical recommendations published in 2014 endorsed the use of a scar classification system first developed in 2002.⁴ In this system, hypertrophic scars are classified as linear (e.g., surgical, traumatic) or widespread (e.g., burn). Keloids are classified as minor or major. Minor keloids are focally raised, itchy scars extending over normal tissue. Major keloids are large, raised (>0.5 cm) scars, possibly painful or pruritic, and extending over normal tissue. Major keloids are often refractory to treatment and have a high probability of recurrence after excision. Mature scars are light-colored and flat. Immature scars are slightly elevated in the process of remodeling and may be painful or itchy. Immature hypertrophic scars (red, slightly raised) may develop into hypertrophic scars; if they persist for longer than 1 month, the guidelines recommend treating them as a linear hypertrophic scar.

There is no gold standard therapy for hypertrophic scars and keloids, and treatment frequently involves multiple techniques including pharmacotherapy, compression, surgery, radiation, and light sources.⁵

Laser Therapy for Scar Treatment

Carbon dioxide (CO₂) fractional laser treatment was initially developed for cosmetic purposes (e.g., photoaging, acne scarring). Fractional CO₂ laser ablation works by creating microscopic thermal wounds, resulting in tissue vaporization and coagulation of surrounding extracellular proteins. The technique has the advantage of reaching the dermis by ablating the epidermis, while avoiding complications associated with nonfractional ablative lasers (no longer in use), such as postoperative pain and infection. For scars and keloids impairing function, CO₂ fractional ablative laser treatment is proposed to improve abnormal texture, thickness, and stiffness of scars by ablative destruction and resurfacing. The treatment may be used as monotherapy or in combination with other therapies (e.g., sequential treatment with other lasers, sequential treatment with other therapies, or laser-assisted drug delivery).

This review focuses on CO2 fractional ablative laser treatment for functional improvement. Other types of lasers used for hypertrophic scars and keloids include pulsed dye laser and intense pulse light.

Summary

Description

Hypertrophic scars and keloids are cutaneous lesions resulting from abnormal wound healing. There is no gold standard therapy for hypertrophic scars and keloids, and treatment frequently involves multiple techniques including pharmacotherapy, compression, surgery, radiation, and light sources. For scars and keloids impairing function, fractional carbon dioxide (CO2) ablative laser treatment is proposed to improve abnormal texture, thickness, and stiffness of scars by ablative destruction and resurfacing. The treatment may be used as monotherapy or in combination with other therapies (e.g., sequential treatment with other lasers, sequential treatment with other therapies, or laser-assisted drug delivery).

Summary of Evidence

For individuals with hypertrophic scars who receive fractional CO2 ablative laser treatment as monotherapy for functional improvement, the evidence includes randomized controlled trials (RCTs), nonrandomized studies, and systematic reviews of these studies. Relevant outcomes are functional improvement, quality of life, and adverse effects of treatment. A Cochrane systematic review included 3 RCTs of CO2 fractional therapy as monotherapy compared to no treatment. None evaluated functional outcomes. For all outcomes reported, the review authors graded the overall evidence as very low certainty, downgraded for very serious imprecision and serious risk of bias. The reviewers concluded that it was unclear whether fractional CO2 laser impacts scar severity compared with no treatment as measured by commonly used scar scales. Conclusions were limited by study heterogeneity and lack of functional outcome measures. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with keloids who receive fractional CO2 ablative laser treatment as monotherapy for functional improvement, the evidence includes RCTs, nonrandomized studies, and systematic reviews of these studies. Relevant outcomes are functional improvement, quality of life, and adverse effects of treatment. One RCT included in a Cochrane review evaluated CO2 fractional laser therapy monotherapy for keloids compared to no treatment. The review authors concluded that it is uncertain whether fractional CO2 impacts on keloid scar severity compared to no treatment after up to 6 months, downgrading the evidence for very serious imprecision and serious risk of bias. Adverse events and function were not assessed. Scar pain and pruritus outcomes were not presented by treatment arm. Another systematic review included 1 RCT of CO2 fractional laser monotherapy compared to intralesional triamcinolone and found no significant differences between keloid response but faster improvement in the intralesional triamcinolone group. Functional outcomes were not evaluated. Conclusions were limited by study heterogeneity and lack of functional outcome measures. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with hypertrophic scars who receive fractional CO2 ablative laser treatment as adjunctive therapy for functional improvement, the evidence includes RCTs, nonrandomized studies, and systematic reviews of these studies. Relevant outcomes are functional improvement, quality of life, and adverse effects of treatment. A systematic review included a 3-arm RCT that compared combination therapy with CO2 laser plus laser, CO2 monotherapy, or no therapy in 23 individuals with hypertrophic scars. Statistically significant improvements were found on commonly used scar scales for both CO2 plus IPL laser and for CO2 alone. The reviewers determined the trial was at unclear risk of bias for unclear adequacy of allocation concealment and blinding. Functional outcomes were not evaluated, and adverse events were not reported. Conclusions were limited by study heterogeneity and lack of functional outcome measures. Another RCT investigated fractional CO2 alone, pulsed dye laser alone, or combined treatment for hypertrophic burn scars and found that all therapies resulted in significant improvements in scar characteristics, but the combined group had the greatest magnitude of effect. A network meta-analysis found that combined fractional CO2 laser therapy plus 5-fluorouracil had the greatest improvements in Vancouver Scar Scale, scar pliability, and thickness, while amongst laser monotherapies, fractional CO2 laser had the greatest improvement in Vancouver Scar Scale. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with keloids who receive fractional CO2 ablative laser treatment as adjunctive therapy for functional improvement, the evidence includes a RCT, nonrandomized studies, and systematic reviews of these studies. Relevant outcomes are functional improvement, quality of life, and adverse effects of treatment. One RCT included in 2 systematic reviews compared CO2 laser plus intralesional triamcinolone to cryosurgery plus triamcinolone. Of 60 individuals enrolled, 23 were lost to follow-up and not assessed. Scar severity ratings favored the laser therapy group at 12 months, but certainty of the evidence was downgraded due to very serious imprecision and serious risk of bias. Pain not related to treatment favored the CO2 group, but there was no difference in pruritus score. There were more frequent early adverse effects in the CO2 laser group. At 12 months, there was a recurrence of 6 keloid scars (16.7%), all of which were in the CO2 laser group. Conclusions were limited by heterogeneity of subject characteristics and study outcomes measures, small sample sizes, and inconsistent study designs. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
3/2025	Annual policy review. Description, summary and references updated. Policy statements unchanged.
6/2024	New medical policy describing investigational indications. Effective 6/1/2024.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

References

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