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

EFFECTIVE DATE: 07|01|2024
POLICY LAST REVIEWED: 03|04|2026

OVERVIEW
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).

MEDICAL CRITERIA
Not applicable

PRIOR AUTHORIZATION
Not applicable

POLICY STATEMENT
Medicare Advantage Plans
Carbon dioxide (CO2) fractional laser ablation treatment of hypertrophic scars or keloids for functional improvement is not covered as the evidence is insufficient to determine the effects of the technology on health outcomes.

Commercial Products
Carbon dioxide (CO2) fractional laser ablation treatment of hypertrophic scars or keloids for functional improvement is not medically necessary as the evidence is insufficient to determine the effects of the technology on health outcomes.

COVERAGE
Benefits may vary between groups/contracts. Please refer to the appropriate section of the Benefit Booklet, Evidence of Coverage or Subscriber Agreement for applicable physician administered drug benefits/coverage.

BACKGROUND
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. 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. Keloids can occur months or years after injury.

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.

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.

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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 a RCT, 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 IPL 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. 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.

CODING

Medicare Advantage Plans and Commercial Products

The following CPT code(s) is not covered for Medicare Advantage Plans and not medically necessary for Commercial Products:

0479T Fractional ablative laser fenestration of burn and traumatic scars for functional improvement; first 100 cm2 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 cm2, or each additional 1% of body surface area of infants and children, or part thereof

RELATED POLICIES

Not applicable

PUBLISHED

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