

Electron Beam Radiation Therapy for Postoperative Keloids

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Radiation therapy, as one of the effective adjuvant measures to suppress keloids, works through the direct and indirect effects of ionizing radiation to inhibit the excessive proliferation of fibroblasts, with the primary goal of preventing recurrence after keloid treatment. A medical linear accelerator generating 6 MeV electron beams is typically used for keloid treatment, offering an effective penetration depth of 1.5 – 2 cm, with precise control over radiation dose and depth. Clinically, postoperative radiotherapy for keloids requires mastery of electron beam techniques, including conformal lead shielding, electron beam compensation and field junction techniques, to enhance dose uniformity in the irradiated area while maximally protecting critical organs and normal tissues surrounding the surgical site.

To achieve effective keloid cure and reduce recurrence, electron beam radiotherapy is generally recommended within 24 – 48 hours postoperatively. For keloids in different anatomical locations, the total radiation dose, fractionation (single dose), and dose–time regimen should be determined based on the BED (biologically effective dose) calculation formula.