



# COMPLICATIONS OF THERAPEUTIC RETINAL LASER PHOTOCOAGULATION



**Eye Learn**

All about the Eye

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- **Complications of therapeutic retinal laser photocoagulation**

TABLE 6-9-1

Laser modality	Mechanism of damage
Laser photocoagulation	Photocoagulation
Transpupillary therapy (TTT)	Photocoagulation
Micropulse diode laser	Photocoagulation
Photodynamic therapy (PDT)	Photochemical
Nd:Yag laser	Photodisruption

1. **Retinal pigment epithelium rips** have been noted, particularly with the use of the krypton red laser in the treatment of choroidal neovascularization.
2. **Sudden contraction of the neovascular membrane** as a result of the thermal effects of the laser may produce a shearing force that causes a rip in the retinal pigment epithelium.
3. **Macular edema** with decrease in vision after extensive PRP in DR. This especially happens if patients has some pre-existing edema (hence complete the macular grid first followed by PRP after 2-3 weeks) or perifoveal capillary non-perfusion. This loss may recover in a month time or may sometimes persist.
4. **Increased IOP** especially if treatment is heavy. Angle shallowing may result due to ciliary body forward rotation as described earlier. If can usually be managed easily & conservatively.
5. **Mydriasis due to sphincteric damage** if pupil was not well dilated or due to damage to nerves in uveal tract. It is usually permanent.
6. **Paralysis of accommodation**- usually temporary.
7. **Choroidal hemorrhage and Bruch's rupture with subsequent 2° CNVM** can occur with heavy burns. Decreases in laser intensity and duration, along with the avoidance of smaller spot sizes (50 μm), help to minimize this complication.
8. **Vitreous hemorrhage may result due to regression of NVEs** with subsequent contraction of glial tissue. Focal treatment with small-diameter, high-intensity burns may cause vascular occlusion or perforate blood vessels, leading to **preretinal or vitreous hemorrhage**.
9. **Inadvertent foveal burn**- may result in permanent loss of central acuity.
10. **Extension of extrafoveal retinal traction to involve fovea**. Avoid heavy treatment in or near areas of vitreoretinal traction.
11. Intense photocoagulation may cause **full-thickness retinal holes**.
12. Intense treatment may create **fibrous proliferation, striae, and foveal distortion**, with resultant metamorphopsia or diplopia.
13. **Choroidal detachment and exudative RD**-especially if treatment is heavy. It is usually transient. Extensive, intense photocoagulation may lead to massive **chorioretinal edema and resultant serous retinal and choroidal detachment**. The latter, can lead to narrowing of the anterior chamber angle from forward rotation of the ciliary body, resultant elevated intraocular pressure, aqueous misdirection. This reaction peaks 1–3 days after treatment and resolves spontaneously within a few weeks. Corticosteroids may be helpful to treat massive exudation.
14. Paracentral visual field loss and scotoma.