CO2 laser-assisted deep sclerectomy surgery (CLASS) – one year follow-up

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Purpose

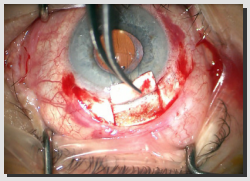
To estimate the efficacy of CO2 laser-assisted deep sclerectomy surgery (CLASS) in open angle glaucoma patients. CO2 laser assisted sclerectomy as a primary filtration surgery for primary or secondary open-angle glaucoma exposures the Schlemm's canal without penetrating into the AC. Laser ablates dry tissue (energy absorption by aqueous humor) leading to self-limited mechanism at percolation with final IOP reduction.

CO2 laser unit + Scanner+ Microscope = IOPtiMate™

Methods

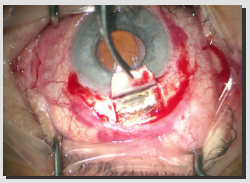
Study group: 51 patients (51 eyes) diagnosed with open angle glaucoma including 27 PEX syndrome patients. During surgery fornix based conjunctival flap at 12 o'clock was created and half thickness sclera flap 5x5 mm was done. In all cases tenectomy was performed. Intraocular pressure (IOP) was measured at baseline, 1, 2, 4 weeks, 3 and 6 and 12 months postoperatively.

Complete success was defined as 5≤IOP≤18 mm Hg and 20% IOP reduction with no medication at a 12-month endpoint visit. Qualified success was defined as the same IOP range with or without medication.



Surgery:

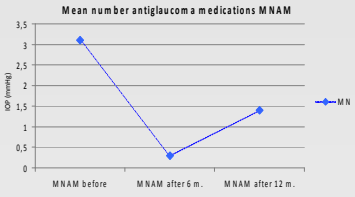
- **Limbus exposure via scleral flap creation 5x5 mm**
- **Creation of scleral bed – Reservoir using laser ablation**
- **Laser deroofing of Schlemm's canal (~30 micron ablation)**
- **Aqueous percolation absorbs the laser's energy**
- **Scleral flap and conjunctiva suture**

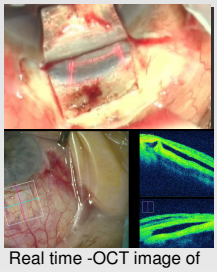


Results

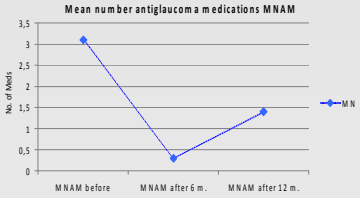
31 patients completed 12 months follow-up. In this group mean baseline IOP of 25.2±1.5 mm Hg (mean±SD) dropped to 18.1±2.8 mm Hg at 12 months. An average IOP reduction of 29,2% was achieved at 12 months (P<0.0001). The mean number of antiglaucoma medications was reduced from 3.1± 0.4 at baseline to 1.4 ± 0.7 at last follow up visit. Intraoperative complications were mild .

Additional procedures during follow-up: needling 5 patients (9,8%) , laser goniopuncture 3 patients (5,8%). At 12 months follow up, complete success was achieved in 54% of patients, whereas qualified success was achieved in 90,3 % of patients.





Real time -OCT image of sclelar bed



Conclusions

CO2 Laser Assisted Sclerectomy (CLASS) is a unique microinvasive surgical procedure reducing IOP in open angle glaucoma patients with low postoperative complication rate.