

## INFRARED DIODE LASER RETINAL TREATMENT FOR CHRONIC HEADACHE

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**ABSTRACT:** Nearly 60 to 70 crores of people all over the world are suffering from various types of chronic headache. This is one of the commonest medical problems. To get relief from headache various medical treatments are used with little success. The aim of our study is to give permanent treatment to chronic headache patients by using infrared diode laser selective retinal photocoagulation. NIDEK infrared diode laser with NIDEK SL40 slit-lamp and NIDEK digital fundus camera for retinal evaluation, MAINSTER 135D lens for laser beam focusing and retinal examination and TOPCON non-contact tonometer for intra ocular pressure measurements are used. Diode laser is chosen because of its deep penetration into all the layers of retina and choroid. 500 cases of chronic headache were studied. Laser photocoagulation was given in selective areas of retina in 2 to 3 sessions with 15 days interval. 10 to 60 years age group were studied. 90% of patients who got laser treatment are relieved from their headache in severity and in frequency. 80% of patients needed 2 sittings and 20% of patients needed 3 sittings. 70% of patients got relief from headache by first sitting itself. 50% of patients are not only relieved from their headaches but also noticed visual clarity improvement. Retinal ischaemia is one of the main cause for ocular pain and headache. Laser treatment will improve circulation by reducing ischaemia thereby relieves ocular pain and headache.

**KEYWORDS:** Headache, migraine, ocular migraine, chronic headache, infrared diode laser, digital retinal fundus changes, laser retinal treatment, laser photocoagulation.

**INTRODUCTION:** Nearly 60 to 70 crores of people all over world i.e. 10 to 15 percent of world population are suffering from various types of chronic headache (Migraine, ocular migraine, tension headache, cluster headache and various types of diffuse headache). Even though most people know that ocular symptoms are predominantly present either before headache, during headache or after headache most of the medical speciality's people concerned in the treatment of headache are not concentrating to examine the full retina, optic nerve, intra ocular pressure and refractive errors. In the headache patients attending the emergency department 10 to 12 percent of cases obvious optic nerve and retinal vessels abnormalities are detected. Retinal ischaemia is one of the main causes for pain in the eye and headache. To relieve ischaemia selective laser photocoagulation plays a vital role. On seeing many abnormalities in retina for nearly three decades in hundreds of headache cases I have decided to give the selective laser photocoagulation with wavelength 810 nm flashless infrared diode laser which has most penetrating power into the all layers retina and choroids. 500 cases of chronic headache were studied. This infrared diode laser is less traumatizing and safer on macular area. Selective laser mild photocoagulation was done in various areas of retina.

**AIM:** Permanent relief from headache by giving infrared diode laser treatment to particular areas of retina.

**METHODS:** 500 cases of various types of chronic headache with age groups ranging from 10 years to 60 years were studied. NIDEK infrared diode laser 810 nm was used. NIDEK slit lamp SL40 was used

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for delivery of laser rays. MAINSTER 135D ocular instruments Inc. lens was used in focusing the laser beams. Two to three laser sittings were given with the gap of 15 days between each sitting. Comprehensive ophthalmic examination which includes refractive error, intra ocular pressure, digital fundus photography with optic nerve and retina and retinal vessels examined thoroughly in all the patients before the laser treatment. For intra ocular pressure measurement TOPCON non contact tonometer was used. NIDEK AFC 210 digital fundus camera was used for taking fundus photographs.

**RESULTS:** 90% of patients who got laser treatment were completely relieved from their headache. 80% of patients needed only two sittings and 20% needed three sittings. 70% of patients got relief from headache by first sitting itself. The frequency and intensity of headache reduced markedly by second sitting itself. 70% of patients even after 5 years they have not got headache. Some patients even after 10 years they have not got headache. Many patients visited many doctors including neurologists before treatment, without any relief. 10% of patients are from 10 to 20 years of age and 50% of patients are from 20 to 40 years of age. Another 40% of patients are between 40 to 60 years of age. More years of permanent relief from headache was noted in the 40 to 60 years of age group. In 50% of patients not only relief from headache but also visual clarity improved both for distant and near vision. Retina also became strong after treatment that is why clarity of vision improved. To know the strength of retina special laser beam technique was used. Even the intraocular pressure decreased in 60% of patients. The eye pain, periorbital pain and headache are decreased in treated cases.

**DISCUSSION:** Headache is one of the commonest medical problems throughout the world. Nearly 50 to 60 crores of people (10 to 15% of world population) all over the world are suffering from mild, moderate or severe headache. According to WHO, 10 to 15% of women and 4 to 5 % of men are suffering from headache. Due to this lot of productivity and GDP is decreased. Not only this the disturbance and inconvenience faced by headache patients in the home and in the office is unimaginable and many students in school, college, university are showing less academic performance and some students also stopped their studies due to chronic and severe headache. In migraine headache 25% of patients have ocular migraine or ophthalmic migraine with classic migraine symptoms. Various treatments are available for headache like propranolol use, flunarazine use, ergotamine, sumatriptan use with NSAID and domperidone. But they all only give symptomatic relief. Many people following this treatment saying that there is no other treatment for chronic headache or migraine headache.

There is very little research done in knowing the retinal and optic nerve abnormalities in migraine or chronic headache patients. Even though majority headache patients are having pain in the eye flashes of light, transient blurring of vision and transient decreased vision partial visual field loss, discomfort in vision, photophobia and heaviness in the eyes.

Transient ischemia is present in many areas of retina due to vascular spasm, venous engorgement and venous tortuosity, hyperemia disc, perivasculature sheathing, arteriolar narrowing, peripheral and mid peripheral thinning of retina and patchy discoloured areas of retina. All these indicate reduced circulation in retina leading to improper visual impulses sending to almost all parts of brain leading to headache.

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Laser photocoagulation is used mainly in diabetic retinopathy and other retinal diseases where main aim is to reduce retinal ischaemia and increase circulation to retina thereby increasing oxygen supply to retina. Photocoagulation reduces vasogenic and other abnormal chemicals released from ischaemic areas. The same principle is applied here to reduce ischaemia in headache patients. So that circulation is increased to retina and thereby regularizing the impulses from the retina to brain.

This diode laser is used because it reaches choroidal circulation and thereby increases choroidal circulation. This diode laser has less energy diffusion to surrounding areas, no flash, safer in macular area, safer near the retinal vasculature, less absorption in xanthophil pigment, less damage to photo receptors with less visual field loss and also works in haemorrhage and in moderate cataract changes also. That is why we have selected this laser for the selective laser photocoagulation for the treatment of headache patients.

This is the first time in world that various types of chronic headache patients were treated with selective laser retinal treatment with 90% success rate with almost 2 to 10 years permanent relief from headache with very less cost.

It is a major breakthrough in the treatment of chronic headache.

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