Case Report **Open Access**

Scleral Perforation following Transscleral Diode Laser Cycloablation:

Afshan Ali

ABSTRACT

Transscleral Diode laser cycloablation (DLCA) is one of the cycloablative procedures usually used for treating cases of refractory glaucoma. We report here a case of 80 years old man, who underwent transscleral diode laser cycloablation in his left painful blind eye. The main aim of this treatment was to lower down the intraocular pressure so that his pain could be relieved. On regular follow up visit, just two weeks after the procedure, he presented with scleral perforation on inferior 180 degrees of eye exactly where laser was applied. His intraocular pressure was 12mmHg. Patient had to undergo tectonic and conjunctival grafting on emergency basis to save the integrity of the globe and to avoid phthisis, pain and infection. His post op intraocular pressure (IOP) was 10mmHg with graft in place. This is a very rare complication and to the authors knowledge, this is first reported case of scleral perforation following transscleral diode laser cycloablation in Pakistan.

Key Words: Glaucoma, Intraocular pressure, diode laser

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INTRODUCTION

The aim of cyclodestructive procedures is to reduce intraocular pressure in glaucomatous patients. It is achieved by causing coagulative effect on ciliary body, which produces aqueous humor. [1] It is mostly used in cases of painful blind eye but it is also being used in glaucoma cases with good visual potential.[2] Complications such as uveitis, conjunctival burns, hyphema, hypotony, cystoid macular edema, retinal detachment, and phthisis bulbi are possible after this procedure.[3] But scleral perforation is a very rare complication.[4] Spread of thermal energy to the surrounding area causes the main damage resulting in these complications.[5] Here, we describe a case of scleral perforation seen two weeks following transscleral diode laser cycloablation which was done in painful blind eye to control intraocular pressure.

Case Report

This 80 years old male, presented to our glaucoma outdoor department with complaint of pain in his left eye for last six months. Pain was severe, gradually getting worse in intensity and radiating to left side of his head. There was history of trauma in the same eye with fist eight years ago. At the time of injury, patient was given symptomatic treatment and no invasive procedure was performed. Medical history included multiple antiglaucoma drugs for last three years in the same eye. He was currently on maximum topical antiglaucoma therapy which included alpha agonists, beta blockers and prostaglandins. He was also on oral carbonic anhydrase inhibitors for last three months due to severe pain. There was history of frequent use of oral pain killers for pain relief. Surgical history included uneventful bilateral cataract surgery 10 years ago. There was no significant systemic or family history.

Examination of left eye showed no perception of light. Intraocular pressure was 42mmHg. There was conjunctival congestion, corneal edema, shallow anterior chamber (AC) of grade 1 with van Herrick method and peripheral anterior synechiae. The eye was pseudophakic. Optic disc showed cup of 1 but view was hazy due to corneal edema, foveal reflex was not visible for the same reason. Gonioscopy was not possible due to hazy view.

Examination of right eye showed Visual acuity of 6/9. Intraocular pressure was 14mmHg. Anterior chamber depth was grade 3 by van herrick method. Eye was pseudo phakic. Gonioscopy showed grade 4 open angle. Cup disc ratio was 0.3 with healthy neuroretinal rim, fovea was normal.

We made a clinical diagnosis of left painful blind eye secondary to uncontrolled glaucoma with very high intraocular pressure. B Scan left eye was carried out to rule out any other posterior segment pathology, which turned out to be normal. Other investigations for glaucoma were not possible due to corneal edema hence the hazy view.

To relieve his pain and to control his Intraocular pressure, it was decided to do transscleral diode laser cycloablation on inferior 180 degrees of left eye. After the patient's consent, he was given peribulbar anesthesia. The left eye was draped. 5% povidone iodine solution was applied to conjunctival sac. Procedure was performed with total 18 burns applied to said area with contact G probe. Power used was 2000

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mW, adjusted according to barely audible popping sound and duration of each shot was 2 seconds. Total energy delivered to inferior 180 degrees of eye, was 70 Joules. At the end, subconjunctival injection of steroid and antibtioic was given in inferior fornix. After the procedure patient was prescribed oral Nonsteroidal anti inflammatory drug to manage post operative pain and topical steroid antibiotic combination drops four times day to manage post op ocular inflammation.

On first post op day, Intraocular pressure of left eye was down to 10mmHg with corneal edema and pain was relieved. Patient was asked to continue steroid antibiotic drops four times a day and he was called back after two weeks for follow up. On two weeks follow up, examination of the same eye showed scleral thinning and perforation on inferior 180 degree of eye exactly where diode laser was applied [Figure 1]

Intraocular pressure was 12 mmHg. To manage this perforation, patient was admitted as an emergency case. After the patients consent, tectonic and conjunctival grafting was performed on perforated site to safe integrity of his eye,

Figure 1: inferior 180 degrees of left eye showing scleral perforation

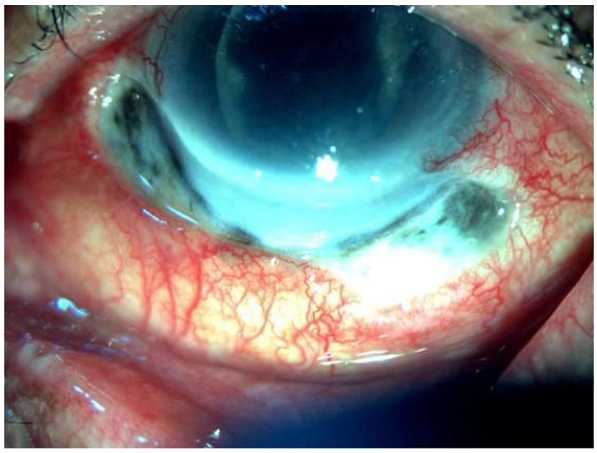
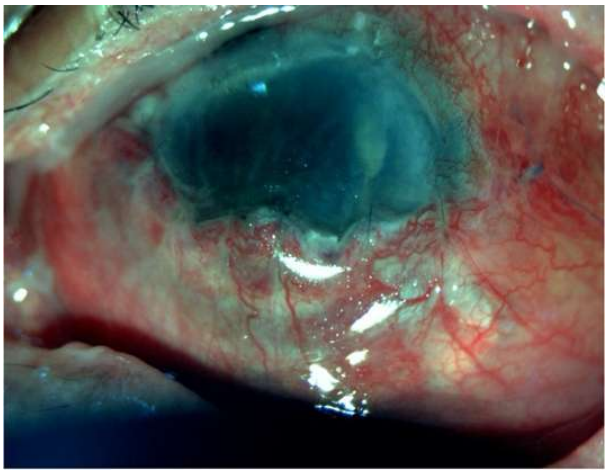


Figure 2: inferior 180 degrees of left eye showing conjunctival graft in place



pain and infection. On one month follow up, graft is in place with intraocular pressure of 12mmHg and patient is pain free [figure 2]

DISCUSSION

Transscleral diode laser cycloablation is usually a mode of treatment for refractory glaucoma, term used for glaucoma cases not responding to conventional medical or surgical therapy.[6] These patients usually have poor visual prognosis.

Destruction of ciliary body has been used to treat glaucoma since 1930s.[7] Diode laser reduces Intraocular pressure by destroying pigmented and non pigmented ciliary epithelium and capillaries in ciliary processes. It also causes coagulative necrosis, muscle damage and reduced vascularity.[8]

There is wide variety of complications. Most common are iritis, corneal edema, hyphema. Less common include scleral perforation, malignant glaucoma, sympathetic ophthalmitis and hypotony.[9]

In this particular case, patient was alright on the table and on first post op day. Scleral perforation was observed two weeks after the procedure. All the local risk factors that could cause it, were absent in this case like pre op scleral thinning or staphyloma. Use of high power of laser, mechanical pressure on the eyeball with the probe could also be the potential causes of this complication. But Power used during the procedure was according to conjunctival reaction seen accompanied by barely audible popping sound. No mechanical pressure was applied on the globe during laser application. There were no conjunctival burns seen during the process. New probe was used, its tip was clean and carbonization of tissue was prevented by making sure that the tip remained clean in between the shots.

A few reported cases on complications of transscleral diode laser are those in which scleral perforation happened on table during application of laser.[10,11] In these cases, there was a full thickness hole through conjunctiva, sclera and choroid. That area had to be closed with two 10.0 vicryl suture on table. There was pre op scleral thinning as pre disposing factor. However, in our case scleral perforation appeared two weeks after the procedure which had to be managed, on emergency basis so aim of presenting this case is to emphasize on the importance of regular follow up after the procedure to look for potential complications and their timely management even when there are no risk factors involved.

CONCLUSION

Transscleral diode laser cycloablation is a very effective treatment for the control of intraocular pressure in cases of refractory glaucoma. It can be used in cases of painful blind eye and also in eyes with good visual potential. Like any other procedure diode laser application has its own set of complications, of which scleral perforation is one of the most serious, but a rare complication.

They were apparently no predisposing risk factors in this case. We had previously used the same G probe and power settings on large number of patients, but no complications were seen so scleral perforation in this case was an unexpected finding. Due to this, we recommend regular follow up of the patient in all cases of transscleral diode laser cycloablation, even if there are no pre-op warning signs like thinned out sclera so that complications can be managed timely.

Authors Contribution:
Afshan Ali: Conception/ Study design, Acquisition of data, Manuscript drafting, Given final approval of version to be published

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