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*RESEARCH ARTICLE*

# COMPARISION OF VISUAL OUTCOME IN PATIENTS WITH CLINICALLY SIGNIFICANT MACULAR OEDEMAAFTER TREATMENT WITH INTRAVITREAL ANTI -VEGF AND LASER PHOTOCOAGULATION

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BCVA-Best Corrected Visual Acuity, CSME-Clinically Significant Macular Edema, VEGF-Vascular Endothelial Growth Factor, V.A.-Visual Acuity, OCT=Optical Coherence Tomography

## Abstract

**Purpose:** to evaluate, compare and disscuss the therapeutic efficacy of intravitreal anti- VEGF and laser photocoagulation in treatment of CSME.

**Material &Method:**We have been selected 100 eyes of 50 patients of diabetic retinopathy with diabetic macular edema (CSME) ,out of which 26 eyes were excluded due to retinal detachment, neovascular glaucoma, complicated cataract, corneal opacity. Total 74 eyes of 37 patients has been selected for the study and divided into two groups with equal numbers of eyes.

**Results:** In group 1 patients 92% patients attained the V.A. of 6/60 – 6/24 and V.A. with pinhole improved to 6/36-6/24 and BCVA 6/36-6/18, 8% patients which developed CSME involving centre of macula and developed contraindication to anti-VEGF ( myocardial infarction) show favourable visual outcome with V.A. 6/60-6/36 when shifted to subthreshold laser .In group 2 patients 85 % attained the V.A. of finger count 2 meter to 6/60 ,V.A. with pinhole 6/60-6/36 and BCVA 6/60-6/24, 10% of patients which were developed CSME involving centre of macula treated with subthreshold laser and attain the V.A. of 6/6/-6/36 from finger count 1meter.

**Conclusion:**This study concluded that efficacy of intravitreal anti-VEGF in treatment of CSME is better than laser photocoagulation.



## Introduction:-

In patients of diabetes mellitus the major cause of vision is diabetic macular oedema.

Term clinically significant macular oedema(CSME) is used when if we find the followings on fundus examination and Optical coherence tomography :-

1. Presence of retinal oedema from the centre of macula within 500 micron meter area.
2. If retinal oedema with exudates presents within 500 micron meter area from centre of macula.
3. If retinal oedema present within one disc diameter of disc area.

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In the treatment of CSME there are two specific treatment modalities are as follows:-

1)Intravitreal anti-VEGF agents(ranibizumab, bevacizumab, aflibercept)
2) Laser photocoagulation
3) Subthresholddiode laser

Nowadays the intravitreal anti-VEGF agents becomes the first line of treatment in case of CSME with better visual outcome than laser photocoagulation ,but laser photocoagulation has its own good therapeutic efficacy in cases of CSME not involving the centre of the macula with favourable visual outcome .

## Review Of Literature:-

Kulkarni et al studied the role of intravitreal anti -VEGF and focal and grid laser in treatment of DME but there was no information about subthreshold laser treatment in DME .[1]

Sander et al studied about the diagnostic efficacy of optical coherence tomography in interpretation of retinal thickness in diagnosis of CSME.[2]

## Material And Method:-

This study is prospective comparative study done at the Maharani Laxmi Bai Medical College, department of Ophthalmology between January 2021 to July 2022.

We have been selected 100 eyes of 50 patients of diabetic retinopathy with diabetic macular edema (CSME) ,out of which 26 eyes were excluded due to retinal detachment, neovascular glaucoma, complicated cataract, corneal opacity. Total 74 eyes of 37 patients has been selected for the study and divided into two groups with equal numbers of eyes:-

1) Group 1-CSME treated with intravitreal anti-VEGF agents
2) Group 2-CSME treated with laser photocoagulation

| | Group 1 | Group 2 |
|---|---|---|
| V.A. at the time of presentation | Hand movement to Finger count at 1meters | finger count at 1 meter to finger count at 2meter |
| V.A with pinhole at the time of presentation | Finger count at 1meter to finger count at 3 meters | Finger count at 2meter to 3 meters |
| V.A. after treatment | 6/60-6/24 | Finger count at 3 meters-6/60 |
| V.A. with pinhole after treatment | 6/36-6/24 | 6/60-6/36 |
| BCVA | 6/36-6/18 | 6/60-6/24 |

T-test and Chi square test were applied as test of significance.

## Result:-

In this study we found that group 1 patients which were treated with intravitreal anti-VEGF (aflibercept, ranibizumab, bevacizumab) out of 37 patients 92% patients attained the V.A. of 6/60 – 6/24 and V.A. with pinhole improved to 6/36-6/24 and BCVA 6/36-6/18, 8% patients which developed CSME involving centre of macula and developed contraindication to anti-VEGF ( myocardial infarction)show favourable visual outcome with V.A. 6/60-6/36 when shiftedto subthreshold laser .

Group 2 patients which were treated with laser photocoagulation (focal/ grid laser) ,out of 37 patients 85 % attained the V.A. of finger count 2 meter to 6/60 ,V.A.with pinhole 6/60-6/36 and BCVA 6/60-6/24, 10% of patients which were developed CSME involving centre of macula treated with subthreshold laser and attain the V.A. of 6/6/-6/36 from finger count 1meter and 5% of patients have developed significant thickening at macula in foveal region and also have contraindication to intravitreal anti-VEGF (pregnancy) laser was combined with intravitreal triamcinoloneand favourable visual outcome with V.A. of finger count 3 meter to 6/60 achieved by these patients. This study showed that efficacy of intravitreal anti-VEGF in treatment of CSME is better than laser photocoagulation.

Sample size was small in this study so this study need to be done with large sample size.

## Conclusion:-

This study concluded group 1 patients which were treated with intravitreal anti-VEGF showed favourable visual outcome but some patients which developed CSME involving centre of macula and contraindication to anti-VEGF shifted to subthreshold laser and showed favourable visual outcome.

In group 2 patients most of the patients attained the good visual outcome ,some patients in which CSME involving centre of macula attained favourable visual outcome when treated with subthreshold laser and few patients which developed contraindication to anti-VEGF laser was combined with intravitreal triamcinolone and patients attained favourable visual outcome.

This study also concluded that efficacy of intravitreal anti-VEGF in treatment of CSME is better than laser photocoagulation.

**Conflict Of Interest:**
None.

**Source Of Funding:**
None.

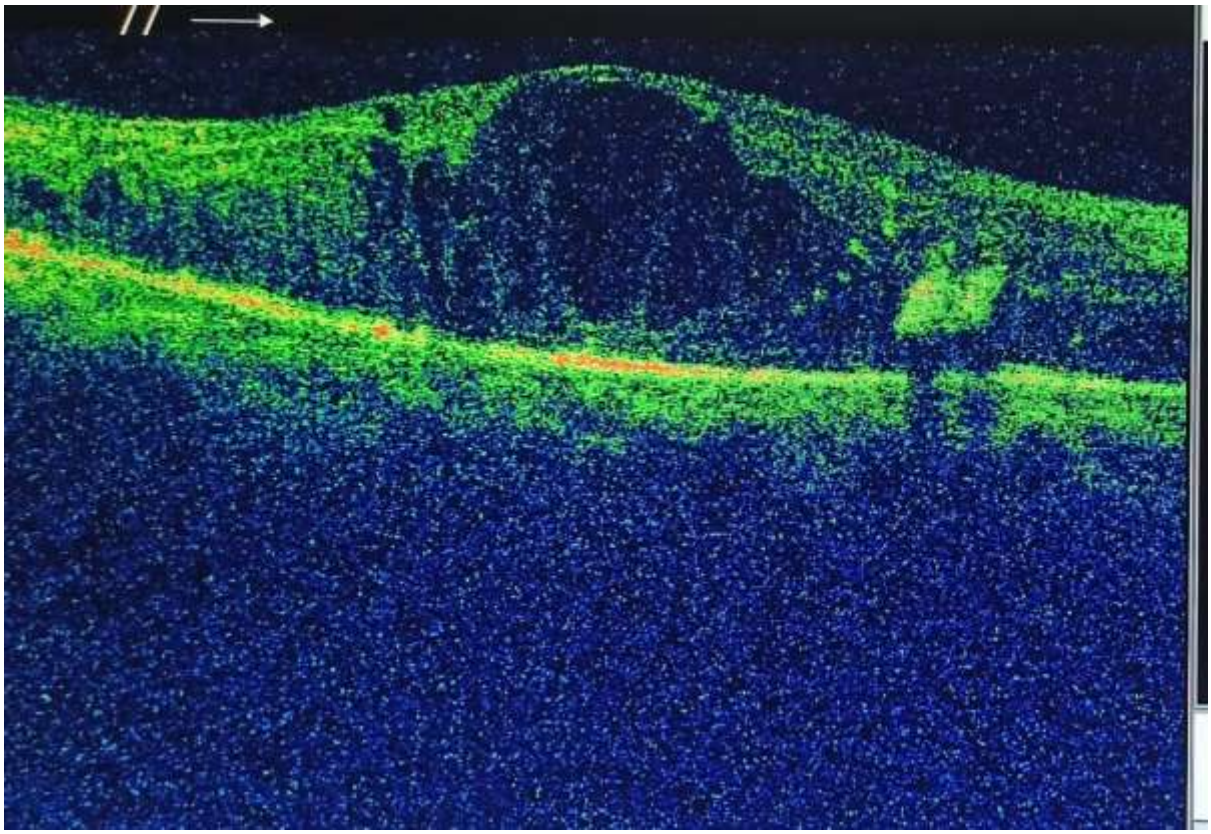

**Figure 1:-** OCT image of 50 years old diabetic patient with CSME in Right eye before intravitreal anti-VEGF treatment.

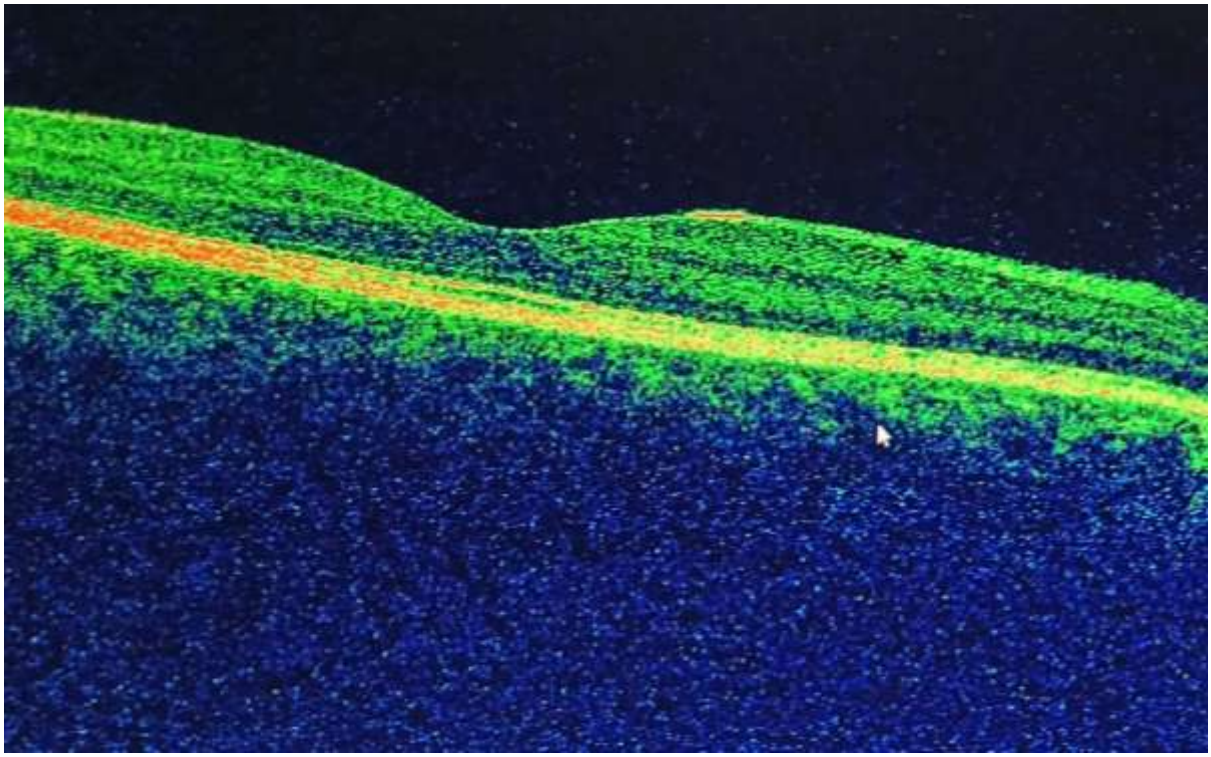

**Figure2:-** OCT image of macula of right eye of same patient after intravitreal anti-VEGF treatment whose right eye was shown in figure1.

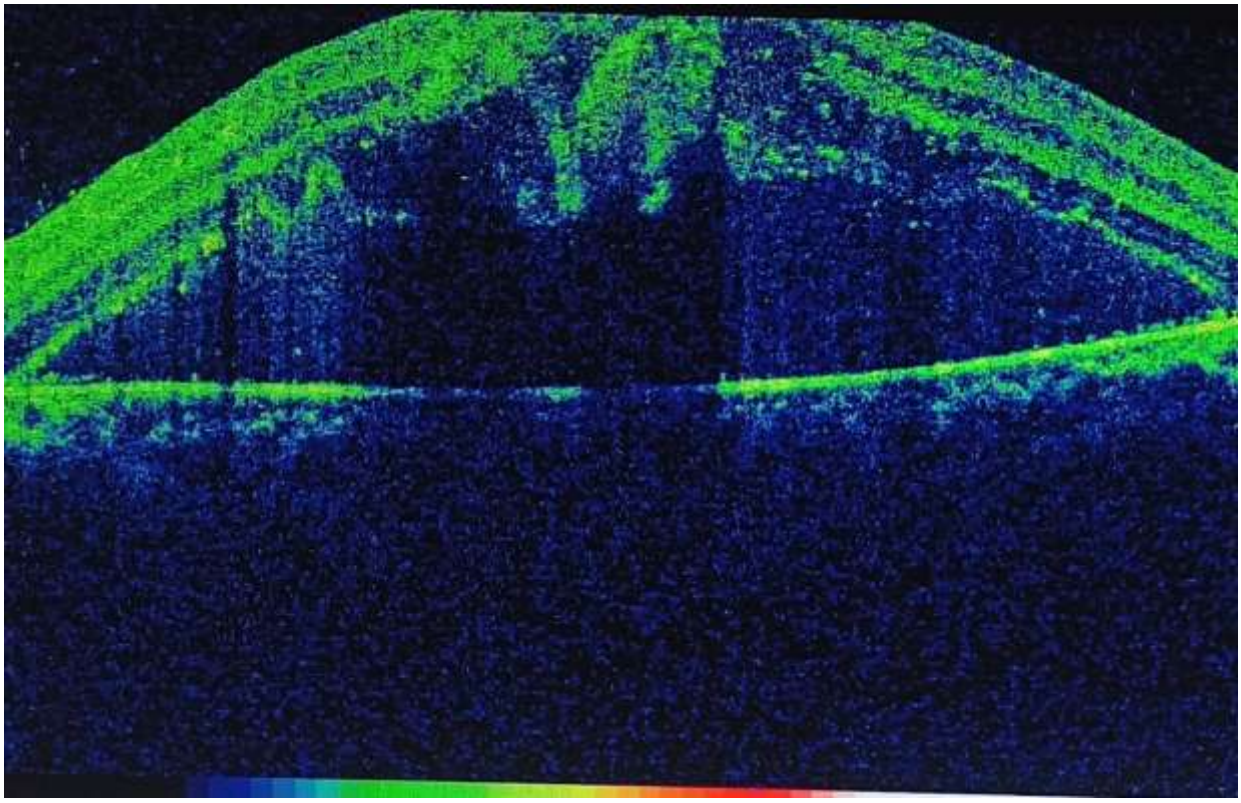

**Figure 3:-** OCT image of left eye of diabetic patient with CSME before laser treatment.

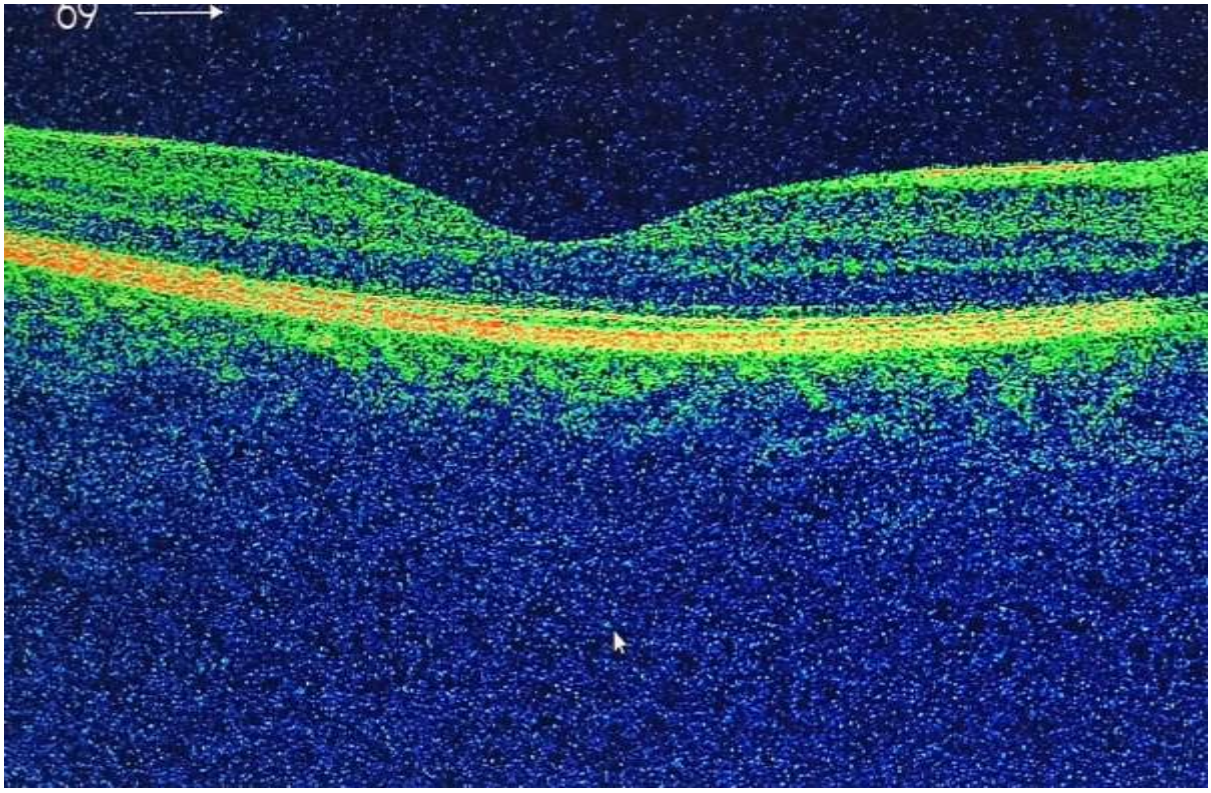

**Figure4:-** OCT image of left eye of same patient shown in figure 3 after laser photocoagulation.

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