Comparison of ParsPlanaVitrectomy WithAnti VEGF Injection As A primary Management ForDiabetic Macular Edema

Thesis

Submitted for Partial Fulfillment of M.D. Degree in

Ophthalmology

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2017

Summary and Conclusions

Diabetic macular edema (DME) is the most common cause of moderate vision loss in diabetics .Various treatment modalities including laser photocoagulation, intravitreal steroids, and intravitreal anti vascular endothelial growth factor (VEGF) drugs have been reported to be useful in management of DME.

Various reports have shown favorable effects of pars plana vitrectomy (PPV) for treating DME with or without obvious abnormalities of the vitreoretinal interface. Some authors have suggested that internal limiting membrane (ILM) is an important contributing factor in the development of DME; therefore, vitrectomy with ILM peeling may have a role in treatment of cases with DME without apparent traction by improving oxygenation of the retina and relieving “subtle” traction on the retinal surface.

Advantages of pharmacological intervention are speed and ease of procedure and early benefit to the patient. The major drawback of anti-VEGF injections is its short term effect leading to multiple injections which is a major economic burden especially in the third world. Also associated with residual edema in 25%–64% of eyes.

At present, the mechanism by which vitrectomy resolves DME is not fully understood, but it is speculated that vitrectomy not only removes the vitreous traction, but also improves the local environment. Even with seemingly successful treatment, the visual outcome may occasionally remain poor despite complete resolution of DME by PPV. Causes for this limited visual improvement include macular ischemia, photoreceptor dysfunction, and accumulated subfoveal hard exudates, especially that most of studies (if not all according to maximum of our knowledge) are

investigating vitrectomy for refractory DME and not as a primary treatment.

The aim of this study is to evaluate parsplanavitrecomy combined with ILM peeling as a primary treatment for DME through a follow up period of six months.

Forty eyes of forty patients which met the inclusion criteria were enrolled in the study. The patients were randomly divided into two groups.

*Group A***:** Twenty eyes received PPV combined with ILM peeling.

Group B: Twenty eyes received three monthly intra vitreal injection of 0.5mg /0.05ml ranibizumab (Lucentis).

Inclusion-criteria

Patients with diffuse diabetic macular edema with central macular thickness (CMT) >300um.

Exclusion-criteria

1**.** History of previous intervention for treating diabetic macular edema at any time (naive eye).

2. Evidence of vitreomacular traction clinically or by OCT.

3. Cases with proliferative diabetic retinopathy

4. Cases with any macular disease other than diabetic maculopathy.

5. Cases with history of cataract surgery within 12 months.

6. Cases with significant cataract which interferes with OCT.

The patients were followed up over six months for change in CMT and BCVA.

In the vitrectomy group; 95% of the cases (19 of 20) showed significant progressive reduction in CMT over the follow up period. The mean CMT pre-operative was **576.80 ± 169.74** um and at six months was to **306.20 ± 47.08** um and 55% of eyes had a reduction of macular thickness of at least 50%.

In the injection group, all cases showed significant reduction in .mean CMT at three months and seventeen cases (85%) at six months

At three and six months the decrease in mean CMT was statistically significant in relation to base line value **(474.30, 351.35 , 389.55 um at zero,3,and 6months respectively**), however the increase in CMT from three to six months was statistically significant; the CMT decreased progressively till three months and then re-increased significantly at six months. This result may be explained by wash out of anti VEGF from the vitreous after the stoppage of injection.

In the vitrectomy group, the mean BCVA (log MAR) changed from **1.04 ± 0.17**at base line to **0.77 ± 0.270** at 3 months**,** and to **0.74 ± 0.27** at 6months and the main visual gain was 2.9 ± 1.87 lines .

The mean change of BCVA between preoperative and 3months and between preoperative and six months was statistically significant**.**

In the injection group, the BCVA changed from **0.97 Log MAR at base line to 0.74**, **0.79 Log MAR** at three and six months respectively and the mean gain was *2.00 ± 2.00* lines. The improvement in BCVA from base line to three and six months was significant, however the decrease in BCVA at six month was significant to three months value.

Few complications were reported in both groups. In the vitrectomy group cataract progression, single case with iatrogenic break and another

case with post-operative reaction were the encountered complications. In the other hand transient IOP elevation was the reported complications in the injection group.

Conclusion

In the present study PPV combined with ILM peeling were not inferior to (even superior) three monthly intravitreal ranibizumab injections as regard efficacy (anatomical and functional) and stability over the follow up period (six months).