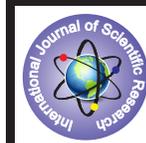


Effect of Partial occlusion in moderate Amblyopia



Medical Science

KEYWORDS :

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ABSTRACT

This study conducted to compare the efficacy of the part time occlusion in moderate refractive amblyopia, at Govt. Regional Eye Hospital, Visakhapatnam.

Materials and methods: 24 eyes of refractive amblyopia with moderate refractive error from 23 patients are selected for the study during the period of one year and followed up to 2 ½ years. The amblyopic eyes were divided in to two groups One group treated with occlusion for one hour, and other other group treated with 6 hours occlusion.

Results: The effect and visual improvement of hour occlusion is equally effective in moderate refractive amblyopia, compared to 6 hours occlusion.

Conclusions: One hour occlusion is effective in moderate refractive amblyopia, and the complications of occlusion therapy are minimal in this short term occlusion.

Introduction:

Amblyopia (Greek - «blunt vision”) is a known defective visual condition since 480 BC, sine the Hippocratic era. Amblyopia thought to be a diminished visual acuity, including presbyopia by. Von Graefe in 1888 stated “**Observer sees nothing, pt sees very little**” labelled it as Lazy eye. The pathogenesis remained unclear until Hubel in 1963 (1), proposed the applied anatomical relevance of retina, lateral geniculate nucleus, Striate cortex and its internal connections, useful to understand pathogenesis of amblyopia. It also made it clear the prognostic aspect and the neuroplasticity in the quality of visual improvement. Vision developed in the new born eye by trail and error, von Noorden described it as Nativism and Empiricism. Ocular alignment developed at the age of 6 weeks in new born, foveal fixation starts by 6 months of the age, complete adult vision developed by the end of 6 years of age.

Amblyopia defined as, a unilateral or bilateral visual deprivation with abnormal binocular interaction without a visible retinal cause commensurate with the visual loss. Amblyopia not only affects the visual acuity but also other qualities of vision Contrast sensitivity, Binocular vision, Fixation, microtropia, Ocular Motility, Accommodation, Crowding, Attention, Motion perception, Temporal processing

Incidence of amblyopia varies from 2- 5 % in children with eye problems (2,3), in rural India it is as high as 12% (4). Recent advances in investigative modalities MRI, OCT revealed low cortical activation, degeneration in the layers of ipsilateral lateral geniculate body, increased macular thickness in amblyopia (5)

Amblyopia classified as (6)

1. Strabismic
2. Anisometropic (unilateral, Assymmetric) Iatrogenic
 - A. Aniso hyperopic
 - B. Aniso myopic
3. Vision deprivation (Unilateral /bilateral)
 - A. Stimulus deprivation (amblyopiaexsopsia) ptosis covering pupil, media opacity, unilateral occlusion, penalization
- B. Ammetropic (uncorrected bilateral high refractive errors)
 - i. High Myopia
 - ii. High Hyperopia
 - iii. Astigmatism (Meridional amblyopia)
4. Nystagmus related amblyopia
5. Organic amblyopia
 - A. Subclinical macular

- B. Cone deficiency syndrome
- C. Mal orientation of Cone

Amblyopia should be treated to avoid the impending complications in the quality of vision. It may lead to blindness and Squint, if neglected. It will have the impact on education, personality development, Negative attitude and significant reduction of employment opportunities. Out come of the treatment depends on the age of the patient, depth of amblyopia, presence of squint, amount of refractive error, other CNS condition like nystagmus and treatment history. Amblyopia responds better if its diagnosed and treated at the early stage, but results are proportionate to compliance of the treatment. Various modalities are available treatment of amblyopia.

1. Refractive correction alone
2. Occlusion therapy
3. Penalization
4. Drug therapy
5. Home vision therapy Internet programs
6. Surgery
7. Pleoptics
8. Cambridge stimulator (CAM stimulator)
9. Red filter

Discussion:

Refractive correction alone improves amblyopia in up to 77% of cases(8,9). But be ware of wrong spectacle correction leads to iatrogenic amblyopia (8). Occlusion therapy is the mainstay of treatment to amblyopia since the 18th century introduced by Buffon, still plays prime role in the treatment especially during placidity period (10). Duration of occlusion therapy is varied from full time, 6 hours, 2 hours and one hour, depends on the age, severity of the condition (11,12). The visual improvement starts from 5 weeks onwards Occlusion has some complications like occlusion amblyopia, the incident is as high as 19.3% (13), cosmetic blemish and psychological effects on the individual which may be solved by proper counseling parents and the class teacher. In the follow up all the cases should be watched for recurrent amblyopia (14). All the cases should be followed up to one year even after complete visual improvement to notice the roll back in the visual acuity and recurrence. The amblyopia which is not responded even after 1 year need to be complete reevaluation.

Material & Methods:

It is a prospective study, to compare the efficacy of 1 hour occlusion with 2 hours period of occlusion in moderate refractive amblyopia. This study includes 24 eyes of 23 pts, 12 males and 11 females, during 16.5.11 -15.6.12. period, between 2

- 17 years of age , with the visual acuity - 6/36 to 6/12, diagnosed as Moderate refractive error (Myopia, Hyperopia, with or without Astigmatism up to 3 Ds/Dcy) are selected to this study. **Exclusion criteria:** Stimulation deprivation, Strabismic, Nystagmus amblyopia.

All the cases are thoroughly examined including best corrected visual acuity, biomicroscopy, refraction, fundus examination to rule out any conditions contributing to loss of vision other than amblyopia . The cycloplegic refraction was done, refractive error are corrected with spectacles.

The cases are divided in to Group A & B: includes Group A: 14 pts. (Two children from a family), One bilateral Amblyopia. Partial occlusion given for one hour during active period of working hours at home ie. while doing home work or watching television, under the supervision of responsible person (Fig .1). Group B: includes 10 pts with 6 hours occlusion under the supervision of many personnel even at school (Fig .2).

Follow up: All the cases are followed for a period of 2 ½ years and examined for Improvement visual acuity, Periodic refraction, Periodic counseling, Change of spectacles if necessary, also reviewed and checked for Recurrence and occlusion amblyopia .

Results: One hour occlusion therapy in moderate refractive amblyopia is as effective as 6 hours occlusion therapy, it is also observed Improvement visual improvement is same in both groups, Monitoring of the individual in the process of occlusion is easy. The psychological effects are less, avoids stigma of full time occlusion, risk of occlusion amblyopia is almost negligible . More acceptable by the child and family, Simple procedure and cost effective, the skin complication of adhesive materials can be avoided, .one hour also helps in bilateral amblyopia, even in more than 10 years of age .

Group A

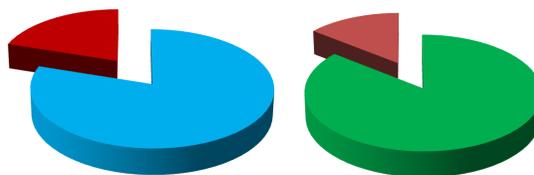
S.No	Sex	Age	Eye	Ref. Error	Initial Vn	Improvement	Final Vn
1.	M	6	OD	-3.00 Ds	6/36	6 Months	6/9
2	F	4	OD	-1.00 Dc x 90	6/12	5 M	6/6
3	F	7	OS	-1.00 Ds / -2.50 Dc x 45	6/36	5M	6/9
4	M	5	OD	+2.00 Ds / +1.50 Dc x 180	6/36	1 Year	6/36
5	M	7	OS	- 1.50 Ds	6/18	6M	6/9
6	F	5	OS	- 2.50 Ds	6/38	4M	6/6
7	F	9	OD	-2.75 Ds / - 3.00 Dc x 110	6/36	9M	6/36
8	M	6	OS	- 1.50 Ds	6/12	6M	6/6
9	M	5	OS	+ 2.00 Dc x 150	6/36	5M	6/12
10	F	7	OD	-2.50 Ds	6/24	3m	6/9

Fig .1: Data of Group A pts and their parameters

Group B

S.No	Sex	Age	Eye	Ref. Error	Initial Vn	Improvement	Final Vn
1	M	6	OD	-3.00 Ds	6/36	6 Moths	6/9
2	F	4	OD	+ 1.00 Dc x 90	6/12	5M	6/6
3	F	7	OS	- 1.00 Ds / - 2.50 Dc x 45	6/36	5M	6/9
4	M	5	OD	+ 2.00 Ds / + 1.50 Dc x 180	6/36	1 Year	6/36
5	M	7	OS	- 1.50 Ds	6/18	6M	6/9
6	F	5	OS	- 2.50 Ds	6/36	4M	6/6
7	F		OD	-2.75 Ds / - 3.00 Dc x 110	6/36	9M	6/36
8	M	6	OS	- 1.50 Ds	6/12	6M	6/9
9	M	5	OS	+ 2.00 Dc x 150	6/36	5M	6/12
10	F	7	OD	-2.50 Ds	6/24	3M	6/9

Fig .2: Data of Group B pts and their parameters



Group A

Fig. 3: Results of Group A

Fig:4: Results of Group B

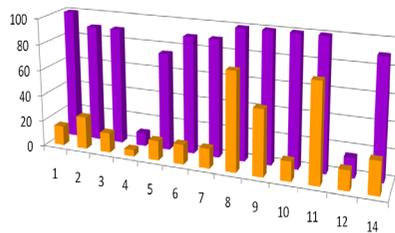


Fig .5: diagram showing visual improvement in Group A. Before and after initiation of one hour occlusion treatment.

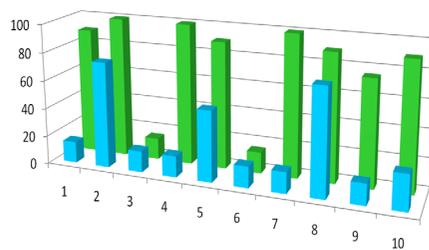


Fig .6: diagram showing visual improvement in Group B. Before and after initiation of one hour occlusion treatment

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