

STENOPEAIC SLIT: A DIAGNOSTIC AND REFRACTIVE TOOL

Partha Haradhan Chowdhury¹ and Brinda Haren Shah²

¹M.Optom, Department of Optometry, Shree Satchandi Jankalyan Samiti Netra Prasikshan Sansthan, Pauri, Affiliated to Uttarakhand State Medical Faculty, Dehradun, India

²B.Optom, Department of Optometry, Gujarat, India

Author's contributions

This work was carried out in collaboration between both authors. Author PHC had wrote the Introduction and Conclusion part of this article. Author BHS had managed the abstract and literature review along with the formatting of the article. Both authors had read and approved the final manuscript.

Article type – short communication

Corresponding Author: Partha Haradhan Chowdhury

Email – optometrypublish@gmail.com

ABSTRACT

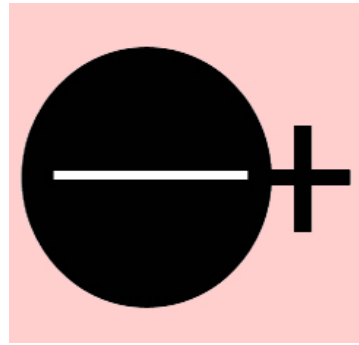
This paper describes about the diagnostic and refractive procedures which were performed with the help of stenopaic slit. The slit is used in performing refraction in cases of high astigmatism, low vision patients, keratoconus patients as well as in performing normal refraction. Slit is also useful in measuring vertex distance to place trial frame properly.

KEYWORDS:

Stenopaic slit, Vertex distance, Refraction

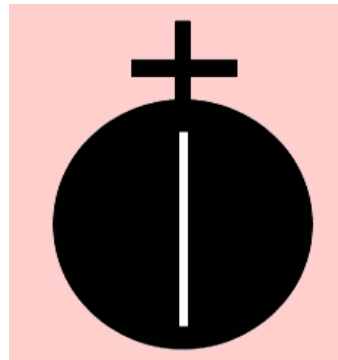
INTRODUCTION

It is an instrument which is very useful for subjective refraction in certain circumstances. There is a rectangular aperture with 0.5 to 1.0 mm width and 15 mm in length. It is made up of a plastic body which consist slit in one portion and another portion is opaque. That's why it is assumed that opaque part is able to limit the admission of light to the eye. For this reason, it is able to reduce the blur circle in some particular area. Due to this, it is also responsible to create blur circle of its slit area.



28

29 Stenopaic slit is also helpful in performing refraction because slit is able to find out the principal
 30 meridian. To start the refraction with slit, monocular fogging and de fogging should be done until the
 31 best correction is achieved. Then the slit is rotated slowly till the patient appreciates best vision in that
 32 meridian with the best correction. At this position, again eye is being fogged and then defogged at
 33 0.50 diopters step interval until the patient reaches the best acuity. The power should be noted for
 34 that particular axis. Then the slit position should be rotated 90 degrees apart from its previous position
 35 and the procedure is repeated.



36

37 If the power in the opposite meridian is same as the previous meridian, then final power will be
 38 spherical. If not, cylindrical component is present in the refractive error. To find out the cylindrical
 39 component, two cylindrical powers which are obtained should be combined and transposed into a
 40 sphero cylinder form. Then slit should be removed which was placed before the eye and visual acuity
 41 should be noted with the sphero cylinder power in the trial frame.

42 Example, when the slit is positioned at 90 degree axis and power is -1.50 Dsph and in the other
 43 meridian at 180 degree axis, power is -0.50Dsph, then the final refractive error will be, -0.50 Dsph /-
 44 1.00 Dcyl 180*. This procedure is always performed monocularly.

45 Letter chart is always **used** when performing refraction with stenopaic slit. Some scientists also
 46 suggest that use of Landolt C chart or T chart can be used. T chart is recommended because stem of T
 47 is beneficial to confirm the meridional orientation. If the chart is not visible, then the subject is moved
 48 closer to the chart until the largest letter can be visible.

49 Stenopaic slit is also used in performing refraction in keratoconus patients. In cases of keratoconus,
50 there is irregular astigmatism. Slit can be used to isolate the two primary meridians which are
51 obliquely oriented. Assuming regularity of astigmatism, the slit may be used to measure the powers in
52 any three or more meridians as a basis for combination into the full refractive error, or meridional
53 decomposition may be accomplished by measurement in one primary meridian and any two other
54 oblique meridians.

55 Vertex distance can also be assessed with the help of stenopaic slit. The trial frame should be fitted
56 on the patient's face. Ask the patient to close eyes. Slit should be kept in the trial frame. A thin ruler
57 should be passed through the slit, till ruler is touched to the eyelid. Measurement is noted. 1 mm
58 should be added to the findings to compensate for the eyelid thickness.

59 Stenopaic slit is useful when the patient is having high astigmatism and mainly in low vision
60 patients.

61

62 **CONCLUSION:**

63 Stenopaic slit is used as diagnostic as well as refractive tool. It is used in performing refraction in
64 cases of high astigmatism, refraction in low vision as well as in keratoconus patients. It is also useful
65 in measuring vertex distance with the trial frame.

66 **CONSENT :**

67 It is not applicable.

68 **ETHICAL APPROVAL:**

69 It is not applicable.

70 **COMPETING INTERESTS**

71 Authors have declared that no competing interests exist.

72 **REFERENCES:**

- 73 1. Paul L. Pease (2006) Borish's Clinical Refraction. William J. Benjamin Second ed.
- 74 2. Richard L. Brilliant, Essentials of low vision practice
- 75 3. Ronald B. Rabbett's, Clinical Visual Optics
- 76 4. Theodore Grosvenore (2007), Primary Care Optometry, Fifth Edition
- 77 5. Janice k. Ledford et al, Optics, Retinoscopy and Refractometry, second Ed.
- 78 6. Andrew Keirl et al, (2007) Clinical Optics and Refraction – A guide for optometrists, contact
79 lens opticians and dispensing opticians, First ed.
- 80 7. Nancy B. Carlson, Daniel Kurtz (2015), Clinical Procedures for Ocular Examination,
81 Fourth Edition
- 82 8. Barbara Brown, (2007), The Low Vision Handbook for Eye care Professionals, Second
83 Edition
- 84 9. Edward S. Bennett, Barry A. Weissman, (2005) , Clinical Contact Lens Practice
- 85 10. Ajay Kumar Bhootra (2014), Clinical Refraction Guide, First Edition