



Optical instruments

Lecture `10

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Synoptophore

The main principal of synoptophore / haploscope

Measurement of deviation in 9 gaze positions

Measurement of Torsion

Clinical evaluation of binocular vision: (a) retinal correspondence: normal or abnormal; (b) presence and type of suppression; (c) stereoscopys mechanical dividing of sense of right and left eye

The test

- The patient should be seated at the Synoptophore
- The inter-pupillary distance (IPD) should be adjusted so the lines on the eyepiece line-up with the corneal reflections
- The smaller picture, i.e. the lion, should be placed in the slide holder in front of the fixing eye, whilst the larger picture should be placed in front of the fellow eye.

Simultaneous Perception (SP)

Objective Measurement

By alternatively switching off the lights illuminating the slides an alternate cover test is performed. The patient's eyes are dissociated and as the single illuminated picture is projected onto each fovea alternately a re-fixation movement occurs. The direction of the eye movement is examined and the tube before the non fixing eye is adjusted until no eye movement is seen, or reversal of movement is noticed. The measurement is then read off the scale in degrees. This can be repeated for vertical deviations however measurements should be read off the scale in prism dioptres (Δ).

Subjective Measurement

The patient pulls/pushes the handle controlling the non-fixing eye's tube until the two images are superimposed. If this is difficult or not possible suppression may be present and a larger target should be introduced, however, if superimposition is not achieved with peripheral slides then the patient has no potential BSV.

Motor Fusion

To measure the range of fusion, it is preferable to start with convergence, gradually turning the arm of the Synoptophore inward and asking the patient if he sees (i.e) a cat with a tail and ears. Continue converging until the patient sees two cats. It is possible for the patient to keep the images unified because of adaptive convergence, which occurs when the range of fusion is exhausted. The images then appear smaller.

Likewise, we turn the arms outward and determine the fusion deviation

Stereopsis

The slides are inserted into the slide holders with the controls of each slide positioned towards or away from the subject.

The patient is then required to describe the apparent effect i.e. a swing moving towards or away from them.

The test should be repeated, with the slide controls changing position, to ensure the stereoscopic effect is authentic and the patient is not guessing