

INTEGRATION OF MODERN TECHNOLOGY IN NETRA ROGA

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ABSTRACT

Shalakya Tantra is the branch of Ayurveda dealing with the disorders related to eye ear , nose throat and mouth including head region thus all disorders above clavicle region. Here we specially focus on eye disorders and those latest technologies that are been developed by scientists and are being very beneficial for the better diagnosis and hence better treatment thus serving to the human kind in better way . various innovations are continuously done by the engineers for the sake of better and easy instrumentation in a way that is easy to use and useful too. In that sense we can innumerate here so many instrument and techniques that are very commonly used in eye clinics , like vision charting , slit lamp, ophthalmoscope , retinoscope , refractometer , oct , perimetry and so on .

Keywords: ocular diseases, instruments, shalakya, technology,

INTRODUCTION

Ayurveda the basic life science that has been searched and researched again and again as it is a vast source of hidden herbs and treatment protocols as well as it provides us the basic life style through which we can stay and happy and healthy forever . *Shalakya tantra* is among one of basic branches of Ayurveda that deals with many disorders of supraclavicular region. The ancient scientists have so immense knowledge that they described all the diseases, their cure too that we found still in toady modern era. Although the basic problem lies in the fact that the way this subject described in our texts in verse form and they just numerated all the things in the way they found at that time accordingly , but now in the present era we cannot find it easy to understand the anatomy and so on further

diagnosis related to eye disorders , in this context if we have the the knowledge of present science that is providing us the very fine details of eye through the help of technology so that we can have better understanding of the organ and hence the diseases its pathology and hence treatment[1] . Thus we go through the basic instruments that are perhaps now become the essential in eye clinics.

Techniques in Ophthalmology provides practical, easy to read reviews of current surgical techniques and instrumentation in each of the ophthalmologic subspecialties Cataract Surgery, Refractive Surgery, Corneal Surgery, Glaucoma Surgery, Oculoplastic Surgery, Retinal Surgery, and Pediatric Surgery highlighting unbiased consumer product evaluations and comparison.

Techniques in Ophthalmology are indispensable, step-by-step guidance on the most effective procedures can employ in cataract, refractive, corneal, glaucoma, oculoplastic, retinal, and pediatric surgery. In a highly visual, easy-to-read review format, the journal discusses such relevant topics as: My Current Cataract Technique, Refractive Surgery Options, and Use of Botox for the Periorbital Tissues, Review of Automated Refractors. The role of diagnostic techniques are as important as that of the clinician. A correct diagnosis helps in differentiating functional, organic, idiopathic and so many diseases. In order to be useful the tools must be properly performed, accurately read, and correctly interpreted. Some procedures that are performed in routine are assessment of vision, slit lamp examination. Tonometry, gonioscopy, perimetry, ophthalmoscopy.

Some other procedures like evaluation of optic nerve head, fundus fluorescein angiography, are invaluable as they not only help in diagnosis, and documentation, but also help in monitoring of the disease.

Assessment of visual acuity is the first and foremost and step in eye examination, vision disorders have an impact on the quality of life of patients, of all age group. It is the most important criteria for testing of functional integrity of eye and visual pathway. It is defined as a ratio of patients visual acuity as compared to standard vision [2] commonly it is measured by snellens chart. Other is the bailey – lovie chart - preferred in the early treatment diabetic retinopathy study.

Slit lamp is an instrument consisting of high intensity of light source that can be focused to shine a thin sheet of light into eye it facilitates the examination of anterior segment which includes eyelid, conjunctiva, sclera,

cornea, iris, anterior chamber, lens. The binocular examination helps in providing stereoscopic details of eye structures in a magnified way [3]. Supplementary optical aids such as lenses aids in permitting observation of posterior segment and iridocorneal angle that are not visible in direct optic pathway, in addition it helps in assessment of intraocular pressure and as teaching aid. also used in contact lens assessment and fitting. Slit lamp photography enables documentation of findings, providing a convenient option for tracking the progression of disease in the eye.

Ophthalmoscopy --It remains an important tool for complete evaluation of posterior segment of eye. It is of two types direct and indirect. Direct ophthalmoscope is most commonly used in practice. [4]

Fluorescein angiography –The study and diagnosis of retinal, macular, and choroidal pathologic lesions have been greatly revolutionized with advent of fundus fluorescein angiography. From initial laboratory tool it has now become a useful diagnostic tool that has aided diagnosis and monitoring of treatment of retinal, vascular and macular disorders. Over the last 40 years, it has been successfully utilized in many research clinical trials. With the development of high quality retinal fundus camera, digital imaging, and photographic filters high resolution angiography, of angiography of retina and choroid is possible. The basic principle is based on understanding of luminescence and fluorescence. The visualization of choroidal circulation is better with indocyanine green angiography. [5]

Gonioscopy –The angle of anterior chamber cannot be visualized directly through an intact cornea because light emitted from angle undergoes total internal reflection at anterior

surface of precorneal tear film. so the gonio lenses are used that eliminate total internal reflection by replacing tear film interface with new tear film gonio lens interface .[6]

Corneal topography ---cornea is the most important the optic component of human eye providing two third of refractive power of eye. As its surface is irregular, it is not radially symmetric, its correct measurement is inaccurate . The fraet upsurge in refractive surgery led to the need of improved methods to analyze corneal surface and shape. keratometer is used for assessing intraocular lens power , and contact lens fitting .[7]

Corneal topography is a non invasive imaging technique for mapping the surface curvature of cornea. Its clinical uses are in detecting corneal pathologies, like ectactic disorders, keratoconus , marginal degeneration , keratoglobus , pterygium in assessing the refractive status of patient before refractive surgery .

Tonometry ---it is used for intraocular pressure assessment that is the criteria for treating and aassessing the glaucoma patients now a day .it can be done through palpatory method, or by contact tonometers , like indentation or applanation . [8] Optic disc assessment in glaucoma ---Stereoscopic clinical evaluation of and imaging of optic nerve head with photographs is the most important and common means of diagnosing glaucoma. It helps in early detection of glaucoma. A variety of contact and non contact lenses are available that allow stereoscopic fundus view on slit lamp. Vertical and horizontal cup disc ratio helps in assessing neuropathy. And early detection of glaucoma [9] asymmetric cupping is also suggestive of glaucomatous damage. A focal or diffuse neuroretinal rim is typical in glaucoma. Splinter hemorrhages on optic disc are common find-

ing in glaucoma.nazalisation of vessels and bearing of circul linear vessels as well as peripapillary atrophy are common finding in glaucoma.

Perimetry --The central 30 degree visual field examination is the current gold standard in evaluation, management and follow up of glaucoma .characteristic visual field defect are typicall in evaluating glaucoma.

Ultrasonography -- it is non --invasive efficient, in expensive diagnostic tool to detect and differentiaite various ocular and orbital pathologies. it is an indispensable tool for the calculation of intraocular lens power , evaluation of posterior segment behind dense cataract or vitreous hemorrhage , diagnosis of complex vitreo retinal condition and differentiation of ocular mass . A scan is indicated for evaluation of posterior segment of eye in the presence of complete or partial opacification of anterior or posterior segments. It is also used to evaluate and localize and differentiate tumors and assess its growth during follow up, as well as to detect intraocular foreign bodies and assess extent of intraocular damage in case of trauma. Biometry is another important indication of a scan for accurate axial length of globe, evaluating congenital glaucoma, microphthalmos , myopia , pthiss bulbi .[10]

Morphological characteristics of eyeball, it's content, corneal thickness, lens thickness, anterior chamber depth, relative lens position, can be studied with the help of A scan. The B scan covers a considerably larger area than a single a mode. It provides two dimensional topographic documentation, B scan is used to define a lesions shape, and position. Ultrasound biomicroscopy has its advantages in visualizing structures behind iris , for ruling out plateau iris , angle closure glaucoma , , anterior segment tumour , it of-

fers better visualization of posterior margin , and provides overall better images .

Spectral domain optical coherence tomography –It is new medical diagnostic technology that can perform micron resolution tomographic cross section imaging of biological tissues. it is used to measure retinal thickness , retinal nerve fibre layer , volume of retina , create retinal maps , various parameters of optic disc , displays three d images , thus it is useful in detection of disease, evaluation of treatment efficacy , quantify the lesions, taking progression of disease and patient education . This technique is simple, short learning, fast, reliable, sensitive, reproducible, and noninvasive.

Ocular surface staining –fluorescein sodium, rose Bengal, lissamine green are the most commonly used dyes for corneal staining.

Fluorescein dye stains areas of corneal and conjunctival epithelia where there is disruption of intracellular junctions to allow the dye to permeate into the tissue.

Schirmer test helps to exclude pseudoepiphora, it is used to assess basal secretion of tears and reflex tearing. Other tests include syringing, probing, dye disappearance test, jones test in cases of epiphora.

CONCLUSION

Thus after having the overview of the major and common techniques we can understand that ophthalmology has now reaching to the sky through its branches in diagnosis and treatment. As we go through our ancient classical ayurveda texts, we find that all the description of diseases in every vast way with its treatment too. but the basic problem lies in the understanding the anatomy and physiology of the eye as the way it is being mentioned in the texts , so here being flexible we should be get more aware

and should utilize these scientific tools for better understanding, then ayurveda treatment to be followed.

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