**Retina**

Retinopathy of Prematurity (ROP)

This disease occurs in prematurely born and underweight babies due to lack of development of the retina. It is known to occur in 40% of premature babies.

Hence, all babies born before the 34nd week or weighing less than 1800 grams are screened for ROP. In addition, babies diagnosed to be at a high risk of developing ROP by a neonatologist are also screened. The first screening takes place within 30 days of birth.

The modalities for screening available at our hospital are two Wide Field Cameras that help screen small babies by taking photographs of the retina:

* Retcam: a digital camera system that has been developed in the U.S.
* Neo 3netra: a digital camera developed in India

In case any abnormality is found during screening, the doctor decides the severity of the disease based on the pictures thus obtained. These digital photographs are then shown to the parents of the child to help them understand the problem.

The most common treatment for ROP is laser therapy for which anaesthetic drops are administered. In very advanced cases, other options, such as intravitreal avastin therapy or vitrectomy surgery, are recommended. The child needs to undergo retinal screening upto the age of three.

Our hospital is the fourth centre in India, and the only one in Maharashtra, to have a dedicated ROP service. Hence, it caters to the population of the entire state. Moreover, it is one of the few hospitals in India that provides surgery for advanced cases.

We run this program by extending services to various prime hospitals across Pune that offer the NICU facility. Screening and laser treatment is provided during these visits. In addition, patients admitted into Sassoon Hospital and Aundh Civil hospital are covered free of charge. Doctors from civil hospitals in five districts of Maharashtra, viz. Thane, Nashik, Usmanabad, Nagpur and Pune, are provided training at HVD in collaboration with the government of India.

So far, we have screened more than 10,000 babies, of which more than 1,000 babies have undergone laser therapy and enjoy good vision today. Intravitreal avastin therapy has been performed in 100 babies. In cases with very advanced ROP, which is potentially blinding, we have carried out vitrectomy surgeries in 85 babies and helped prevent blindness.

**VR Speciality**

The retina is a delicate multi-layered film that is present in the innermost posterior part of the eyeball, which transmits light to the nerve impulses and sends them to the brain via the optic nerve for the perception of visual images. Macula is the most sensitive part of the retina, and is responsible for central vision. In the posterior segment, the eyeball is filled with a transparent gel-like structure, known as the vitreous, which helps transmit light to the retina as well as maintains the structure of the retina. Loss of clarity of the vitreous can occur in a condition known as vitreous haemorrhage (due to the accumulation of blood). Grave conditions that can lead to total loss of vision are retinal detachment (neurosensory retina gets separated from the retinal pigment epithelium) and hereditary & acquired macular diseases. Retinal diseases can not only affect adults, but also newborns. Premature babies are highly prone to develop a condition called Retinopathy of Prematurity (ROP), which, if not treated on time, can progress to retinal detachment and eventually, in loss of vision. Retina is also likely to be affected by trauma and common medical conditions such as diabetes and hypertension.

Various medical and surgical treatments are available for the above-mentioned conditions. Complicated vitreo-retinal surgeries are performed successfully every day. Various types of lasers and intravitreal injections are given to patients for the treatment of retinopathy of prematurity.

The retina department of H.V. Desai Eye Hospital is flourishing under the valuable guidance and experience of the head of department Dr. Sucheta Kulkarni, who has expertise in medical retina, public health and epidemiology.

Facilities available at H.V. Desai Hospital are:

**Investigations**

* Retcam examination: Advanced high-resolution imaging technology for the consistency of reports to detect retinopathy of prematurity and conduct a detailed evaluation without the long exposure of newborns to the examination procedure and documentation. Highly trained personal for the use of such advanced technology
* Ultrasonography: To view intraocular structures in opaque media and trauma
* Fundus fluorescein angiography: To view leaking vessels, neovascularization and non-perfused areas of the retina
* Indocyanine green angiography: To view choroidal circulation
* Fundus photography: For the detailed viewing and documentation of retinal images
* Optical coherence tomography: To evaluate retinal thickness in cases of edema, to detect macular holes, tumours, retinal detachment, epiretinal membrane, and various other retinal diseases
* Electroretinography: To graphically represent the functional capacity of the retinal cells
* Visual evoked potential: For the measurement of the electrical activity of the visual system to detect mechanical and neural abnormalities related to vision

**Medical Treatment**

* Various lasers are used to stabilise retinal diseases, such as diabetic retinopathy, vascular diseases, tumours and retinopathy of prematurity, among others, which are delivered either with the help of a slit lamp or by an indirect ophthalmoscope. Lasers available at the hospital include diode, frequency doubled Nd:Yag laser and argon laser
* Transpupillary thermotherapy is used for the treatment of tumours. They damage the abnormally growing vessels while causing minimal trauma to the normal retina
* Intravitreal injections: Intravitreal anti-VEGF injections are used for the treatment of conditions in which there is growth of new abnormal leaky vessels due to underlying disease that causes ischaemia of the retina. It can also be used in cases of macula edema. Moreover, intravitreal steroids can be used for the effective treatment of macular edema. Intravitreal antibiotics are used for the treatment of grave ocular infections to effectively deliver these drugs into the eyeball.

**Vitreo-retinal surgery**

Pars plana vitrectomy with silicon oil or gas injection, core vitrectomy, epiretinal membrane peeling, macular hole surgery and intraocular foreign body removal are performed regularly at H.V. Desai Eye Hospital. Modern-day surgeries are performed with the help of smaller size trocar/cannula systems such as 23G, 25G and 27G. These help in better wound reconstruction and healing, as well as prevent post-operative infections. All the vitreous-retinal surgeries performed at H.V. Desai Eye Hospital are performed by highly educated and skilled surgeons who have several years of experience in this field.