

Guidelines
For
Competency Based Training Programme
In
FNB- Vitreo Retinal Surgery
2022



NATIONAL BOARD OF EXAMINATIONS IN MEDICAL SCIENCES
Medical Enclave, Ansari Nagar, New Delhi-110029, INDIA
Email: mail@natboard.edu.in Phone: 011 45593000



TABLE OF CONTENT

S.No	Content	Page No.
I.	Introduction:	3
II.	Objectives of The Programme:	4
III.	Teaching and Training Activities:	5
IV.	Syllabus:	6-8
V.	Competencies:	9-10
VI.	Logbook:	11
VII.	Recommended Books, Journals, Societies and Web Resources:	12



I. INTRODUCTION:

Surgical intervention is routinely indicated in patients with specific disorders like rhegmatogenous retinal detachment, proliferative vitreoretinopathy, complications of proliferative vascular retinopathy [non-resolving vitreous hemorrhage, tractional retinal detachment, combined detachment], posterior segment complications following trauma, complications following cataract surgery [dropped crystalline lens, dropped intraocular implant], vitreomacular traction, epimacular membrane, macular hole, endophthalmitis and other conditions. In addition, skill acquisition in the field of vitreoretinal surgery would be important in carrying out recently approved procedures like implantation of retinal prosthesis, sustained drug delivery devices and gene therapy. Knowledge about investigations like ultrasonography [USG], fluorescein angiography and optical coherence tomography [OCT] would also be needed in making the right decisions. Retinal photocoagulation is an integral part of managing patients needing vitreoretinal surgery and so skill must be acquired on this front. Becoming proficient in vitreoretinal surgery requires a strong foundation regarding the surgical anatomy, complex surgical equipment [high end vitrectomy machines] and surgical maneuvers. It is also paramount to understand the limitations of the interventions, legal and ethical obligations.



II. OBJECTIVES OF THE PROGRAMME:

1. To train competent vitreoretinal surgeons who would be able to independently manage common retinal disorders needing surgical intervention.
2. To provide a structured training environment that would consist of a foundation course, interactive sessions, workshops, reviewing evidence levels and learning through active assistance in the operation theatre
3. To integrate trainees who successfully complete the fellowship into the secondary and tertiary level of health care, so as to enhance the chain of health care delivery within the country
4. To encourage, with time, fellows to themselves take up the responsibility of mentoring other young vitreoretinal surgeons
5. To inculcate the tenets of research methodology and encourage the pursuance of continuous learning and upskilling based of evolving advances and recommendations



III. TEACHING AND TRAINING ACTIVITIES:

Components of the teaching programme aims to provide the fellows with adequate knowledge, skill and attitudes required to become a specialist in the field of vitreoretinal surgery. This would be achieved with a mix of theoretical, practical and hands on approaches and would include the following-

1. Case evaluation and discussions
2. Problem based learning
3. Peer group discussions and interactive sessions
4. Focused symposia and lectures [including invited guest lectures by experts]
5. Journal club presentations
6. Ethics submission, manuscript writing and reviewing
7. Participation in specialty related workshops, meetings, conferences
8. Maintenance and audit of a detailed surgical log-book
9. Regular mentor-fellow reviews
10. Mock examination sessions
11. Six-monthly evaluation
12. 1-month self-financed observer ship in vitreoretina [at another training facility]



IV. SYLLABUS:

1. Basic Sciences:

- i. History and evolution of vitreoretinal surgery
- ii. Surgical and applied anatomy (in relation to vitreoretinal surgery, including extraocular muscles and vasculature)
- iii. Physical principles of vitreoretinal equipment
- iv. Optics of operating microscope and visualization systems
- v. Properties and dynamics of intraocular gases and vitreous substitutes
- vi. Basics of laser- tissue interaction in relation to vitreoretinal procedures
- vii. Basics of tissue handling [including suture material, knot tying, types of needle and forceps].
- viii. Landmark vitreoretinal surgery studies

2. Diagnostic Procedures:

- i. Principles, applications and interpretation of Ultrasonography (USG)
- ii. Principles, applications and interpretation of Optical coherence tomography (OCT)
- iii. Principles and applications of Indirect ophthalmoscopy/ Fundus biomicroscopy [and drawing retina charts]
- iv. Principles, applications and interpretation of Fluorescein angiography and Fundus autofluorescence

3. Specific Vitreoretinal Disorders

- i. Diabetic retinopathy and its complications
 - a. Non-resolving vitreous hemorrhage
 - b. Tractional retinal detachment
 - c. Combined retinal detachment
 - d. Progressive/ resistant neovascularization
- ii. Peripheral retinal degenerations and their management
- iii. Acute posterior vitreous detachment (PVD) and its complications
 - a. Retinal tear
 - b. Retinal detachment
 - c. Proliferative vitreoretinopathy
- iv. Anomalous PVD and its complications
 - a. Epimacular membrane
 - b. Vitreomacular traction syndrome
 - c. Macular hole



- v. Myopia and its complications
 - a. Myopic tractional maculopathy
 - b. Foveoschisis
 - c. Macular hole
 - d. Macular hole with retinal detachment
 - e. e. Rhegmatogenous retinal detachment (simple and complex)
 - f. f. Giant retinal tear [GRT]
- vi. Posterior segment complications of ocular trauma
 - a. Retinal dialysis/ tear
 - b. Retinal detachment (including GRT)
 - c. Retained intraocular foreign body
 - d. Endophthalmitis
 - e. Globe rupture
 - f. Macular hole
- vii. Posterior segment complications of cataract surgery
 - a. Endophthalmitis
 - b. Dropped nucleus/ crystalline lens
 - c. Dropped/ dislocated IOL
 - d. Posterior capsular rupture
 - e. Retinal detachment
- viii. Endophthalmitis [metastatic/ rare forms]
- ix. Complications of Intraocular inflammation (Vasculitis and Uveitis)
 - a. Non-resolving vitreous hemorrhage
 - b. Retinal detachment [tractional/ rhegmatogenous/ combined]
 - c. Resistant intraocular/ vitreal inflammation
 - d. Masquerade inflammation (intraocular lymphoma)

4. Surgical Techniques

- i. Cryotherapy for peripheral degenerations/ dialysis/ tears
- ii. Laser therapy for peripheral degenerations/ dialysis/ tears a. Conventional b. Laser indirect ophthalmoscope (LIO)
- iii. Scleral buckling surgery
- iv. Pneumatic retinopexy
- v. Intravitreal injections [including drug implants]
- vi. Vitreous biopsy



- vii. Pars plana vitrectomy for
 - a. Vitreous hemorrhage
 - b. Macular hole
 - c. Epimacular membrane
 - d. Vitreomacular traction
 - e. Dropped IOL
 - f. Dropped nucleus
- viii. Vitreoretinal surgery for
 - a. Rhegmatogenous retinal detachment
 - without proliferative vitreoretinopathy
 - with proliferative vitreoretinopathy
 - b. GRT associated retinal detachment
 - c. Tractional retinal detachment
 - d. Combined tractional-rhegmatogenous



V. COMPETENCIES:

1. **Basic science:**

- i. Attain understanding of the structure and function of the eye and its parts in health and disease including Anatomy, Physiology, Genetics, Biochemistry, Microbiology, Pharmacology etc. and its relevance to retina.
- ii. Attain understanding of, and develop competence in, executing common general laboratory procedures employed in diagnosis [e.g., gram staining, KOH preparation] and basic research in retina.

2. **Diagnosis and management:**

The fellow will be given adequate opportunity to work on the basis of graded responsibilities, in outpatients, in-patient, and operation theaters (on a rotational basis). The fellow will be given an opportunity to work on a rotational basis in various sub-fields of Vitreo-Retina. This would train the fellow to be able to examine, diagnose and demonstrate understanding of management of (medical and surgical) complicated problems in the field of Vitreous & Retina. Thus, from the day of commencement to completion of the training program, the fellow shall be able to:

- i. Acquire scientific and rational approach to the diagnosis of ophthalmic cases.
- ii. Acquire understanding of, and develop inquisitiveness to investigate, cause and effect of diseases.
- iii. To understand the principles, perform observe all routine and special ophthalmic investigations for example, Slit lamp examination, Dark room procedures, Electrophysiological Tests (ERG, EOG, VER) etc.
- iv. Manage and treat all common and some rare categories Vitreo-Retina related cases
- v. Competently handle all ophthalmic medical and surgical emergencies
- vi. Competently handle and execute safely all commonly performed retinal surgical procedures

3. **Ophthalmic pathological/microbiological/biochemical sciences:** The fellow should be able to interpret the relevant pathological/ microbiological / biochemical data and correlate with clinical data.

4. **Should be able to identify systemic emergencies of acute nature and carry out an effective emergency management:**



- 5. Tele-consultation and Tele-ophthalmology:** Fellows in training shall be exposed to the approaches, advantages and limitations of these facilities in the diagnosis and management of vitreoretinal disorders
- 6. Research:** The fellow shall be able to-
- i. Recognize a research problem.
 - ii. State the objectives in terms of what is expected to be achieved in the end.
 - iii. Plan a rational approach, with appropriate controls, with full awareness of the statistical validity of the size of the material.
 - iv. Spell out the methodology and carry out most of the technical procedures required for the study.
 - v. Accurately, systematically and objectively record results and observations made.
 - vi. Analyse the data with the aid of appropriate statistical analysis.
 - vii. Interpret the observations in the light of existing knowledge and highlight in what ways the study has advanced the existing knowledge on the subject and what further remains to be done.
 - viii. Fellow should have knowledge of ethical issues involved in research and publication.
 - ix. Fellow should be encouraged to write at least one scientific paper of National / International Standards from the material of this thesis.
- 7. Teaching:**
- i. To write Symposiums/ Seminars and critically discuss them
 - ii. To methodically summarize internationally published articles according to prescribed instructions and critically evaluate and discuss each selected article
 - iii. To present cases at clinical conferences, discuss them with his colleagues and guide his juniors in groups in evaluation & discussion of these cases.
 - iv. To mentor younger colleagues in acquiring clinical skills needed for accurate diagnosis, interpretation and management of vitreoretinal disorders
 - v. To mentor younger colleagues on the surgical anatomy and basic steps of vitreoretinal surgery



VI. LOGBOOK:

Every candidate, at the time of practical examination, will be required to produce performance record (logbook) containing details of the work done by him/her during the entire period of training as per requirements of the logbook. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution. The logbook shall be made available to the board of examiners for their perusal at the time of the final examination. In the absence of production of logbook, the result will not be declared.

Every candidate shall maintain a log-book that is indicative of the following-

1. Record of preoperative evaluation, intraoperative observations, postoperative condition (assisted / performed) during the training period [each case must be certified by the concerned post graduate teacher / Head of the department / senior consultant]
2. Topics indicated in the curriculum that were covered during the course of the training [with details of date, name of teacher and certified by the teaching staff]
3. Record [with certification] of all academic activities undertaken by the fellow [cases presented/ discussed, symposia presented/ participated, group discussions-presented/ participated, vitreoretina workshops participated, vitreoretina CME participated/ attended; investigative procedures performed/ interpreted [USG/ OCT/ FFA/ ICG/ Electrophysiology (if available)]
4. Record active participation in educational and research activities of the institute [multicentric studies, Institutional studies, manuscript writing/preparation and submission, manuscript review]
5. Record manuscripts published [Indexed and non-indexed; as part of multi-authorship publication], posters presented [as part of multiauthor submission], oral presentations made [by herself/ himself]. Certified copies of these must also be affixed to the logbook.



VII. RECOMMENDED BOOKS, JOURNALS, SOCIETIES AND WEB RESOURCES:

1. Retina [Surgical retina volume]. Ed. Stephan Ryan. Elsevier Publishers
2. Vitreous microsurgery. Charles S.
3. Benson. Retinal detachment. 3rd Edition. Lippincott Raven Publishers
4. Vitreoretinal surgery- Progress 3. Rizzo S. Springer, 2010
5. Principles and Practice of Ophthalmology. Gholam Peyman
6. Principles and Practice of Ophthalmology. Albert and Jakobiec
7. Adler's Physiology of the Eye
8. Snell's Clinical Anatomy
9. The Eye. Basic sciences in Practice. Forrester. Saunders Publication
10. RETINA [Journal]
11. Ophthalmology [Journal of American Academy of Ophthalmology]
12. International journal of retina and vitreous [IJRV]
13. Survey of Ophthalmology
14. International Ophthalmology Clinics
15. Progress in Retinal Research
16. Eye Research
17. Ophthalmology, Retina
18. ICO [International Council of Ophthalmology]
19. ORBIS International
20. VRSI [Vitreoretinal Society of India]
21. Eyetube.net [Source for surgical videos]
22. Eyetext.net [www.Eyetext.net]
23. ASRS, Euretina, EVRS [paid vitreoretina societies]

