Ophthalmic Diseases in Relation to Anesthesia

1st Course

Lecture : 4

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Objectives

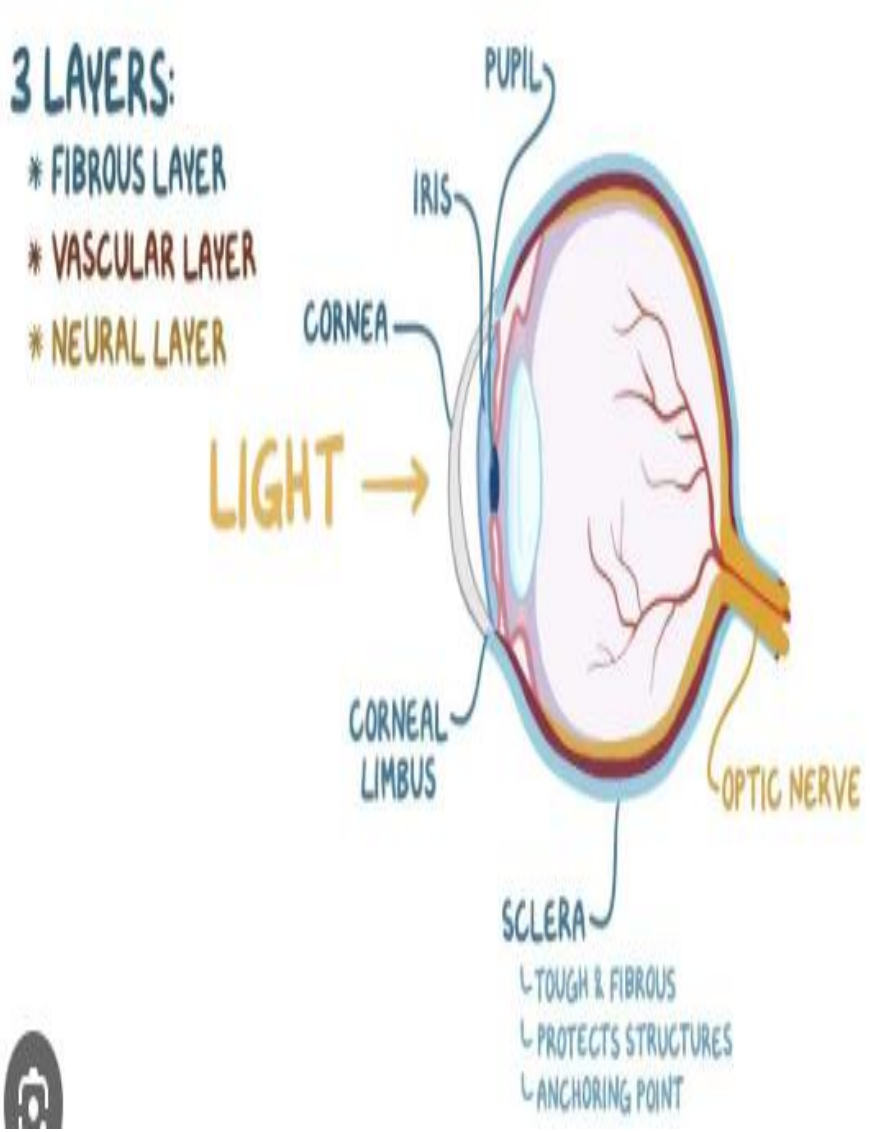
1. Understand basic eye anatomy and physiology
2. Know how anesthesia affects the eye
3. Identify anesthetic considerations in common eye diseases
4. Learn proper eye care for ICU and unconscious patients

Importance

1. Eye surgeries are delicate and sensitive to anesthetic effects
2. Small changes in intra-ocular pressure (IOP) can affect vision
3. Cooperation between anesthetist and ophthalmologist is vital

Anatomy Overview

1. Eye layers: cornea → sclera → choroid → retina
2. Optic nerve connects to brain
3. Blood supply from ophthalmic artery



Innervation & Reflexes

1. **Sensory:**

   trigeminal nerve (ophthalmic branch)
2. **Motor**:

   occulomotor, trochlear, abducent
3. **Occulocardiac reflex**:

   eye pressure → vagal bradycardia

Anesthesia & Intraocular Pressure

1. IOP ↑ with:

   coughing, straining, ketamine, succinylcholine

2. IOP ↓ with:

   propofol, volatile agents, controlled ventilation

3. Avoid sudden pressure changes

Glaucoma

1. Chronic ↑ IOP damages optic nerve
2. Avoid drugs that increase IOP
3. Keep smooth induction & emergence
4. Avoid prolonged Trendelenburg position

Cataract

1. Common in elderly (ASA II–III)
2. Usually local or short GA
3. Avoid excessive sedation → airway obstruction
4. Protect operated eye post-op

Retinal Detachment

1. Delicate retina; risk of re-detachment
2. Avoid coughing, vomiting, nitrous oxide
3. Control BP and IOP carefully

Keratitis / Corneal Injury

1. Prevent direct trauma or dryness
2. Lubricate eyes before GA
3. Avoid mask pressure on eyes

Uveitis

1. Inflammatory eye disease; may use steroids
2. Monitor steroid effects (BP, glucose)
3. Avoid stress response → ↑ IOP

Diabetic Retinopathy

1. Fragile retinal vessels
2. Maintain stable blood sugar and BP
3. Avoid fluid overload and hypoxia

Orbital Trauma

1. Airway may be difficult
2. Risk of optic nerve damage
3. Gentle ventilation, control bleeding

Graves' Ophthalmopathy

1. Associated with hyperthyroidism
2. Exophthalmos → risk of corneal exposure
3. Avoid sympathetic stimulation
4. Lubricate eyes during GA

Conjunctivitis & Infection Control

1. Highly contagious
2. Use strict aseptic technique
3. Avoid cross-contamination of equipment

Occulocardiac Reflex

1. Afferent: trigeminal → Efferent: vagus
2. Bradycardia or asystole (possible).
3. Management: stop traction, give atropine, deepen anesthesia

Anesthetic Techniques

1. **General anesthesia:** pediatric, uncooperative, long surgery
2. **Regional blocks:** retrobulbar, peribulbar, topical
3. Choose technique based on patient & surgeon

Airway & Position

1. Avoid neck vein compression
2. Slight head elevation decreases IOP
3. Smooth induction and extubation

Eye Care in ICU (1)

1. Unconscious patients risk **exposure keratopathy**
2. Causes: incomplete lid closure, no blink, low tear production
3. Check eyes daily

Eye Care in ICU (2)

- **Prevention:**

1. Lubricating drops or ointment every 4–6 h
2. Close eyelids gently or tape them
3. Use moisture chambers if needed

Eye Care in ICU (3)

- **Nursing & Anesthesia Team Role:**

1. Maintain humid environment
2. Clean secretions carefully
3. Document eye condition each shift
4. Report redness or discharge early

Complications

1. Awareness during surgery
2. Occulocardiac reflex
3. PONV → ↑ IOP
4. Hemodynamic instability → retinal ischemia

Summary

1. Protect the eye before, during, and after anesthesia
2. Avoid factors that increase IOP
3. Provide continuous care for ICU and unconscious patients