

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

MEDICATIONS IN SURGERY: UNIT III

STUDENT HANDOUT

AFRASCA@WSBOCES.ORG

REVISED BY A. WALIA 5/2019

CLASSIFICATIONS OF MEDICATION AGENTS USED IN SURGERY

- IV FLUIDS
- IRRIGATION FLUIDS
- LOCAL ANESTHETICS
- TOPICAL HEMOSTATIC AGENTS
- ANTICOAGULANTS
- ANTIBIOTICS
- RADIOPAQUE CONTRAST AGENTS

TERMINOLOGY RELATED TO IV & IRRIGATION FLUIDS

- OSMOSIS - THE DIFFUSION OF WATER THROUGH A SEMI-PERMEABLE MEMBRANE. THE WATER MOLECULES MOVE FROM AN AREA OF HIGHER CONCENTRATION TO AN AREA OF LOWER CONCENTRATION. THAT IS, THEY MOVE FROM A MORE DILUTE SOLUTION TO A LESS DILUTE SOLUTION

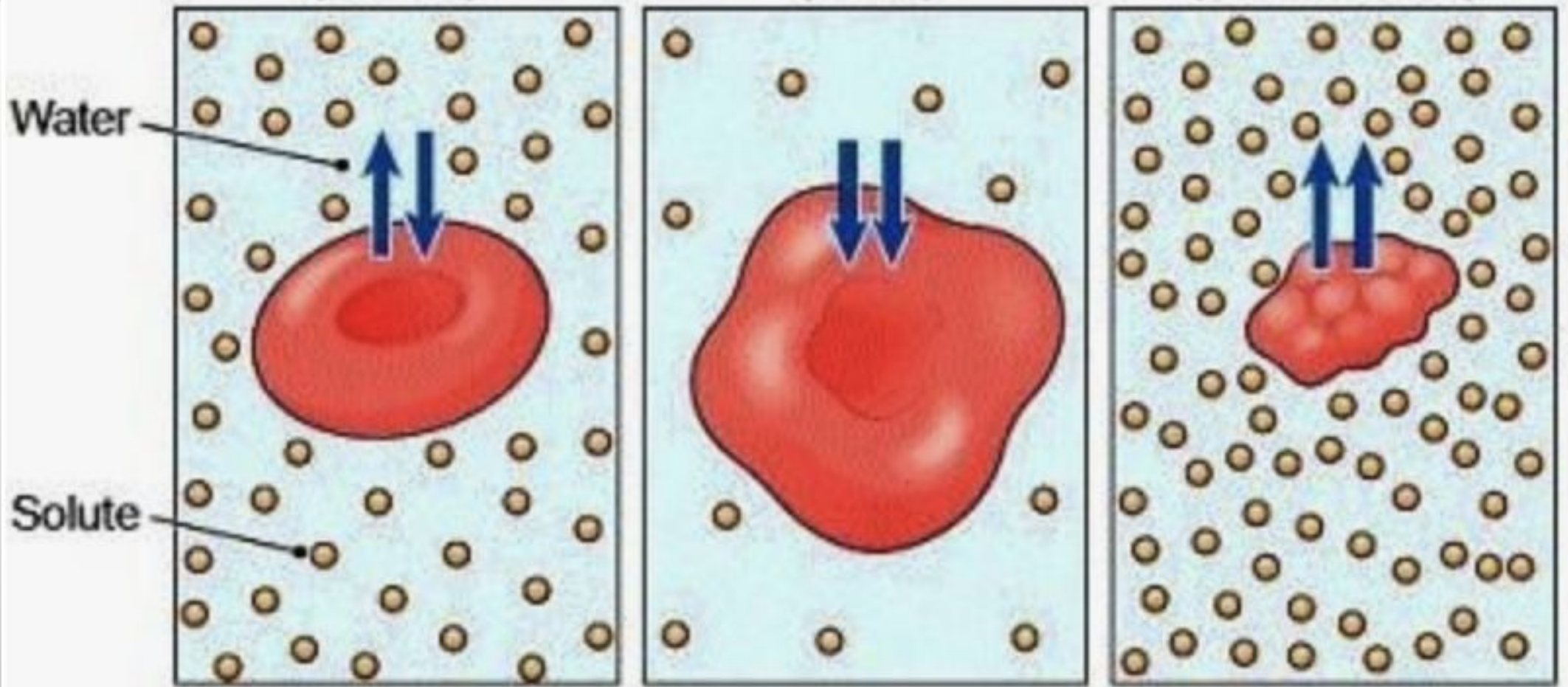
TERMINOLOGY CONTINUED

- ISOTONIC - SOLUTIONS WITH H₂O CONCENTRATIONS EQUAL TO THE CONCENTRATION OF THE INTRACELLULAR FLUID
- HYPOTONIC - SOLUTIONS WITH MORE H₂O CONCENTRATION (MORE DILUTE) THAN THE INTRACELLULAR FLUID
- HYPERTONIC - SOLUTIONS WITH LESS H₂O CONCENTRATION (MORE CONCENTRATED) THAN THE INTRACELLULAR FLUID

Isotonic solution
(normal)

Hypotonic solution
(dilute)

Hypertonic solution
(concentrated)




Water

Solute

A Normal red blood cell

B Swollen red blood cell

C Shrunken (crenated) red blood cell

 Direction of osmotic water movement



OSMOTIC PRESSURE ON BLOOD CELLS

Hypotonic

The cells inflate and eventually burst

Water is transported into the cell



Solute concentration inside the cell is HIGHER

Isotonic

Amount of water transported into the cell equal to the amount of water transported out from the cell



Solute concentration inside the cell is Equal to the solution outside the cell

Hypertonic

The cells shrink

Water is transported out from the cell



Solute concentration inside the cell is LOWER

INTRAVENOUS FLUIDS

- INTRAVENOUS FLUIDS ARE GIVEN DURING SURGERY FOR 3 REASONS

- 1) TO CREATE IMMEDIATE VENOUS ACCESS FOR ADMINISTRATION OF DRUGS

- 2) TO MAINTAIN/MANIPULATE INTRAVASCULAR FLUID VOLUME

- 3) TO MAINTAIN FLUID & ELECTROLYTE BALANCE AS NEEDED

BODY FLUIDS ARE BALANCED IN THE INTRACELLULAR (INSIDE THE CELL) AND EXTRACELLULAR (OUTSIDE OF THE CELL)

COMMON IV FLUIDS USED IN SURGERY

- NORMAL SALINE (NACL 0.9%) – ISOTONIC. AGENT OF CHOICE FOR SIMPLE HYDRATION
- LACTATED RINGER'S (LR) – COMMONLY USED IN THE OR
 - ISOTONIC. CONTAINS ELECTROLYTES AND LACTATE. USED BECAUSE THE BYPRODUCTS OF LACTATE COUNTERACT ACIDOSIS WHICH CAN OCCUR WITH ACUTE BLOOD/FLUID LOSS DURING SURGERY

COMMON IRRIGATION FLUIDS USED IN SURGERY

- NORMAL SALINE (NACL 0.9%) – MOST COMMON IRRIGATION FOR OPEN PROCEDURES
 - TOPICAL & CONDUCTIVE
 - SOLUTIONS MARKED FOR IRRIGATION SHOULD **NEVER** BE ADMINISTERED INTRAVENOUSLY
 - **ALWAYS** CHECK THE TEMPERATURE OF IRRIGATION BEFORE GIVING IT TO THE SURGEON
 - NSS IS ALSO USED ON THE FIELD TO RINSE TISSUES, SOAK LAPS/RAYTEC, OR RECONSTITUTE AN ANTIBIOTIC

STERILE WATER

- STERILE WATER IS USED MOST OFTEN TO RINSE/COOL/CLEAN INSTRUMENTS
- STERILE WATER MAY ALSO BE USED AS A “SPLASH BASIN” TO RINSE POWDER FROM A SURGEON’S GLOVES
- NOT TYPICALLY USED FOR IRRIGATION, HOWEVER STERILE WATER MAY BE USED AS IRRIGATION ON A TURBT BECAUSE IT IS NON-CONDUCTIVE AND NOT ABSORBED THROUGH THE BLADDER

IRRIGATION EQUIPMENT & SUPPLIES

- BULB SYRINGE (ASEPTO) – WHEN FILLED TO CAPACITY HOLDS APPX 120ML'S OF FLUID
- EAR SYRINGE – WHEN FILLED TO CAPACITY HOLDS APPX 90 ML'S OF FLUID
- KEEP YOUR IRRIGATION SYRINGES FILLED AND READY TO USE. ALWAYS NOTE HOW MUCH IRRIGATION IS USED SO THAT BLOOD LOSS CAN BE MEASURED ACCURATELY



BLOOD & BLOOD PRODUCTS

- GIVEN DURING SURGERY WHEN THE PATIENT'S BLOOD LOSS IS EXCESSIVE OR WHEN THE HEMOGLOBIN IS LOW
 - HEMOGLOBIN IS THE OXYGEN CARRYING COMPONENT OF BLOOD.
IF HEMOGLOBIN IS LOW, OXYGEN CARRYING CAPACITY IS LOW
- MUST BE STORED PROPERLY (33.8°F – 42.8°F)
- TWO LICENSED PROFESSIONALS MUST MATCH ALL PATIENT INFORMATION INCLUDING BLOOD TYPE & CROSS MATCH (USUALLY THE CIRCULATOR & ANESTHESIOLOGIST/CRNA)
- DURING TRANSFUSION, BLOOD PRODUCTS MUST PASS THROUGH A WARMING SYSTEM TO PREVENT HYPOTHERMIA & CARDIAC ARREST

BLOOD TYPES

- FOUR MAIN BLOOD TYPES – THESE ARE INHERITED TRAITS
 - A
 - B
 - AB
 - O
- RH FACTOR – AN INHERITED ANTIGEN IN HUMAN BLOOD.
 - RH + BLOOD CONTAINS THE RH ANTIGEN
 - RH – BLOOD LACKS THE RH ANTIGEN

BLOOD TYPES CONTINUED

- INDIVIDUALS WITH AB+ BLOOD ARE CALLED UNIVERSAL RECIPIENTS BECAUSE THEY CAN RECEIVE BLOOD FROM ANY BLOOD TYPE
- INDIVIDUALS WITH O- BLOOD ARE CALLED UNIVERSAL DONORS BECAUSE THEY CAN DONATE BLOOD TO ANY BLOOD TYPE

BLOOD & BLOOD PRODUCTS

- AUTOLOGOUS BLOOD – USE OF THE DONOR'S OWN BLOOD WHICH WAS COLLECTED AT A DATE PRIOR TO THE PROCEDURE (3 DAYS BEFORE OR MORE)
- DIRECTED DONOR – SOMEONE WITH MATCHING BLOOD TYPE SELECTED BY THE PATIENT WHO DONATES BLOOD ON THEIR BEHALF (35 DAYS BEFORE OR LESS). BLOOD BANK COLLECTS, PROCESSES, AND RELEASES BLOOD FOR USE.
- AUTOTRANSFUSION – THE MECHANICAL RECOVERY & TRANSFUSION OF PATIENT'S OWN BLOOD DURING SURGERY
 - AUTOTRANSFUSION IS CONTRAINDICATED IN THE PRESENCE OF: THROMBIN, COPIOUS AMOUNTS OF IRRIGATION, POLYMETHYLMETHACRYLATE, AMNIOTIC FLUID, BOWEL CONTENTS, INFECTION, MUCOUS MEMBRANE PROCEDURES, MALIGNANCY

BLOOD PRODUCTS CONTINUED

- WHOLE BLOOD – CONTAINS SERUM & BLOOD CELLS
 - ONLY USED WHEN PATIENT'S BLOOD LOSS EXCEEDS 30% OF TOTAL VOLUME (APPX 1500ML'S)
- PACKED RED BLOOD CELLS (PRBC'S) – GIVEN TO INCREASE THE OXYGEN-CARRYING CAPACITY (HEMOGLOBIN) OF THE BLOOD
 - ADVANTAGES – REDUCED RISK OF BLOOD BORNE DISEASE TRANSMISSION
 - MAY BE GIVEN WITH VOLUME EXPANDERS

BLOOD & BLOOD PRODUCTS CONTINUED

- PLATELETS – BLOOD COMPONENT GIVEN TO INCREASE THE PLATELET COUNT. PLATELETS ARE ESSENTIAL FOR COAGULATION & HEMOSTASIS
- FRESH FROZEN PLASMA (FFP) – CONTAINS ALL COAGULATION FACTORS IN NORMAL CONCENTRATIONS. USED AS AN INTRAVASCULAR EXPANDER. INCREASES CLOTTING FACTORS OF THE BLOOD
- VOLUME EXPANDERS – INCREASE TOTAL VOLUME OF BODY FLUIDS BY DRAWING FLUID FROM EXTRACELLULAR FLUID COMPARTMENTS INTO SYSTEMIC CIRCULATION. MAY BE USED IN EMERGENCIES WHEN DONATED BLOOD IS NOT AVAILABLE. HYPERTONIC.
 - ALBUMIN (PLASMA PROTEIN), DEXTRAN, HESPAN ®

LOCAL ANESTHESIA

- A LOCAL ANESTHETIC IS ADMINISTERED TO THE SURGICAL SITE. AFFECTS A SMALL, CIRCUMSCRIBED AREA. MAY OR MAY NOT HAVE AN ANESTHESIA CARE PROVIDER AVAILABLE
 - INJECTED
 - APPLIED TOPICALLY
- TYPES OF LOCAL/TOPICAL AGENTS
- LIDOCAINE (XYLOCAINE®) – MOST COMMON ANESTHETIC AGENT. IF EPINEPHRINE IS ADDED, DURATION OF EFFECT IS INCREASED, SYSTEMIC ABSORPTION IS SLOWED, & BLEEDING IS DECREASED.
- BUPIVICAINE (MARCAINE®, SENSORCAINE®)
- MEPIVICAINE (CARBOCAIN®, POLOCAINE®)

LOCAL ANESTHESIA CONTINUED

- EXPAREL® (BUPIVICAINE/LIPOSOME INJ. SUSPENSION) – NEWER PRODUCT. PROVIDES UP TO 72H OF POST-SURGICAL PAIN CONTROL
 - INCOMPATIBLE WITH LIDOCAINE – IF LIDOCAINE IS USED, WAIT 20 MINS BEFORE INJECTING EXPAREL
 - INCOMPATIBLE WITH BETADINE
- COCAINE – TOPICAL USE ONLY. USED FOR NASAL SURGERY. POWERFUL VASOCONSTRICTOR. TOPICAL
- CETACAINE – USED TOPICALLY ON THROAT/NOSE FOR NASAL INTUBATION, FLEXIBLE LARYNGOSCOPY. TOPICAL, SMELLS LIKE BANANAS

TOPICAL HEMOSTATIC AGENTS

- USED TO CONTROL SMALL VESSEL BLEEDING, ESPECIALLY IN HIGHLY VASCULAR AREAS, OR THOSE THAT ARE NOT SAFE TO COAGULATE BY OTHER MEANS (E.G. BRAIN TISSUE)
- AGENTS PLACED DIRECTLY OVER BLEEDING SITE
- BONE WAX – MADE FROM BEES
- MONSEL'S SOLUTION – USED IN CERVICAL CONE BIOPSY
- THROMBIN – MUST **NEVER** BE INJECTED INTO LARGE VESSELS → SIGNIFICANT CLOTTING & VASCULAR DEATH
- GELFOAM – ABSORBABLE PORCINE GELATIN. SOAKED IN THROMBIN
- AVITENE – BOVINE MICROFIBRILLAR COLLAGEN. ATTRACTS PLATELETS TO AREA. CLEAN & DRY
- SURGICEL – OXIDIZED BOVINE CELLULOSE. REMOVED AFTER USE.
- THROMBIN – BOVINE. MUST BE RECONSTITUTED BEFORE USE

ANTICOAGULANTS

- A LIQUID AGENT THAT TEMPORARILY PREVENTS NORMAL BLOOD CLOTTING.
 - DURING VASCULAR SURGERY – HEPARIN SODIUM
 - DILUTED WITH 0.9% IVNS
 - INJECTED INTO OPEN BLOOD VESSELS
 - USED TO PRIME CERTAIN VASCULAR GRAFTS.
 - HEPARIN IS MEASURED IN INTERNATIONAL UNITS (IU)
 - PROTAMINE SULFATE IS THE ANTIDOTE TO HEPARIN SODIUM.
 - REVERSES THE EFFECTS OF HEPARIN SODIUM.
 - GIVEN BY THE ANESTHESIA CARE PROVIDER

ANTIBIOTICS

- INHIBIT GROWTH OF OR KILL MICROORGANISMS IN THE BODY. EACH CLASS OF ANTIBIOTIC IS USED AGAINST A PARTICULAR GROUP OF BACTERIAL ORGANISM.
- ANTIBIOTICS USED IN SURGERY
 - PRE-OPERATIVE/PROPHYLACTIC – CEFAZOLIN (ANCEF®, KEFZOL®) 1GM IVPB. MOST COMMON
 - **CONTRAINDICATED WITH PCN ALLERGY**
 - MIXED 1G/1LNS ON FIELD FOR IRRIGATION
 - BACITRACIN 50,000U/1LNS ALSO COMMON (I.E. NEURO CASES)
 - **ALLERGIES CAN BE LIFE THREATENING**

RADIOPAQUE CONTRAST AGENTS

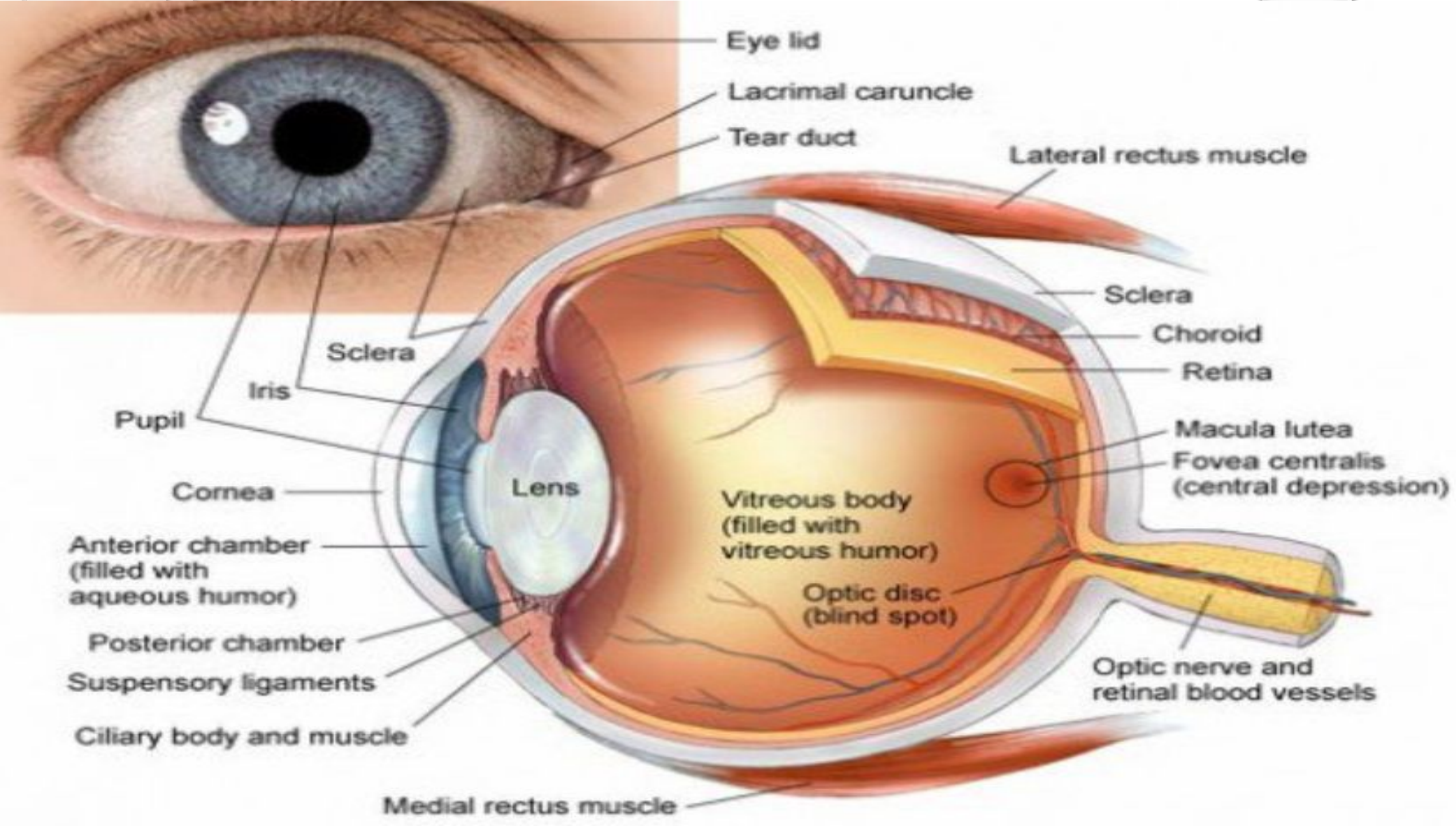
- LIQUID CONTRAST AGENT THAT IS IMPENETRABLE BY X-RAYS. USED WHEN INDIRECT VISUALIZATION OF AN ANATOMICAL STRUCTURE IS NECESSARY. CARE MUST BE TAKEN TO REMOVE ALL AIR BUBBLES FROM SYRINGE
- THE FOLLOWING AGENTS ARE WATER SOLUBLE AND USED MOST OFTEN IN SURGERY:
 - CONRAY®
 - HYPAQUE®
 - RENOGRAFIN®
- AGENTS ARE CLEAR IN COLOR. USE CARE WHEN LABELING!

DYES

- COLORED DYES ARE USED FOR VISUAL IDENTIFICATION. WHEN INFUSED INTO A DUCT OR HOLLOW STRUCTURE, THE PATH OF THE DYE CAN BE TRACED VISUALLY – E.G. VERIFY PATENCY OF FALLOPIAN TUBES
 - INDIGO CARMINE
 - GENTIAN VIOLET
 - METHYLENE BLUE
 - ISOSULFANE BLUE (LYMPHAZURINE®)
 - DYES MAY BE APPLIED TOPICALLY, INJECTED INTO BLOODSTREAM OR INSTILLED INTO A BODY CAVITY

STAINING AGENTS

- STAINING AGENTS HELP IDENTIFY ABNORMAL TISSUE FOR BIOPSY
 - LUGOL'S SOLUTION – STRONG IODINE SOLUTION. STAINS NORMAL TISSUE
 - ACETIC ACID (VINEGAR) – CLEARS MUCOUS AND SECRETIONS WHILE MAKING ABNORMAL TISSUE APPEAR WHITER THAN SURROUNDING NORMAL TISSUE. COMMONLY USED PRIOR TO LUGOL'S APPLICATION



ANATOMY OF THE EYE

- CONJUNCTIVA – THIN, CLEAR LAYER OF SKIN COVERING FRONT OF EYE. INCLUDES SCLERA & INSIDE OF EYELIDS. KEEPS BACTERIA & FOREIGN MATERIAL FROM GETTING BEHIND EYE
- SCLERA – FIBROUS LAYER OF EYE, WHITE OF THE EYE. TOUGH CONNECTIVE TISSUE.
 - CONTAINS NO BLOOD VESSELS
 - PROTECTS INNER WORKINGS OF THE EYE
 - PROVIDES EXTERNAL SUPPORT
 - CLEAR PART OF SCLERA IS COVERED. WHERE THE SCLERA & CORNEA MEET IS CALLED THE LIMBUS WHICH CONTAINS THE CANAL OF SCHELM. THIS IS WHERE AQUEOUS HUMOR IS DRAINED
- CORNEA – HELPS TO FOCUS INCOMING LIGHT. AS LIGHT ENTERS, IT PASSES THROUGH THIS “WINDOW OF THE EYE”
- AQUEOUS HUMOR – CLEAR WATERY FLUID THAT LIGHT TRAVELS THROUGH. THE SPACE BETWEEN THE CORNEA AND LENS IS FILLED WITH AQUEOUS HUMOR.
 - CONSTANTLY CIRCULATING, MAINTAINS PRESSURE OF FRONT OF EYE, CONTINUOUSLY PRODUCED & DRAINS INTO CANAL OF SCHLEMM (VENOUS SYSTEM)

ANATOMY OF THE EYE CONTINUED

- PUPIL – OPENING THAT REGULATES THE AMOUNT OF LIGHT ENTERING THE EYE. FORMED BY THE IRIS
- IRIS – COLORED PART OF EYE. ATTACHED TO CILIARY BODIES BETWEEN CORNEA AND LENS. CONTAINS MUSCLES TO DILATE (MAKE PUPIL LARGER) OR CONSTRICT (MAKE PUPIL SMALLER)
- ANTERIOR CHAMBER – POSTERIOR TO CORNEA, ANTERIOR TO IRIS. TRABECULAR MESHWORK LOCATED WHERE CORNEA MEETS IRIS. IF IT CANNOT PROPERLY DRAIN, PRESSURE INCREASES CAUSING OPTIC NERVE DAMAGE & EVENTUALLY VISION LOSS
- POSTERIOR CHAMBER – POSTERIOR TO IRIS, ANTERIOR TO LENS
- LENS – DIRECTLY BEHIND IRIS. AFTER LIGHT TRAVELS THROUGH PUPIL IT TRAVELS THROUGH THE LENS. RESPONSIBLE FOR FOCUSING LIGHT. FOCUSES IMAGE ONTO RETINA & CAN CHANGE SHAPE TO ACHIEVE FOCUS. MADE OF PROTEIN FIBERS ARRANGED IN ONION LIKE LAYERS

ANATOMY OF THE EYE CONTINUED

- ZONULA – LIGAMENTS THAT HOLD THE LENS IN PLACE
- VITREOUS HUMOR – JELLY LIKE FLUID THAT FILLS THE POSTERIOR PART OF THE EYE. AFTER LIGHT PASSES THROUGH THE LENS, IT PASSES THROUGH THE CENTER OF THE EYE, WHERE THIS FLUID IS, TOWARDS THE RETINA. VITAL TO MAINTAINING STRUCTURE OF THE EYE & RETINAL POSITION. NOT CONTINUALLY PRODUCED
- RETINAL VESSELS – NOURISH INNER LAYERS OF RETINA
- RETINA – NERVOUS LAYER OF GLOBE (LIKE FILM OF A CAMERA). LIGHT SENSITIVE TISSUE LINING THE INSIDE POSTERIOR WALL OF THE EYE. COVERS THE CHOROID. (VASCULAR LAYER). CONTAINS PHOTORECEPTOR CELLS (RODS & CONES). SURFACE MUST BE FLAT, SMOOTH, & IN GOOD WORKING ORDER TO PRODUCE SMOOTH IMAGE.
 - RODS – PERIPHERAL VISION. FUNCTION IN LESS INTENSE LIGHT
 - CONES – RESPONSIBLE FOR COLOR VISION. FUNCTION IN RELATIVELY BRIGHT LIGHT

ANATOMY OF THE EYE CONTINUED

- MACULA – CENTER OF THE RETINA. CONTAINS HIGH CONCENTRATION OF PHOTORECEPTOR CELLS WHICH CONVERT LIGHT TO NERVE SIGNALS. RESPONSIBLE FOR FINE PRINT DETAILS.
 - FOVEA – CENTER OF MACULA. SITE OF SHARPEST VISION
- CHOROID – VASCULAR LAYER. BLOOD VESSELS, FEEDS OUTER LAYERS OF RETINA
- CILIARY BODY – PRODUCES AQUEOUS HUMOR. CONNECTS CHOROID WITH IRIS. CONSISTS OF 3 ZONES.
 - CILIARY RING – ATTACHED TO CHOROID
 - CILIARY PROCESSES – FORMS PART OF ATTACHMENT TO IRIS AND LENS
 - CILIARY MUSCLES – ATTACHES TO LENS AND CONTROLS CURVATURE OF LENS
- OPTIC NERVE – BUNDLE OF NERVE FIBERS WHICH CARRY VISUAL INFORMATION FROM EYE TO BRAIN

KEY CONCEPTS

- THE EYE IS A COMPLEX SENSE ORGAN COMPRISED OF MANY STRUCTURES
- THE BLOOD-EYE BARRIER PREVENTS EFFECTIVE ABSORPTION OF MOST SYSTEMIC DRUGS. MOST COMMON METHOD OF MEDICATION ADMINISTRATION IS TOPICAL
- Accessory Structures:
 - Eyebrows – protection
 - Eyelids – protection/moisture
 - Eyelashes - protection
 - Lacrimal System – moisture/cleanse
 - Bony orbit – protection
- Globe:

OPHTHALMIC AGENTS

- ENZYMES – ADDED TO LOCAL ANESTHETIC TO INCREASE DIFFUSION THROUGH TISSUE FOR NERVE BLOCKS. THEY ARE CATALYSTS FOR MEDICATIONS. TWO USED IN OPHTHALMIC SURGERY:
 - ALPHA-CHYMOTRYPSIN (ALPHA-CHYMAR® , ZOLYSE®)
 - HYALURONIDASE (VITRASE® , WYDASE®)
- ENZYMES DISSOLVE THE SUSPENSORY LIGAMENTS (ZONULA) HOLDING THE LENS IN PLACE. THIS USE IS BECOMING RARE DUE TO PHACOEMULSIFICATION & EXTRACAPSULAR CATARACT EXTRACTION, WHICH LEAVE THE ZONULA INTACT

OPHTHALMIC AGENTS CONTINUED

- IRRIGATING SOLUTIONS – CLEANSE OPERATIVE SITE & KEEP CORNEA MOIST
 - BALANCED SALT SOLUTION (BSS) MOST COMMON
- VISCOELASTIC AGENTS – THICK, JELLY-LIKE SUBSTANCES USED TO KEEP THE ANTERIOR CHAMBER EXPANDED AND PREVENT INJURY TO SURROUNDING TISSUE AND PROTECT THE CORNEA
 - SODIUM HYALURONATE (HEALON®), VITRAX®, VISCOAT®)

OPHTHALMIC AGENTS CONTINUED

- MIOTICS – CONSTRICT THE PUPIL BY STIMULATING THE SPHINCTER MUSCLE OF THE IRIS. REDUCE INTRAOCULAR PRESSURE
 - ACETYLCHOLINE CHLORIDE (MIOCHOL-E®)

- MYDRIATICS & CYCLOPLEGICS – DILATE THE PUPIL BY PARALYZING THE SPHINCTER OF THE IRIS
 - ATROPINE SULFATE (ATROPISOL®, MYDRIACYL®)

OPHTHALMIC AGENTS CONTINUED

- OINTMENTS & LUBRICANTS – USED TO TREAT EXTERNAL OCULAR INFECTIONS OR AS PROPHYLAXIS AGAINST POST-OP INFECTIONS
 - GENTAMYCIN, NEOMYCIN, GARAMYCIN
 - LACRI-LUBE®

OPHTHALMIC AGENTS CONTINUED

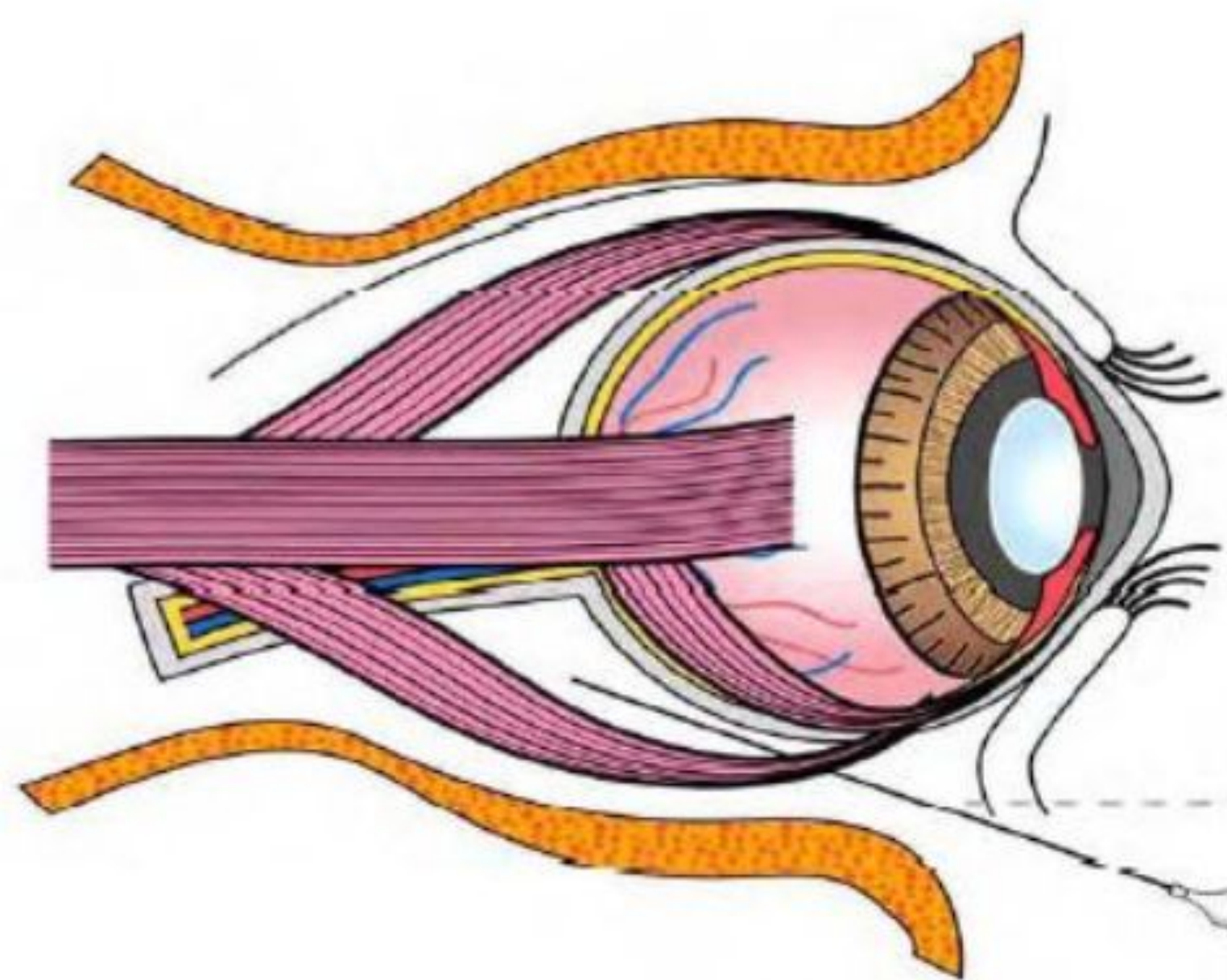
- ANESTHETICS – TOPICAL OR INJECTED

- TOPICAL

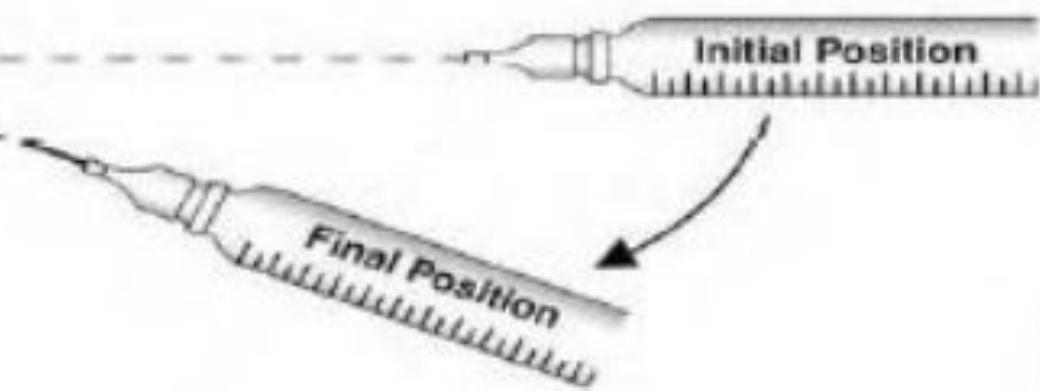
- TETRACAINE HCL (PONTOCAINE) – 0.5%. ONSET <1 MIN.
MOST COMMON. 10-20 MIN DURATION

- INJECTED - RETROBULBAR OR PERIBULBAR BLOCK

- LIDOCAINE 1% OR 2% (MOST COMMON), BUPIVICAINE



Retrobulbar Block: Insert needle inferior to the maximum diameter of the globe and perpendicular to the plane of the face. Once past the axis of the globe, angle the needle medially and superiorly. Final needle position is within the muscle cone.



OPHTHALMIC AGENTS CONTINUED

- ANTI-INFLAMMATORY AGENTS – USED TO DECREASE INFLAMMATION. OFTEN USED IN COMBINATION WITH ANTIMICROBIAL AGENTS. TWO TYPES:
 - STEROIDAL - TOBRADEX®, MAXITROL® UNG.
 - NON-STEROIDAL/NSAIDS - ACULAR®, VOLTAREN®
- DIAGNOSTIC AGENTS – ARE DYES WHICH COLOR SHOW OR MARK TISSUE. INSTILLED TOPICALLY. USED TO SHOW ABNORMALITIES OF CORNEA, CONJUNCTIVA, FLOW OF AQUEOUS HUMOR, AND LACRIMAL SYSTEM FUNCTION
 - FLUORESEIN SODIUM, ROSE BENGAL, I C GREEN®

OPHTHALMIC AGENTS CONTINUED

- ANTI GLAUCOMA AGENTS – GLAUCOMA REFERS TO INCREASED INTRAOCULAR PRESSURE. LONG TERM MANAGEMENT ACCOMPLISHED WITH OSMOTICS, DIURETICS, & BETA-ADRENERGIC BLOCKERS. MEDICATIONS CAN BE GIVEN PO, IV, OR TOPICALLY
 - ACETAZOLAMIDE (DIAMOX®) - PO
 - MANNITOL (OSMITROL®) - IV
 - TIMOLOL (TIMOPTIC®) TOPICAL GTT – REDUCES AQUEOUS PRODUCTION
 - DORZOLAMIDE/TIMOLOL (COSOPT®) - GTT

OBSTETRICAL AGENTS

- OXYTOCIN (PITOCIN®) – A HORMONE NATURALLY PRODUCED DURING LATE PREGNANCY, LABOR, LACTATION. GIVEN IV. SOMETIMES PRESCRIBED TO INDUCE LABOR, OR DURING LABOR TO INCREASE THE INTENSITY OF UTERINE CONTRACTIONS.
- GIVEN AFTER DELIVERY TO CONSTRICT UTERINE BLOOD VESSELS THEREBY REDUCING POST PARTUM BLEEDING
- GIVEN PRIOR TO EXPULSION OF PLACENTA
- MAY BE USED FOR D&E
- METHERGINE (METHYLERGONVINE MALEATE) – GIVEN IM WHEN PATIENT HAS DEVELOPED A RESISTENCE TO PITOCIN