surgery contraindicated; surgery due to entrapment of soft tissue; manage diplopia caused by pa-resis, edema, or intramuscular hemorrhage with trial of oral ste-
roids to reduce inflammation; other indications include early

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Orbital and Oculoplastic Emergencies

Katherine Lane, MD, Ophthalmic Consultants of Vermont, South Burlington

Evaluation after orbital injury: assess afferent visual pathway; evaluate vision, pupils, and motility; perform orbital, lid and periorbital examination and complete ocular examinations; order axial and coronal computed tomography (CT) of orbit

Retrobulbar hemorrhage: orbital volume only >30 mL; vision loss possible if intraorbial pressure exceeds filling pressure of central artery (with compressive optic neuropathy and disruption of circulation, or traction on optic nerve and nutrient ves-
sels due to increasing proptosis); irreversible retinal damage often occurs after orbital decompression

Orbital compartment syndrome: patients present with variable vision, afferent papillary defect, dyschromatopsia, increased intracranial pressure (IOP), central retinal artery pulsation, and possibly venous congestion or occlusion; perform immediate canthotomy by horizontal incision at lateral canthus followed by inferior cantholysis; perform superior cantholysis if needed; perform before orbital imaging or transfer of patient if orbit feels tight; administer intravenous (IV) corticosteroids; IV mannitol and topical medications can reduce IOP; orbital decompression needed rarely

Traumatic optic neuropathy (TON): indirect injury—occurs in <5% of patients with history of closed head trauma (usually de-
celeration injury); presents as sudden loss of vision, afferent papilla-
defect with relative dyschromatopsia, and normal findings from slit lamp and fundus examinations; treatment—National Acute Spinal Cord Injury Study (NASCIS) trials suggested mega-
dose corticosteroids improved outcomes; International Optic Nerve Study showed that observation associated with better vi-
sual recovery than steroids or surgical decompression; Cessation—Ran-
domized After Significant Injury (CASH) study stopped early because of increased risk for death or severe disability in patients treated with IV steroids; placebo use of steroids no longer recommended for TON (especially with con-
current head injury, direct injury)—possibly caused by impinge-
ment by posterior fracture; role for surgical decompression depends on risks; manage cases of optic nerve transaction or evul-
sion with counseling and protection of contralateral eye

Orbital fractures: fracture observation possible for small fractures with no entrapment or minimal enophthalmos, or if

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Ocular Ischemia

Visual symptoms are present in __________% of patients with giant cell arteritis.

(A) 26% (B) ≤46% (C) ≥66% (D) <86%

5. Which of the following procedures should be performed immediately in cases of giant cell arteritis?

(A) Temporal artery biopsy (B) Imaging studies (C) Intravenous corticosteroids (D) Treatment with high-dose corticosteroids

6. It is necessary to perform imaging studies in which of the following situations?

(A) An older patient with complete third nerve palsy, vascular risk factors, and uninvolved pupil

(B) A patient with Horner syndrome that developed after trauma to neck, upper spine, or chest

(C) A patient with Horner syndrome that is new in onset with ipsilateral neck trauma or face pain

(D) All the above

7. Recovery of visual acuity (VA) to _______ is typical if retinal detachments that involve the macula are repaired by day 5.

(A) 20/20-30 (B) ≥20/40 (C) ≥20/50 (D) ≥20/60

8. Choose the correct statement(s) about endophthalmitis.

(A) Patients with initial VA of hand motion or better were found to have good outcomes with tap and inject (B) Patients with initial VA of hand motion or better were found to have better outcomes if treated with immediate vitrectomy

(C) Noninfectious endophthalmitis does not occur after intravitreal injections of preservative-free triamcinolone

(D) Small-gauge surgery with a 25-gauge needle has been shown to reduce the rates of endophthalmitis

9. Which of the following options would be best for treatment of acute elevation of intraocular pressure caused by plateau iris?

(A) Iridotomy

(B) Trabeculotomy

(C) Cycloplegia with or without YAG of anterior hyaloid

(D) Tissueplasty or cataract extraction and endophotonvoculation of the ciliary body

10. Rlebitis or bleb-related endophthalmitis with no involvement of the vitreous should be treated with immediate, followed by hourly, antibiotics.

(A) True (B) False

Educational Objectives

The goal of this program is to improve the recognition and management of ophthalmic emergencies. After hearing and as-
simulating this program, the clinician will be better able to:

1. Diagnose and treat retrobulbar hemorrhage and orbital compartment syndrome

2. Evaluate and treat patients with traumatic optic neu-
rophy, orbital fractures, and orbital foreign bodies

3. Apply appropriate combinations of physical examina-
tion and imaging to differentiate among various types of temporal arteritis, third nerve palsy, and Horner syn-
drome

4. Identify cases of retinal detachment that require imme-
diate treatment, determine optimal treatment regimens

5. Examine and treat patients with acute elevations of in-
traocular pressure

Faculty Disclosure

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rouch presents information related to the off-label or investiga-
tional use of a therapy, product, or device.

Remarks represent viewpoints of the speakers, not necessarily those of the Audio-Digest Foundation.
Treatment: antiplatelets, anticoagulants, or both

Retinal Emergencies

Fina C. Barouch, MD, Assistant Clinical Professor; La- bey Clinic, Tufts University School of Medicine, Burling- ton, MA

Retinal detachments: involving macula — repair recommended within 1 wk; recovery of visual acuity (VA) declines expo- nentially with progressive retinal detachment (PDR); VA recovery of >20/205 typical if repaired by day 5; threat- ening macula — prompt treatment required; progression variable; observation for PDR possible; resolution of 1.8 discs-per-meter/day; close proximity (espe- cially within 1 disc-diameter) of subretinal fluid to key only factor for progression.

Treatments: cryotherapy with pneumatic retinopexy; laser demar- cation, pars plana vitrectomy, and scleral buckling; consider cymoretinopathy with pneumatic retinopexy in superior detach- ments with favorable location for retinal break.

Endophthalmitis: Endophthalmitis Viterba study — randomized patients to immediate vitrectomy vs. tap and inject; patients with initial VA of <20/200 better with tap and inject; patients with light perception or worse had greater im- provement with immediate vitrectomy; no difference seen with systemic antibiotics; small pupil size — one study found no difference in rates of endophthalmitis among 20-gauge, 23-gauge, and 25-gauge incisions; another study found higher rate with 25-gauge vs. 20-gauge surgery; intravitreal anti-inflammatories — no loss of potency noted with compounded vancomycin, cefazidime, and tobramycin stored in 1-ml polyethylene vials at 4°, -20°, or -80° for 24 wk (could allow greater availability).

Noninfectious endophthalmitis seen after intraocular injections of triamcinolone, corticotropin, and dexamethasone; pupillary block; possibly also helps pupillary block; possibly also

Other findings: prompt treatment required; progression after recovery, revise leaks or paper-thin cystic blebs; speaker in- jects autologous blood around bleb to seal; rotate conjunctiva with amniotic membrane or pericardium.

Treatments: cryotherapy with pneumatic retinopexy, laser demar- cation, pars plana vitrectomy, and scleral buckling; consider cymoretinopathy with pneumatic retinopexy in superior detach- ments with favorable location for retinal break.

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Retinal Emergencies

Fina C. Barouch, MD, Assistant Clinical Professor; Las- bey Clinic, Tufts University School of Medicine, Burton- ton, MA

Retinal detachments: involving macula — repaired recommended within 1 wk; recovery of visual acuity (VA) declines expo- nentially with increase in duration of macular detachment; VA recovery of >20/25 typical if repaired by day 5: threat- ening macula — prompt treatment required; progression variable; segmental detachment: typically mean of 1.8 disc-diameters per day; close proximity (espe- cially within 1 disc-diameter) of subretinal fluid to fovea only risk factor for progression.

Treatments: c cryotherapy with pneumatic retinopexy, laser demar- cation, pars plana vitrectomy, and scleral buckling; consider cryotherapy with retinopexy in superior detach- ments with favorable location for retinal break.

Endophthalmitis: Endophthalmitis Vitrectomy Study — randomized patients to immediate vitrectomy “tap and inject”, patients with initial VA of <20/500 who have “tap and inject; patients with light perception or worse had improved vision with immediate vitrectomy; no difference seen with systemic antibiotics; small-gauge surgery; one study found no difference in rates of endophthalmitis among 20-gauge, 23-gauge, and 25-gauge incisions; another study found higher rate with 25-gauge vs 20-gauge surgery; intravitreal antibiotics — no loss of potency noted with compounded vancomycin, ceftazidime, and tobramycin stored in 3-id, polysulfone, syringe at 4°, 20°, or -80°C for 24 wk (could allow greater availability)

Noninfectious endophthalmitis seen after intra vitreal injections of triamcinolone; vitreous involved with intracranial-synuclein mor- phologies in anterior chamber (AC) or vitreous (sometimes pseudo- hypopyon); no eye pain, and little to no conjunctival injection, and have negative cultures; vision recovers spontaneously; onset occurs within 3 days of injection; develops at low rates if preserva- tive-free triamcinolone used

Acute retinal necrosis: caused by herpes viruses (eg, herpes sim- plex, varicella-zoster); diagnosed by presence of 3-1 disc of foci of choriocapillaris and retinal detachments, prominent AC and vitreous reaction, and rapid pro- gression without therapy; treatment — IV ganciclovir for 7 to 10 days, followed by oral acyclovir for 6 to 14 wk; recent involve- ment of fellow eye; newer antiviral agents directed orally (eg, fam- ciclovir, valaciclovir, ganciclovir); visual outcome poor; retinal detachment common

Choroidal hemorrhage: management — control systemic hy- pertension, imipramine, triamcinolone, vitrectomy; CE angio- gram, if pupil involved and for patients with partial TNP with- or without pupillary involvement

Horner Syndrome

Evaluation: characterized by oculosymphalic palsy, ptosis, and mi-osis on same side; imaging unnecessary if Horner syndrome develop- ed after trauma to neck, upper spine, or chest (eg, thyroid surgery, CSF leak after head trauma, or intravenous drug use) look for localizing fea- tures (eg, with nerve palsy that localizes to cavernous sinus); dis- section — if Horner syndrome new in onset with ipsilateral neck trauma or facial anesthesia with detrusive features with dissection have eye signs and symptoms as presenting symptoms); risk factors — hypertension, arterial occlusive disease, traumatic mani- festations, and extreme activities; disruption possibly spontaneous in pa- tients with Marfan syndrome, Ehlers-Danlos syndrome, or Marfan-like polydysia; most common cause of stroke in patients <45 yr of age

Suggested Reading


Estimated time to complete the educational process: 5 minutes

References

The California State Board of Registered Nursing (CA BRN) accepts courses provided for AMA category 1 credit as meeting the continuing edu- cation requirements for license renewal.

The Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO) allows certificants to earn JCAHPO Group B credits towards recertification with AD Ophthalmology activities. With each completed activity, certificants are awarded credits earned for completion of activities in Ophthalmology designated for AMA PRA Category 1 Credit(s)™ for each Ophthalmology course participated in.

Audio-Digest Foundation is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's (ANCC)'s Com- mittee on Accreditation. Audio-Digest Foundation provides 1.0 CE contact hours for completion of this course.

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The Pennsylvania College of Optometry (PCO) at Salus University is desig- nated by the Council on Optometric Practitioner Education (COPE) as the COPE Accredited Optometric Postgraduate Education Program for Audio-Digital Ophthalmology. Upon COPE approval, PCO at Salus Uni- versity designates each issue of Audio-Digital Ophthalmology for 1.0 CE contact for ODs for a maximum of 3 years from the date of publication. Note: This issue of Audio-Digital Ophthalmology is pending COPE approval.

CLE resources.

Expiration: The CME activity qualifies for AMA PRA Category 1 Credit(s)™ for Category 1 credits.
surgery contraindicated; surgery—indicated if intraorbital soft tissue, manage diplopia caused by pa-

otics to reduce inflammation; other indications include early

Timing of repair—controversial; in past, repair performed after

Pediatric fractures: trapdoor fracture may entrap muscle and peri-

relieve muscle ischemia and reduce risk for fibrosis, contrac-

From Retina and Ophthalmic Emergencies, presented by the New England Ophthalmological Society

To submit a test form by mail or fax, complete Pretest section.

Retrobulbar hemorrhage: orbital volume only "30 mL; vision loss possible if intraorbital pressure exceeds filling pressure of

corneal computed tomography (CT) of orbit

Orbital compartment syndrome: patients present with variable

TBHs likely in patients with history of closed head trauma (usually de-

occur after only 90 min of hypoxia

Immediate canthotomy by horizontal incision at lateral canthus

Orbital fractures:

Trapezial muscle ischemia and reduce risk for fibrosis, contrac-

If orbit feels tight; administer intravenous (IV) corticosteroids;

Orbital decompression needed rarely

IV mannitol and topical medication can reduce IOP; orbital decompression needed rarely

Mannitol and topical medications can reduce IOP; orbital decompression needed rarely

2. Which of the following management options has been shown to provide better visual recovery for patients with traumatic optic neuropathy resulting from indirect injury?

A) 1, 2, 3, 4 (B) 2, 3, 4, 5 (C) 1, 3, 4, 5 (D) 1, 2, 4, 5

(1) Temporal artery biopsy

(2) Imaging studies

(3) Treatment with high-dose corticosteroids

6. It is necessary to perform imaging studies in which of the following situations.

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A) True (B) False

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5. Examine and treat patients with acute elevations of in-

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Bouchoux presents information related to the off-label or investiga-
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