

Handbook Of Clinical Ophthalmology

Edited by
James F. Collins, M.D.

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Preface

Ophthalmology is certainly not suffering from a scarcity of general and introductory texts and handbooks. The question might then be asked, why another? It is hoped that our approach to the organization and presentation of this information is sufficiently novel and useful to make this book a valuable addition to the literature and not a tired rehash.

It has been my experience that the clinician in day-to-day practice often consults a reference source for one of three basic types of information: a miscellaneous, elusive fact or figure; the differential diagnosis of a given sign or symptom; or a brief summary of the salient features of a condition. An attempt has been made in this volume to present these types of information in separate parts and to interrelate them by cross-referencing and indexing. It is hoped that this book will bridge the gap between the shorter handbooks, primers and synopses, and the definitive texts, and serve the practitioner at all levels of experience and expertise.

I am deeply indebted to a number of individuals who assisted in the production of the book and wish to acknowledge their efforts. My sincerest thanks to Neil Choplin, M.D., Norman Reinach, M.D., Marshall Graditor, M.D., Gerald Batt, M.D., Edward J. Mohr, M.D., Mitchell Ashkenazy, M.D., Mark Daniels, M.D., Lewis Roberts, M.D., and James Maisel, M.D., for their assistance in the preparation of Part I and Part IV; Bruce Malen, M.D., and Arnold Levine, M.D., for reviewing the manuscript and making helpful suggestions; Fast Type Secretarial Services, Lynn Campion, Naomi Hassig, and Carol Burrows for manuscript typing and secretarial assistance; and the publisher and editorial staff for their exceptional professionalism and constant encouragement.

James F. Collins, M.D.

Dedication

This book is dedicated to my wife, Regina;
my parents, Anne and Jim; my daughter, Allison;
and in memory of Frank J. Keller.

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Part I

Glossary

Note: This glossary contains definitions of ophthalmic and related terminology, abbreviations, acronyms, and eponyms. Eponyms denoted by a bullet (•) are diseases or syndromes presented as follows:

inheritance pattern & age of onset | ocular findings | systemic findings

Other eponyms refer to anatomic and pathologic structures, laws, phenomena, procedures, signs, tests, and testing apparatus.

A

A Pattern: strabismic pattern wherein the eyes are more convergent in upgaze; e.g., A Pattern esotropia: ET greatest in upgaze; 25° elevation is the conventional measuring point

Abducens: sixth cranial nerve; innervates the lateral rectus muscle to abduct the eye

Adduction: outward (lateral) rotation of the eye around its vertical axis

Aberration: a failure of light rays from a point source to converge to a single focus; e.g., spherical aberration chromatic aberration, etc.

AC: anterior chamber

AC/A: accommodative convergence — accommodation ratio

Accommodation: adjustment of the crystalline lens to provide additional “plus” power by assuming greater convex curvature

Accommodative Amplitude: the dioptric range from the far point to the near point

Accommodative Convergence: that convergence elicited by accommodation

Accommodative Convergence/Accommodation Ratio: expresses the amount of accommodative convergence elicited by a certain amount of accommodation for a given individual

Accommodative Range: the linear range of clear vision between the far point and the near point

Accommodative Spasm: inappropriate excessive accommodation which may create a pseudomyopia

Achromatopsia: absence of any color vision

Adduction: inward, nasal, or medial rotation of the eye around its vertical axis

Adie’s Pupil: unilateral, usually dilated, tonic pupil which reacts very slowly to change in illumination; displays cholinergic hypersensitivity; seen mostly in females

Afocal: without a focal point

“Against the Rule” Astigmatism: astigmatism where the horizontal meridian is steepest or where minus cylinder axis 90° is required for correction; “with the rule” astigmatism is just the opposite

Aicardi’s: ? hereditary; onset congenital / microphthalmos, round depigmented chorioretinal lesions, O.N. coloboma / agenesis of corpus collosum, mental retardation, seizures, vertebral and rib abnormalities•

Albright’s: ? hereditary; onset childhood—adolescence / unilateral proptosis, papilledema, optic atrophy, ± cataracts / unilateral osteitis fibrosa cystica, melanotic skin patches, precocious puberty in females•

Allele: one of a pair of genes occupying corresponding loci on homologous chromosomes

Alport’s: AD or X-linked rec. / ant. lenticonus, cataracts, retinal degenerative changes, hyaline bodies of O.N. / hemorrhagic nephritis, nerve deafness•

Altitudinal: a unilateral or bilateral hemianopic defect in either the upper or the lower portion of the visual field

Amacrine: one type of specialized cell in the inner nuclear layer of the retina which provides an integrating

and modifying influence on a nerve impulse

Amaurosis: lack of vision; blindness

Amblyopia (functional): decreased visual acuity irrespective of refractive error or any other organic deficit

Amblyoscope: an orthoptic device used to quantify ocular deviation in strabismus and to determine fusion-al status and binocular function, etc.

Ametropia: presence of a refractive error

AMPPE: acute multifocal posterior placoid pigment epitheliopathy

Angioid Streaks: gray-brown, vessel-like markings in the fundus due to breaks in Bruch's membrane; seen in many different conditions

Angle Kappa: the angle formed by the visual and optical axes of the eye, clinically measured at the center of the pupil

Aniridia: absence of the iris; a rudimentary portion of the iris root remains in all cases

Aniseikonia: inequality of image sizes perceived by the two eyes

Anisocoria: inequality of pupillary size

Anisometropia: inequality of refractive errors between the two eyes

Ankyloblepharon: adhesion of the eyelids to each other

Anophthalmia: absence of the globe

Anterior Chamber: compartment bounded by the cornea anteriorly, the angle peripherally and the iris-lens diaphragm posteriorly; communicates with the posterior chamber through the pupil

Antimetropia: a form of anisometropia in which the refractive errors of the two eyes are of different kinds, as when one eye is myopic and the other hyperopic

Anton's: nonhereditary / denial-visual hallucination syndrome; cortical blindness from an occipito- or parieto-temporal lesion with unawareness or denial of deficit•

Apert's: AR or AD; onset congenital / shallow orbits, exophthalmos, optic atrophy, strabismus, nystagmus / oxycephaly, syndactyly, seizures•

Aphakia: absence of the crystalline lens because of surgical, traumatic, or lytic processes

Applanation: flattening; a means of measuring intraocular pressure by flattening a certain area of the cornea with a tonometer and recording the pressure in mm Hg necessary to do this

Aqueous: fluid contained in the anterior and posterior chambers; produced by the ciliary body, it passes through the pupil to be drained in the chamber angle

ARC: anomalous retinal correspondence

Arcuate: a visual field defect along the arch from the blind spot to the nasal horizontal raphe above or below fixation

Arcus Juvenilis (anterior embryotoxon): a white ring in the anterior periphery of the cornea occurring at birth or up to middle age; alone or with other anomalies

Arcus Senilis: a gray-white ring in the corneal periphery; separated from the limbus by clear cornea; seen commonly with normal aging

Argyll-Robertson Pupil: disorder in which the pupil fails to react to light stimuli but accommodative pupillary constriction is preserved; usually bilateral, but asymmetrical and pupils are miotic (less than 2.5mm); most often seen in neurosyphilis

Arlt's Lines: subconjunctival scar tissue along upper tarsus seen in cicatricial stage of trachoma, may be a precursor of entropion

Arnold-Chiari Malformation: herniation of central nervous tissue through foramen magnum; maldevelopment of the pons, medulla and cerebellum; almost always associated with hydrocephalus and spina bifida

Aspheric: a lens or mirror with a paraboloid surface that minimizes spherical aberration

Asteroid Hyalitis: stellate and spherical calcium-containing opacities in the vitreous that appear to sparkle when illuminated; a benign unilateral condition

Asthenopia: subjective symptoms comprising "eye strain"; usually seen with prolonged "close work" — symptoms: redness, burning, tearing, dull aching over the brow

Astigmatism: literally — "without a point"; a refractive condition of the eye where there are two major focal lines rather than a point focus due to irregularity of the refractive media of the eye especially the cornea and lens

AT: applanation tension

Atkinson Block: facial nerve block produced by infiltration of the peripheral fibers coursing over the zygoma toward the orbicularis

Autosomal: referring to the autosomes or the 22 paired, nonsex chromosomes

Axenfeld's: AD / posterior embryotoxon, \pm angle and pupillary abnormalities, frequent associated glaucoma •

Axenfeld's Anomaly (Posterior Embryotoxon): prominent Schwalbe's ring with attached iris strands

Axoplasmic Flow: streaming of cytoplasm along a nerve cell's axon, responsible for the movement of metabolic products to all parts of the cell

B

Bagolini Striated Glasses: plano glasses with oblique striations used to test sensory status in strabismus under conditions of casual seeing

Balint's: nonhereditary / paralysis of fixation resulting from bilateral parieto-occipital lesions; eyes move freely in random fashion but voluntary control of fixation is lacking •

Band Keraopathy: deposition of calcium in the superficial cornea in the interpalpebral space; may completely traverse the cornea or be limited to the periphery

Barkan's Membrane: a thin membrane covering the trabecular sheets reputed to be of etiologic significance in congenital glaucoma

Bassen-Kornzweig: prob. AR / pigmentary retinal degeneration, nystagmus / acanthocytosis, malabsorption, abetalipoproteinemia, spinocerebellar degeneration •

Batten-Mayou (Vogt-Spielmeyer): poss. AR; onset 5-8 y.o. / pigmentary retinal degeneration, red-brown spot in macula, optic atrophy, nystagmus / mental retardation, seizures •

Battle's Sign: ecchymosis over mastoid area suggesting a basal skull fracture

BD: BI: BO: BU: base down; base in; base out; base up (refers to direction of the base of a prism)

Bear Tracks: descriptive term for congenital grouped pigmentation of the retina; a benign condition of pigment accumulation in the fundus

Bedewing: commonly refers to the slit lamp appearance of microcystic corneal epithelial edema where the tiny edema cysts appear like dew-drops

Behçet's: see pp. 219 and 500 •

Behr's Sign: anisocoria associated with a tract hemianopia where pupil is dilated but normally reactive on opposite side of tract lesion

Belladonna: a perennial herb whose leaves and roots contain atropine and related anticholinergic alkaloids

Bell's Palsy: facial nerve palsy following inflammation in the stylo-mastoid foramen; commonly leads to lagophthalmos with corneal exposure; most cases recover within several months

Bell's Phenomenon: physiologic elevation and abduction of eyes with lid closure

Belpharoptosis: the condition of ptosis or drooping of the eyelid; the upper lid in common usage unless specified otherwise

Benedikt's: see p. 592 •

Benson's: see Asteroid Hyalitis •

Berger's Space: the slitlike space between the posterior lens capsule and the vitreous enclosed within Wieger's ligament

Bergmeister's Papilla: congenital anomaly of no clinical significance composed of glial elements within the optic cup which may extend well into the vitreous cavity

Berlin's Edema: see Commotio Retinae

Berman Locator: electronic device which aids in the localization of metallic intraocular foreign bodies; sensitivity is proportional to electrical conductivity of the foreign body

Best's: see p. 196 •

Bielschowsky-Jansky: AR / pigmentary retinal degenerative changes, cherry-red spot *not* usually seen / mental retardation, \pm seizures and ataxia •

Bielschowsky Phenomenon: phenomenon seen in dissociated vertical deviations consisting of a downward movement of the non-fixating, elevated eye as illumination presented to the fixating eye is reduced

Bielschowsky's Test: head tilt test to identify paretic cyclovertical muscle

Bietti's Dystrophy: familial / marginal crystalline dystrophy; punctate opacities in superficial stroma in paralimbal region •

Bipolar Cell: a cell in the midretinal layer with two processes connecting the photoreceptors and ganglion cells

Birefringence: the splitting of a light ray, generally by a crystal, into two components which travel at different velocities and are polarized at right angles to each other

Bitot's Spot: a foamy chalk-white triangular lesion on the bulbar con-

junctiva at the limbus seen in xerosis of the conjunctiva and especially in vitamin A deficiency

Bjerrum Scotoma: arcuate scotoma connected to the blind spot; characteristically seen in glaucoma

Blennorrhea: discharge of mucus and/or pus from the eye

Blepharitis: inflammation of the eyelids, may be allergic, infectious, seborrheic, etc.

Blepharochalasis: redundancy of the skin of the upper or lower lids, associated with lymphedema and defects in the orbital septum; often occurs in young adults, a familial tendency may be present

Blepharophimosis: very narrow tight palpebral fissure

Blepharoplasty: a surgical procedure for the repair of redundant lid tissue

Blepharospasm: forcible closure of the eyelids often accompanying inflammatory diseases of the anterior segment of the eye

Blessig-Iwanoff Cysts: degenerative cystic spaces in the peripheral retina seen commonly with normal aging

Bloch-Sulzberger: ? heredity, familial; onset congenital or neonatal / pseudoglioma, orbital mass, nystagmus, blue sclera, cataract, optic atrophy / incontinentia pigmenti, aplopecia, dental anomalies •

Blow-out Fracture: a fracture of an orbital bone (usually the floor of the orbit), secondary to a blow to the eye which raises intraorbital pressure and "blows out" the thin bone

Bourneville's: see p. 255 •

Bowman's Membrane: a uniformly thick, homogeneous sheet beneath and distinct from the corneal epithelial basement membrane which merges with the underlying stroma

Boxcarring: sludging of flow in the retinal blood vessels, seen after vascular embarrassment; the segmented blood column resembles a train of boxcars

Brown's: see p. 566 •

Bruch's Membrane: (also lamina vitrea) a thin elastic and cuticular band lining the inner aspect of the choroid and underlying the RPE

Brunescence: red-brown color seen in the nucleus of some dense senile cataracts

Brushfield Spots: light colored spots in the peripheral iris, a normal variant with high incidence in Mongoloids

Bulbar: referring to the globe or eyeball

Buphthalmos: enlargement of the globe caused by high intraocular pressure in congenital glaucoma

Busacca Nodules: pigmented peripheral iris nodules in certain cases of granulomatous uveitis

C

C: facility of outflow (aqueous)

C & C': convergence amplitude and convergence amplitude at near fixation

Café-au-lait Spot: a circumscribed light tan pigmentation of the skin in various phakomatoses (especially neurofibromatosis)

Caldwell Projection: a radiologic view useful in orbital fracture evaluation. Canthomeatal line is perpendicular to the plane of the film and x-ray tube is tilted 15° (P-A view)

Canaliculus: a small tube within the eyelid which forms part of the lacrimal excretory apparatus

Candle (Candella): a unit of luminous intensity equal to 1/60 of the luminous intensity of 1 cm² of a black body radiator at the temperature of the freezing point of platinum

Cantholysis: the severance of a canthal tendon

Canthotomy: an incision made through the canthus separating the upper and lower canthal tendons; a lateral canthotomy is sometimes performed prior to cataract surgery

Canthus: corner of the eye; the angle formed by the junction of the medial or lateral points of the upper and lower eyelids

Cardinal Fields: the nine major directions of gaze in which the eyes are measured in strabismus evaluation

Carrier: a person who possesses a particular gene and may transmit it, but does not usually express its characteristics, e.g., a heterozygote for a recessive disorder

Caruncle: a small fleshy protuberance; *C. Lacrimalis*—a small reddish body at the medial canthus of the eye containing modified sebaceous and sweat glands

Cataract: any opacity of the crystalline lens due to congenital defect, aging, trauma, or metabolic disease, etc.

Cavernous Sinus: a paired blood sinus on either side of the sella turcica connected by anastomosis

CC: with correction (glasses)

C/D Ratio: cup-disc ratio

C/F: cells and flare

Cellophane Maculopathy: clinical term for preretinal macular fibrosis wherein a layer of fibrous tissue on the anterior surface of the retina gives rise to a wrinkled appearance

Cells and Flare: the biomicroscopic appearance of particles (cells) and haze (flare or "beam") usually in the anterior chamber of the eye; implies active inflammation of the anterior segment; due to the Tyndall effect

Chalazion: granulomatous inflammation in a meibomian gland

Chalcosis: deposition of copper in ocular tissues from a retained foreign body or elevated serum copper

Chandler's: nonhereditary / iris atrophy, eccentric pupil, glaucoma, corneal endothelial dystrophy and corneal edema / no systemic findings•

Chediak-Higashi: ?AR / diminished uveal pigmentation, photophobia,

nystagmus, papilledema / partial albinism, anemia, thrombocytopenia, hepatosplenomegaly, recurrent infections●

Chemosis: conjunctival edema or an accumulation of subconjunctival fluid, usually of an inflammatory nature

Cherry-red Spot: a red spot in the macula, seen in central retinal artery occlusions and in certain storage diseases

Chiasmatic Arachnoiditis: an inflammatory process of the arachnoid in the region of the chiasm, may lead to bizarre visual field defects

Chiasm: the junction and partial crossing of the two optic nerves, gives rise to the optic tracts

Chorioretinitis: inflammation of the choroid and retina seen in such conditions as toxoplasmosis, syphilis, cytomegalic inclusion disease, etc.

Choristoma: a nonneoplastic mass composed of anomalous tissue with elements not normally found in that anatomic area

Choroid: the posterior portion of the vascular pigmented tunic of the eye (uvea)—supplies blood to the outer retina, especially the photoreceptors

Chromatic Aberration: the property of lenses whereby shorter wavelengths of light are refracted more acutely than longer wavelengths, resulting in a chromatic interval surrounding the focal point

Chromatic Interval: the linear distance from the focal point of the shorter blue wavelengths to that of the longer red wavelengths, created by chromatic aberration of lenses; clinically important in the duochrome or bichrome test to refine the refractive sphere

Chromosome: a DNA strand which transmits genetic information

Ciliary Body: a specialized portion of the uveal tract responsible for accommodation and aqueous secretion

Circle of Least Confusion: a circular point along the interval of Sturm,

dioptrically halfway between the two major focal lines created in an astigmatic lens system

Claude's: nonhereditary / ipsilateral paralysis of nerves III and IV with contralateral hemianesthesia and occasional contralateral hemiataxia; closely resembles Benedikt's syndrome●

Coats': see page 176●

Coat's White Ring: circular white corneal opacity containing iron located in an area of former foreign body

Cockayne's: AR; onset 2 y.o. / cataracts, pigmentary retinal degeneration, optic atrophy / dwarfism, deafness, mental retardation●

Cogan's (1): see page 492●

Cogan's (2): nonhereditary / congenital oculomotor apraxia with deficient voluntary gaze movements; fixation of an object to one side is accomplished by a series of head thrusts to that side; prognosis variable, deficit disappears in some cases●

Cogan's Sign: a transient upward twitch of the lid upon raising the eye to primary position from downgaze, sometimes seen in patients with myasthenia gravis

Collier's Sign: symmetrical upper lid retraction, greatest in upgaze and decreasing on downgaze, seen in disease of the periaqueductal region and rostral midbrain

Coloboma: a break in continuity of one or more of the tunics of the eye; usually a congenital failure in eye development; typical colobomas are located along the fetal fissure where there has been a failure of closure

Comberg Technique: a method for the radiologic localization of an intraocular foreign body using a contact lens with radiopaque markers

Comitant (Concomitant): usually a nonparalytic strabismus where the angle of deviation is the same in the cardinal positions of gaze and remains the same regardless of which