Centre for Eye Health

CHAIR-SIDE REFERENCE: PERIPHERAL RETINA

PERIPHERAL DEGENERATIONS THAT DO NOT INCREASE THE RISK OF RETINAL DETACHMENT

Optomap image	Green separation/red-free	OCT	Description
Peripheral (reticular) pigmentary degeneration (honeycomb chorioretinal degeneration)			• **Fundus appearance:** Circumferential reticular pigmentation with a polygonal, netlike arrangement of hyperpigmented lines forming geometric or 'honeycomb-like' patterns. Llocated between the equator and ora serrata. • Lesions typically located nasally and/or superiorly. • **OCT: O**uter retinal disruptions at intersections of hyperpigmented lines. • Benign and more prevalent with increasing age. Typically, bilateral and often accompanied by peripheral drusen. *Routine review required.*
Peripheral drusen			• **Fundus appearance**: Multiple small, focal, yellow lesions, often found near the equator. May present with pigmented borders. • Usually bilateral and often accompanied by reticular pigmentary degeneration. Increasing prevalence with age. • **OCT:** Usually appear hyperreflective on peripheral OCT. Various drusen subtypes possible with small/hard drusen most common. • **FAF:** Appearance varies with both hyper- and hypo- FAF patterns reported. *Routine review required.*
Peripheral cystoid degeneration (microcystoid degeneration)			• **Fundus appearance**: Yellowish vesicular-like lesions with a hazy grey area of thickened retina extending from the ora serrata. Small red cysts within areas of cystoid degeneration may mimic atrophic retinal holes. • **OCT:** Shows cystic spaces primarily affecting the INL and OPL. • **Complications**: Coalescence of cysts may lead to development of an acquired retinoschisis. • Benign, usually bilateral and symmetrical and typically develops with age. *Routine review required.*
Chorioretinal atrophy (pavingstone/cobblestone			• **Fundus appearance:** Well circumscribed circular areas of retinal thinning from loss of RPE and photoreceptors, allowing increased visualisation of the choroidal vasculature. May show hyperpigmented cuffs and can coalesce to form larger areas of atrophy. • **OCT**: shows loss of the RPE and thinning of the outer retinal layers. • **FAF**: Sows hypo-FAF. • Often bilateral and more common in the inferotemporal quadrant. • More prevalent with increasing age. *Routine review required.*

Risk factors associated with development of retinal breaks/RRD: Vitreous degeneration (liquefaction or shrinkage), Myopia, Fellow eye with retinal detachment, lattice degeneration, strong family history of RRD, Symptomatic retinal break, Cataract surgery, Progression of retinal thinning in young patients, Presence of significant vitreoretinal traction in elderly patients, Blunt/penetrating ocular injury, Vitreous haemorrhage

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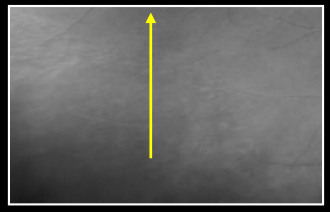
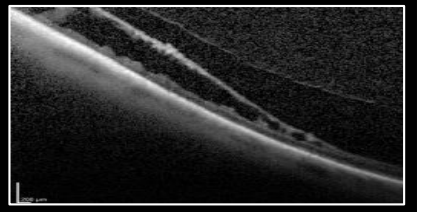
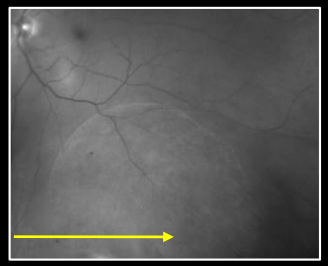
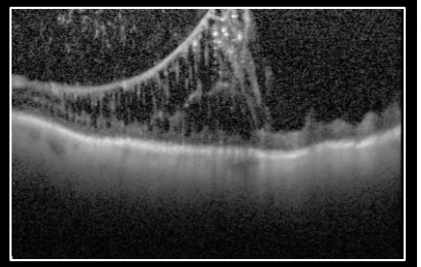
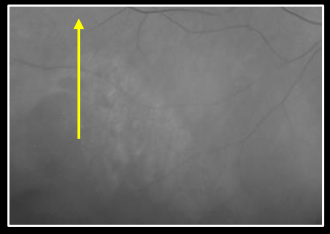
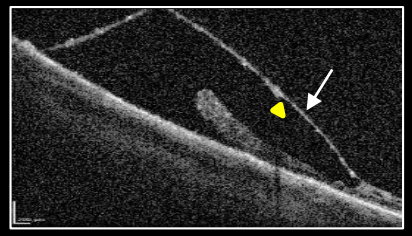
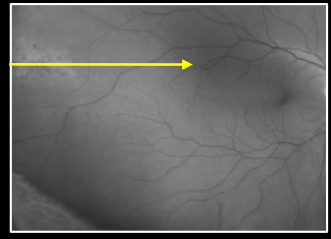
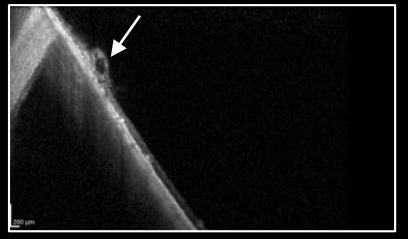
PERIPHERAL RETINAL CHANGES THAT INCREASE THE RISK OF RHEGMATOGENOUS RETINAL DETACHMENT (RRD)

Optomap image	Green separation/red-free	OCT	Description
Degenerative retinoschisis: flat/typical			• **Fundus appearance**: Smooth, slightly elevated transparent retina, often with surface white dots. Usually bilateral, found anterior to the equator, and most common in the inferotemporal quadrant. • **OCT**: Retinal splitting occurs at the level of the OPL, possibly due to coalescence of cysts in peripheral cystoid degeneration. • Often asymptomatic and found incidentally. • Rarely associated with expansion, retinal holes or retinal detachment. *Annual review. Referral indicated if increase in size or other signs of progression are observed*
Degenerative retinoschisis: bullous/reticular			• **Fundus appearance**: Well-circumscribed, immobile, transparent dome-shaped elevation of the retina, often with a pitted appearance. Reticular pattern of sheathed retinal vessels may show aneurysmal changes, telangiectasia or sclerosis. • **OCT:** Splitting occurs at the level of the RNFL. • Often asymptomatic, bilateral and most common in the inferotemporal quadrant. • Prevalence increases with age. • Retinoschisis remains elevated with scleral indentation while a retinal detachment flattens against the indentation. *Annual review. Refer if increase in size or other signs of progression are observed*
Schisis-detachment			• Caused by outer layer (leaf) breaks in a degenerative retinoschisis. • **Fundus appearance:** The presence of a pigmented demarcation line suggests a secondary detachment which has been stationary for >3 months. • **OCT:** Shows attached outer leaf with rolled-up edges (arrow) and neurosensory detachment (arrow head) *Breaks in both the inner and outer layers may result in a rapidly progressive RRD and prompt referral is required*
Vitreoretinal tuft			• Area of abnormal vitreoretinal attachment associated with vitreoretinal traction. • **Fundus appearance:** *Non-cystic tufts* are short, thin projections of abnormal retinal and glial tissue less than 0.1mm in diameter, typically found in the far peripheral retina. They do not lead to the formation of retinal holes or tears. • *Cystic tufts* appear as round-shaped grey-white nodules on retinal imaging and are usually equatorial in location. They are often associated with RPE hyperplasia and are larger than 0.1mm. **OCT** imaging shows the presence of internal microcysts. • Posterior vitreous detachment (PVD) can cause increased traction on the tuft, potentially resulting in a retinal tear or operculated retinal hole. *Annual review*

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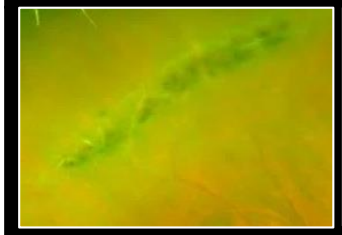
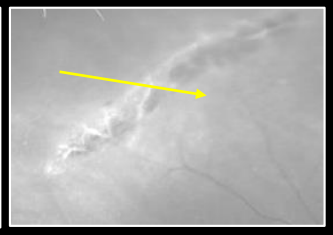
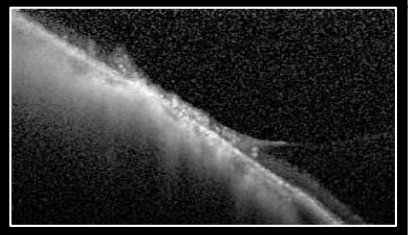
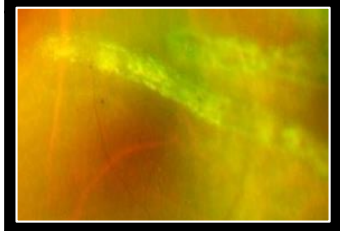
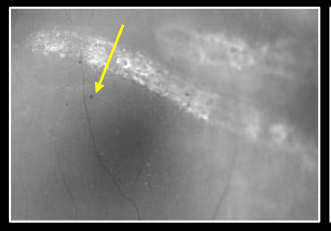
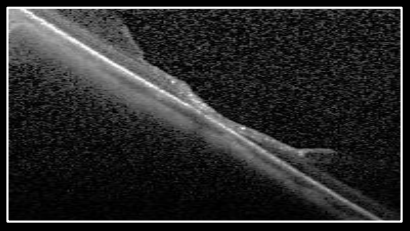
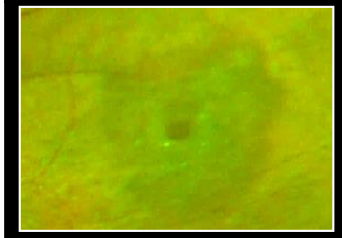
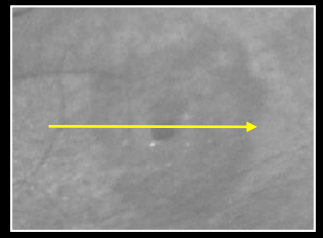
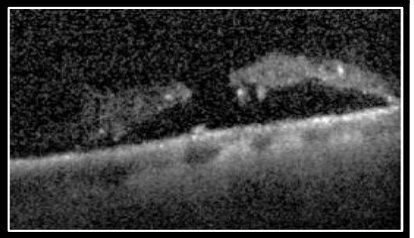
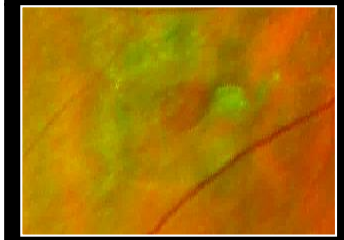
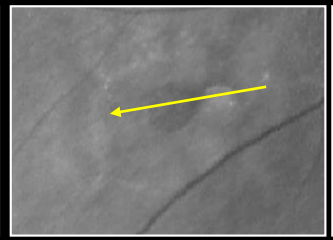
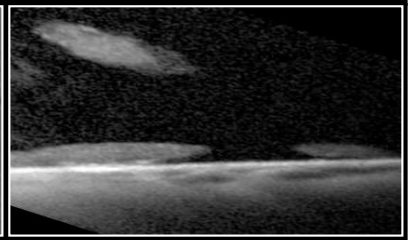
Optomap image	Green separation/red-free	OCT	Description
Lattice degeneration			• **Fundus appearance:** Oval or linear bands of thinned retina, typically located in the superior/inferior retina between the equator and vitreous base, orientated parallel to the ora serrata. Associated with pigmentary clusters, yellow glistening flecks, vessel sclerosis and atrophic holes. More common in myopes. • **OCT:** Retinal thinning, often with overlying vitreous liquefaction and/or abnormal vitreoretinal adhesion at the margins. • **FAF**: Pigmented areas are hypo-FAF, and non-pigmented areas are hyper-FAF. • Rarer perivascular and radial variants are associated with higher risk of RRD. • Higher risk of developing delayed retinal pathology following an acute PVD. *Annual review is required. If an increase in size or other signs of progression are observed, referral is indicated. If symptomatic: scleral indentation is mandatory, and if a horseshoe tear or retinal detachment is observed, urgent referral is indicated.*
			
Snail-track degeneration			• **Fundus appearance**: Bands of glistening yellow-white frost-like dots on the inner retinal surface without associated pigmentation. Resembles track left by a snail. • Most common in inferotemporal quadrant. Often associated with atrophic holes. • **OCT:** Shows irregular retinal thinning often with a wrinkled inner retinal surface, with or without vitreoretinal traction. *Manage as per Lattice degeneration (above)*
			
RETINAL BREAKS OR DETACHMENTS			
Atrophic retinal hole			• **Fundus appearance**: Appear as a red, circular lesion. May be associated with a fluid cuff, or RPE hyperplasia suggesting chronicity. • **OCT**: Shows a full-thickness retinal break. • Due to retinal thinning/degeneration and likely unrelated to vitreoretinal traction. • Atrophic holes internal to lattice degeneration associated with a low risk of RRD. If they do occur, the detachments typically shallow, slow progressing, asymptomatic. *Asymptomatic cases: 1-2 yearly review, depending on chronicity.* *With fluid cuff <1DD in radius: review in 6-12 months depending on chronicity.* *With fluid cuff >1DD radius or symptomatic cases: referral is indicated.*
			
Operculated hole			• Full-thickness retinal break associated with localised vitreoretinal traction which causes detachment of a circular 'plug' (operculum) of neurosensory retina. • **Fundus appearance:** Round red hole with an overlying floating fragment of tissue, which often appears smaller than the hole due to tissue atrophy. • May be associated with a fluid cuff, or RPE hyperplasia suggesting chronicity. • Rarely progress to RRD, unless the vitreous remains attached bordering the hole. *Asymptomatic cases with <1DD radius fluid cuff: 4-12 month review, depending on chronicity. Refer if signs of progression. With fluid cuff >1DD radius, symptomatic lesions or additional risk factors for retinal detachment: referral is indicated.*
			

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Optomap image	Green separation/red-free	OCT	Description
Retinal tear (linear, horseshoe or flat)			• Full thickness breaks occurring along the edges of lattice degeneration or from vitreous tufts. Often associated with an acute PVD. • **Fundus appearance:** Appears red surrounded by grey retinal tissue. When horseshoe-shaped, the apex usually points towards the posterior pole. • **OCT:** The vitreous remains attached to the flap with the ongoing traction increasing the risk for progression to RRD. • High risk for progression to RRD, especially if superior in location. • Risk factors for development include age, myopia, lattice degeneration, trauma and previous intraocular surgery. *Prompt referral is indicated*
Giant Retinal Tear			• **Fundus appearance**: Full thickness circumferential breaks extending over at least 3 clock hours of the retina in the presence of a PVD. • **Associations:** Majority are idiopathic but associations with trauma, previous intraocular surgery, high myopia and Stickler Syndrome exist. • Management is difficult due to the large area of detachment, with heavy liquids and strict positioning required. *Urgent referral is indicated. Regular dilated fundus examinations required for fellow eye which has increased risk of retinal detachment.*
Retinal Dialysis			• **Fundus appearance**: Full thickness break occurring at the ora serrata. • Typically associated with trauma and predominately affects young males. A PVD is present in approximately half of these patients and many progress to RRD. • May present insidiously, with slowly progressing and shallow retinal detachment occurring weeks or months following blunt trauma. • Scleral indentation may be required for diagnosis due to the peripheral location. • Respond well to scleral buckle surgery. *Urgent referral is indicated.*
Rhegmatogenous retinal detachment (RRD)			• **Fundus appearance**: Acute RRD appears as an oedematous, folded and semi-transparent, undulating retinal elevation which can then become opaque over time. Chronic RRD may show cyst formation and pigmented demarcation lines, as well as subretinal fibrosis. Obscuration of underlying choroidal detail may be the only visible sign in early/shallow cases. • **OCT:** Retinal break allows fluid from the vitreous cavity to enter the subretinal space leading to fluid separation of neurosensory retina from the RPE. • In the absence of prior surgery, cells in the anterior vitreous (Shafer's sign/ tobacco dust) indicate a retinal break or detachment until proven otherwise. *Urgent referral. Visual prognosis better with macula-on RRD than macula-off RRD.*