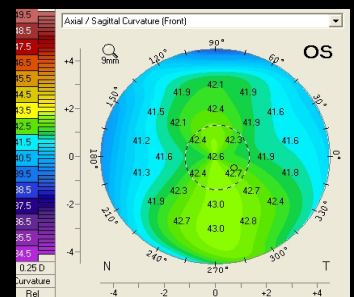
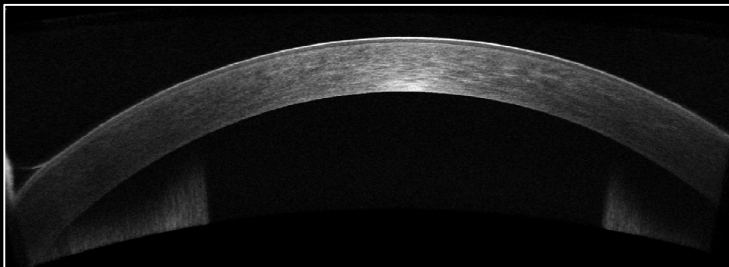
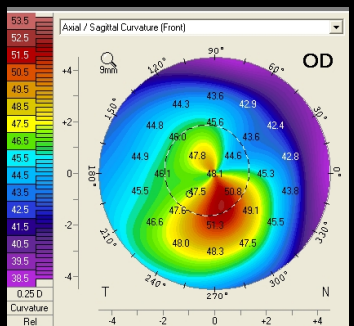
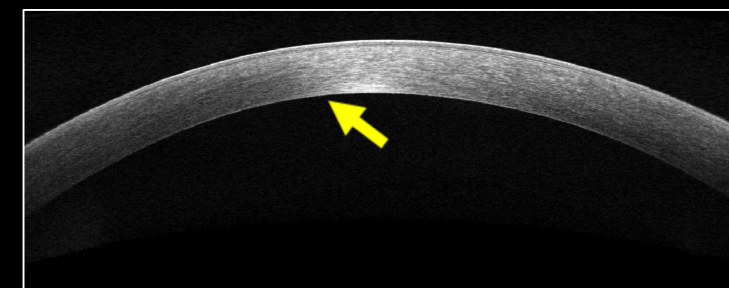
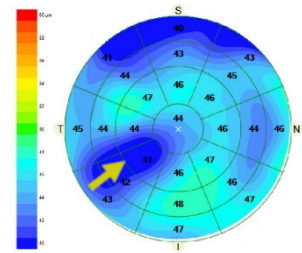
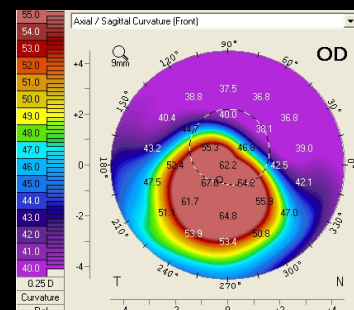
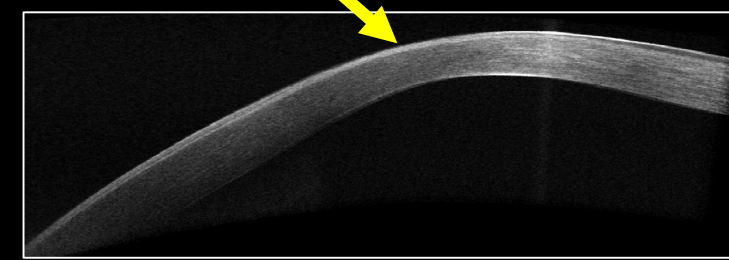
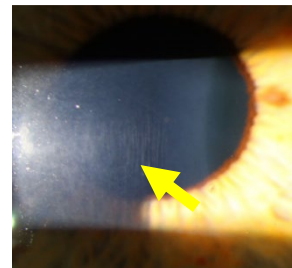


CHAIR-SIDE REFERENCE: CORNEAL ECTASIA

KERATOCONUS		
<p>Condition is bilateral, often asymmetric. Progression typically occurs until 40 years of age. Non-inflammatory, although inflammatory mediators can hasten progression.</p> <p>Age of onset: puberty.</p> <p>Typical clinical findings: Myopic astigmatism, scissor reflex on retinoscopy and/or distorted mires on keratometry.</p> <p>Established associations: Knuckle rubbing, eczema, asthma, allergy and positive family history.</p> <p>Associated systemic conditions: Down syndrome, Ehlers-Danlos syndrome, Marfan's syndrome, osteogenesis imperfecta, Leber's congenital amaurosis and floppy eyelid syndrome. There is also a possible association with mitral valve prolapse.</p>		
Sagittal front corneal topography	Anterior OCT and/or colour photography	Description
<p>Subclinical Keratoconus</p> 		<ul style="list-style-type: none"> Typically refers to an “incomplete form” of keratoconus The term can describe either of the following: <ol style="list-style-type: none"> Where the contralateral eye has keratoconus and the eye in question has: <ul style="list-style-type: none"> Normal corneal topography OCT findings are indistinguishable from a “normal” cornea Some suspicious corneal topographical changes with no other clinical findings conclusive for a diagnosis of keratoconus <ul style="list-style-type: none"> The terms “keratoconus suspect” and “Forme Fruste keratopathy” have also been used to describe this in the literature
<p>Early Keratoconus</p> 		<p>Slit lamp and OCT findings:</p> <ul style="list-style-type: none"> Subtle signs of corneal thinning (yellow arrow). Subtle signs of epithelial thinning overlying the cone. <p>Topography:</p> <ul style="list-style-type: none"> Abnormal elevation (steepening) of the anterior and posterior surfaces often resulting in an asymmetric bow-tie appearance and increase in astigmatism. Posterior changes can occur prior to anterior changes <p>Pachymetry:</p> <ul style="list-style-type: none"> Abnormal corneal thickness distribution Apical corneal thinning - typically presents inferior to the visual axis but can be present in other corneal locations.  <p><i>Image: Epithelial thickness map showing thinning over the cone (indicated by arrow)</i></p>
<p>Moderate to advanced keratoconus</p> 		<p>Slit lamp findings:</p> <ul style="list-style-type: none"> Vogt's striae Fleischer's ring Perforation or hydrops can occur Corneal scarring at the conical apex <p>OCT findings:</p> <ul style="list-style-type: none"> Atypical corneal thinning and forward bowing Abnormal epithelial distribution (Yellow arrow) <p>Topography:</p> <ul style="list-style-type: none"> Marked corneal elevation and steepening <p>Pachymetry</p> <ul style="list-style-type: none"> Prominent corneal thinning  <p><i>Photo: Vogt's striae (indicated by arrow)</i></p>

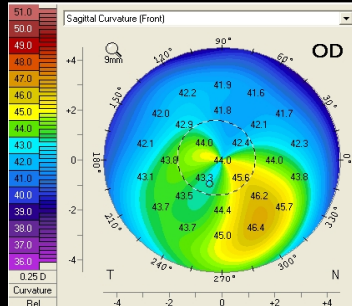
CHAIR-SIDE REFERENCE: CORNEAL ECTASIA

PELLUCID MARGINAL DEGENERATION

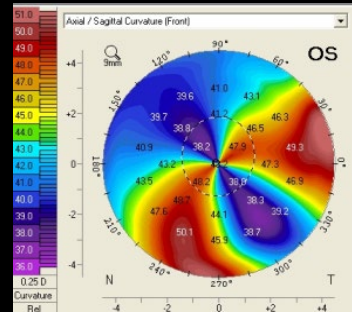
Condition is bilateral and non-inflammatory. Male predominance. Presents with increasing against-the-rule astigmatism. Age of onset: 20-50 years. There is currently debate as to whether pellucid marginal degeneration, keratoconus and keratoglobus are separate entities or different phenotypes of the same condition.

Sagittal front corneal topography

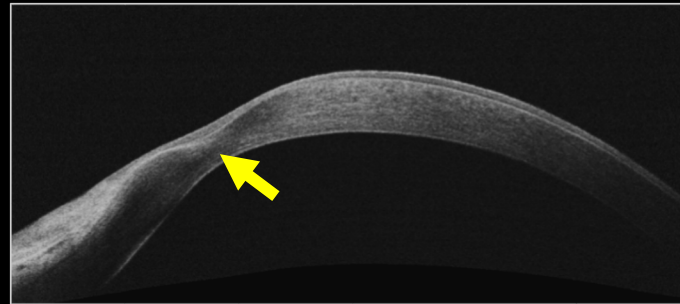
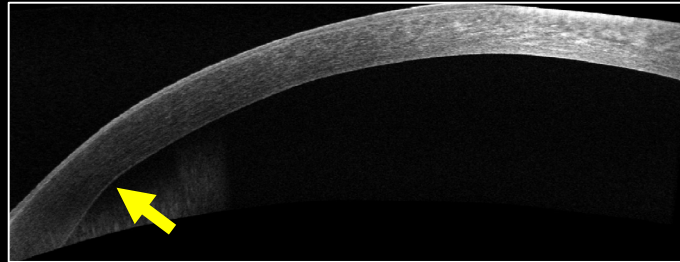
Early



Advanced



Anterior OCT and/or colour photography



Description

Spectacle visual acuity typically normal. May be difficult to distinguish from keratoconus without multimodal imaging.

Slit lamp and OCT findings:

- A 1-2mm thick band of peripheral corneal thinning extending from 4 o'clock to 8 o'clock
- Cornea is clear at the area of thinning (yellow arrow)

Topography:

- Inferior corneal thinning and steepening
- Superior corneal flattening along the vertical meridian
- "Crab claw" or "kissing dove" pattern

Pachymetry

- Possible inferior thinning however typically minimal change in central corneal thickness

Spectacle visual acuity is typically reduced but can remain normal with large cylindrical corrections.

Slit lamp findings:

- Protrusion of the inferior cornea above the area of thinning
- Inferior peri-limbal striae

OCT findings:

- Peripheral stromal thinning (yellow arrow)
- Epithelial changes overlying the area of thinning

Topography:

- Marked "Crab claw" pattern, Sometimes better appreciated on a Tangential map

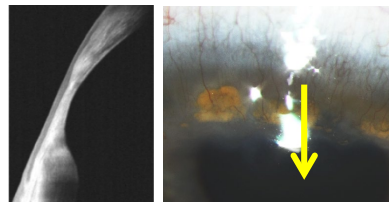
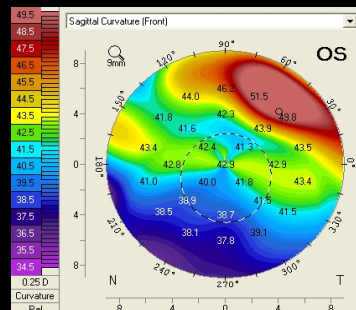
Pachymetry

- Perforation or hydrops can occur

TERRIEN'S MARGINAL DEGENERATION

Males are affected more than females. May present in 2 forms:

1. Quiescent type (affects older individuals, asymptomatic in early stages)
2. Inflammatory type (affects younger individuals 20-30 years of age, associated with episcleritis or scleritis).



OCT shows thinning of the superior peripheral cornea (peripheral gutter)

Slit lamp findings:

- Yellow-white punctate opacifications in the stroma (earlier)
- Lipid deposition along the anterior edge of the limbus (later)
- Pseudo-ptyrygia (20% of cases)

Topography:

- Against-the-rule astigmatism
- Steepening of the superior peripheral cornea

KERATOGLOBUS

- Rare bilateral condition usually present at birth.
- Some associations with connective tissue disorders such as Ehlers-Danlos syndrome, Marfan syndrome and Rubenstein-Taybi Syndrome

Clinical signs:

- Generalised thinning of the cornea, especially in the periphery
- Pachymetry is reduced to up to one fifth of normal corneal thickness
- Globular protrusion of the cornea
- High myopia with irregular astigmatism
- Perforation or rupture of cornea

Keratoglobus can occur in older patients following a hydrops in those with keratoconus or pellucid marginal degeneration.