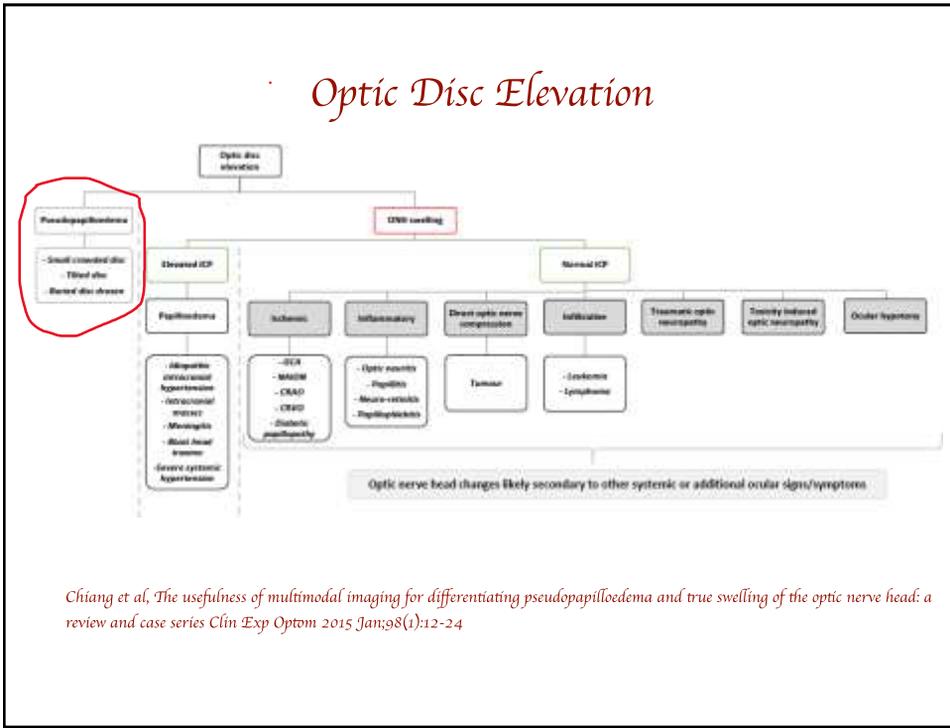


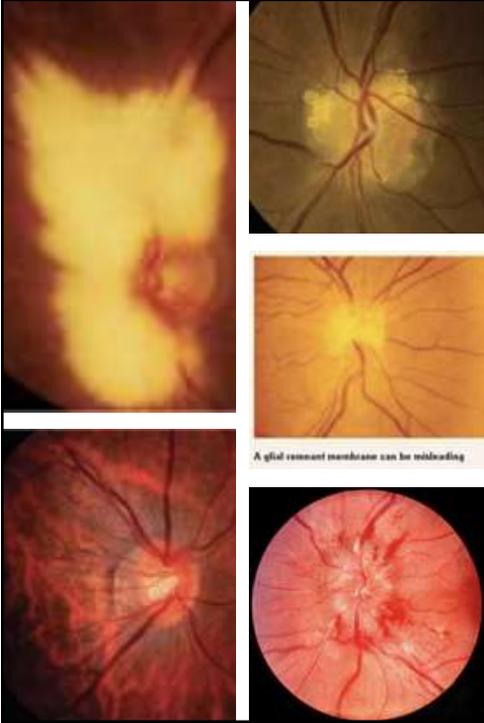
Not All Optic Disc Swelling is Papilloedema

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Papilledema Versus Pseudopapilledema

- It is very important to rule out causes of pseudo optic nerve swelling; otherwise patients might end up having several unnecessary invasive **investigations** with financial implications as well as adding to patient **anxiety**.



Pseudopapilledema

- Pseudopapilloedema describes conditions which mimic papilloedema with elevation of the optic nerve head being the main clinical observation.
- Optic disc elevation in pseudo-papilloedema occurs secondary to a **usually benign** process, such as:
 - Small crowded optic nerve head.
 - Tilted optic disc.
 - Drusen of the optic nerve head.

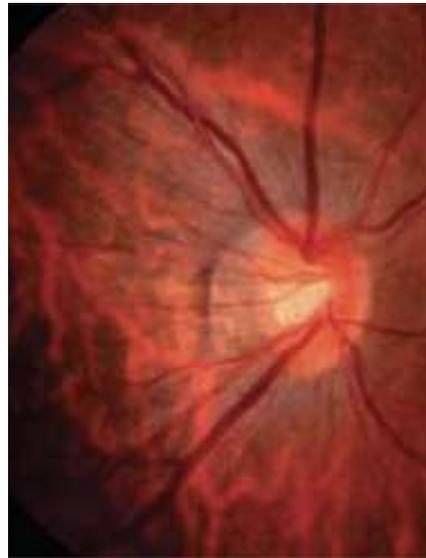


1. Small crowded optic disc.

- Small crowded discs are a physiological variation and can be a challenge in the differential diagnoses of optic nerve head elevation.
- The size of a small disc that can give rise to pseudopapilloedema is in the order of 1.95 ± 0.33 mm³ (compared to normal optic disc size of 2.69 ± 0.70 mm³).
- It is characterized by indistinct margins and no apparent cupping commonly associated with **hyperopia** due to shortened axial length although some high myopes also have them.

2. Tilted optic disc

- The tilted optic disc is a congenital condition, with increased prevalence in myopic and astigmatic eyes. These optic discs are most commonly tilted in the inferonasal direction, with elevation and indistinct disc margins at the superotemporal aspect of the optic disc.
- Tilted optic discs have a prevalence of 0.4 to 3.5 % in the general population and present bilaterally in 37.5 to 80 % of cases. The associated blurring and elevation of the disc margins can imitate the appearance of a swollen optic disc.

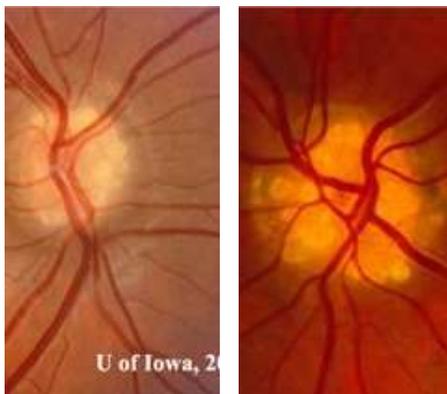


3. Optic nerve head drusen

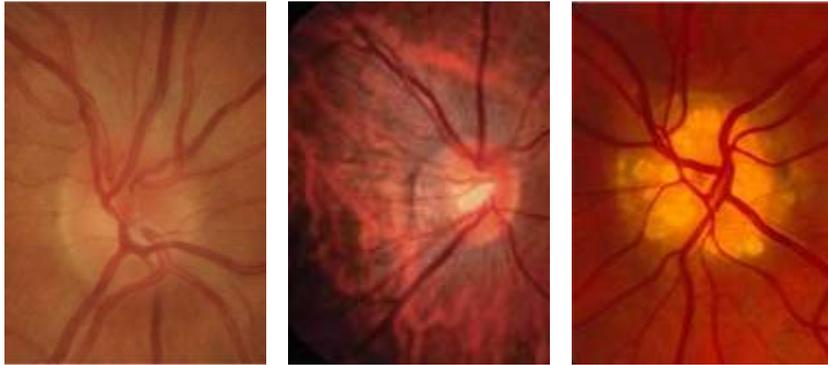


- Optic nerve head drusen is the most common cause of pseudopapilledema, occurring in 0.34%-2.4% of individuals. They are usually present since childhood and asymptomatic.
- Drusen consists of extracellular deposits of calcium, hyaline, and other proteins in the structure of the optic nerve.
- Over time, the drusen can result in elevation of the optic nerve head. **Surface drusen** could be readily seen. **Deeper, "buried" drusen** are not visible with funduscopy and may be difficult to differentiate from papilledema.

Optic nerve head drusen

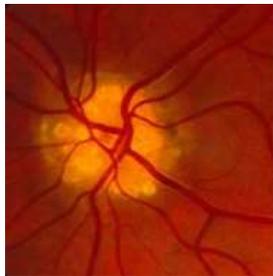


- Optic nerve head drusen can be inherited as part of a genetic syndrome with other ocular or systemic manifestations. For example, disc drusen may be associated with retinitis pigmentosa, Usher syndrome, pseudoxanthoma elasticum, angioid streaks, and migraine headaches.



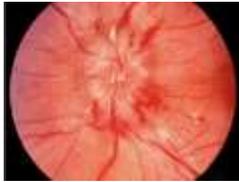
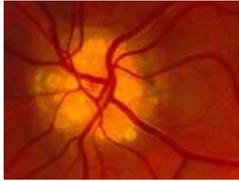
Papilledema Versus Pseudopapilledema

- 1. History
- 2. Fundus Examination
- 3. Imaging:
 - A. Optic nerve head Auto fluorescence (AF)
 - B. Optic nerve head ultrasound
 - C. Optic nerve head Fluorescein angiography (FA)



1. History

- A thorough history is key to distinguish papilledema from pseudopapilledema. Patients with true papilledema will often present with progressive headaches, nausea, vomiting, and other neurologic symptoms such as positional headaches, transient visual obscurations (TVOs), pulsatile synchronous tinnitus, and binocular diplopia.
- The possibility of pseudopapilledema can be considered in a patient with apparent optic disc swelling and no clinical symptoms or signs of increased intracranial pressure.
- Occasionally, patients with ODD will notice transient visual obscurations due to transient ischemia from vascular compression by the drusen, but other symptoms of increased intracranial pressure will be absent.



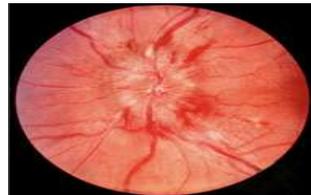
2. Funds examination

- In true papilledema, swelling of the peripapillary nerve fiber layer causes an **obscured view of underlying retinal vessels**. The appearance of vessels in the peripapillary nerve fiber layer is the most important distinguishing feature between pseudopapilledema and papilledema.
- Splinter hemorrhages may also be seen in true papilledema. Spontaneous venous pulsations (SVPs), a reassuring sign that there is no raised intracranial pressure, may also indicate pseudopapilledema. However, SVPs may be absent in up to 10% of normal individuals.

Fundus Examination Of ODE Versus ODD

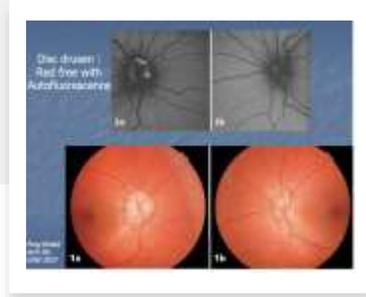
Optic disc edema	Pseudopapilledema with buried drusen
Disc vasculature obscured at disc margins	Disc vasculature remains visible at disc margins
Elevation extends into peripapillary retina	Elevation confined to optic disc
Graying and muddying of peripapillary nerve fibre layer	Sharp peripapillary nerve fiber
Venous congestion	No venous congestion
+/- Exudates / NFL haemorrhage	No exudates, NFL hge rare
Loss of optic cup only in moderate to severe disc edema	Small cupless disc
Normal configuration of disc vasculature despite venous congestion	Increased major retinal vessels with early branching
No circumpapillary light reflex	Crescentic circumpapillary light reflex
Absence of spontaneous venous pulsations	Spontaneous venous pulsations may be present or absent

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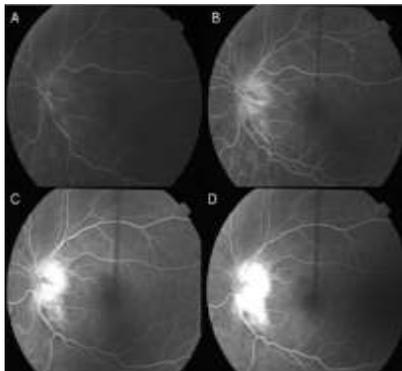


3. Imaging of Pseudopapilledema

- The most helpful imaging in diagnosing optic nerve drusen are:
 1. Optic nerve head Auto fluorescence (AF)
 2. Optic nerve head ultrasound

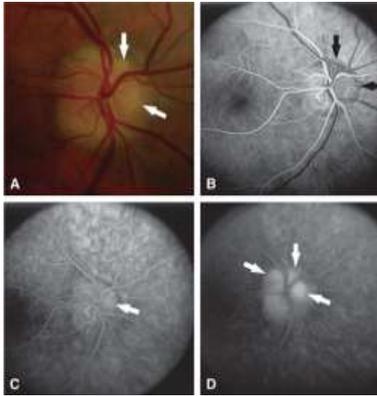


Fluorescein angiography (FA) of papilledema



- Disc FA is one of the best tests for the diagnosis of true optic disc edema, although it is typically only used in cases where other testing is equivocal.
- Capillary leakage will be present in papilledema, but not in pseudopapilledema.
- Fundus FA of the left eye with papilledema. The frames (A – D) show progressively increased intensity of fluorescence leakage from the edematous disc.

Fluorescein angiography (FA) of Optic disc drusen



- **A.** Drusen visible superiorly and nasally (arrows).
- **B.** Early phase of FA revealing early blockage of fluorescence due to the presence of surface drusen (arrows).
- **C.** Mid-phase angiography revealing early nodular staining of drusen (arrow).
- **D.** Late-phase angiogram revealing further nodular staining of drusen (arrows).



1. Distinguishing papilledema from pseudopapilledema is important to avoid invasive and unnecessary workup for increased ICP.
2. FAF and B-scan ultrasonography are imaging modalities which can definitively diagnose ONH drusen.
3. Optic Disc FA will help where other testing is equivocal.

