Junctional scotoma from a sellar mass
Visual fields and OCT findings

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A 55 year old woman presents with gradual painless loss of peripheral vision for 1 year

She is healthy and does not take any medications

Visual acuity was 20/20 OD, 20/20 OS

There was a small left relative afferent pupillary defect

She saw 14/14 correct Ishihara color plates in both eyes
Figure 1

Right eye

Left eye
There is diffuse pallor of both optic nerves (red arrows)
24-2 SITA Fast Humphrey perimetry

Left eye

Right eye
There is a temporal visual defect respecting the vertical midline in the right eye (red) and more diffuse visual field loss in the left eye (green) that also respects the vertical midline superiorly
The visual field defect localizes to the “junction” of the left optic nerve and chiasm and is called a “junctional scotoma”.

The green shape represents the location of the lesion at the distal portion of the optic nerve at the junction with the optic chiasm.
Figure 4

Retinal nerve fiber layer analysis

Ganglion cell layer analysis
There is superior thinning of the RNFL in the right eye (red arrow) and more diffuse thinning of the RNFL in the left eye (blue arrow).

Red quadrants signify that the RNFL thickness in that quadrant is less than 1% of the normal population. Yellow quadrants mean that the thickness in that quadrant is less than 5% of the normal population.
Diffuse loss of macular ganglion cells with relative sparing of the infero-temporal macula corresponds to the diffuse visual field loss with relative sparing of the supero-nasal visual field (since the inferior retina is responsible for the superior visual field).

Nasal ganglion cell loss respecting the vertical meridian seen on OCT corresponds to the temporal visual field defect in the right eye (since the nasal retina is responsible for the temporal visual field).
Coronal T2 MRI images
Coronal T2 MRI shows the right optic nerve (blue) and compression of the left pre-chiasmatic optic nerve (yellow) and chiasm (red) by a pituitary adenoma (green)
Summary points:

- A “junctional scotoma” is a visual field defect that localizes to the posterior optic nerve at the junction with the optic chiasm.

- The side ipsilateral to the lesion will have central or diffuse loss and the contralateral side will have a temporal defect since crossing fibers are affected.

- The most common cause of a junctional scotoma is a sellar/suprasellar mass such as a neoplasm or large aneurysm.