

## “Macular sink hole” with intrachoroidal cavitation in a case of pathological myopia

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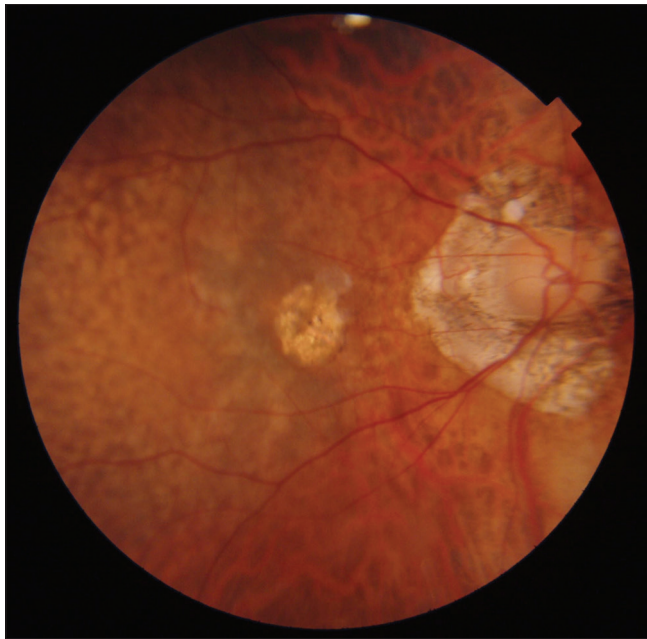
Intrachoroidal cavitation (ICC) is a morphological feature outlined by optical coherence tomography and is characterized by presence of a hyporeflective space beneath the unaltered retinal pigment epithelium. It can be peripapillary or macular in location. Macular ICCs are reported in both myopic and non-myopic eyes. We report a case of full thickness macular hole with retinal incarceration into the macular ICC in a patient with pathological myopia. The term “Peripapillary sink hole” has been described in the literature. We propose the use of term “Macular sink hole” for our case owing to similar findings in the macula.

**Key words:** Full thickness macular hole, intrachoroidal cavitation, macular sink hole, pathological myopia

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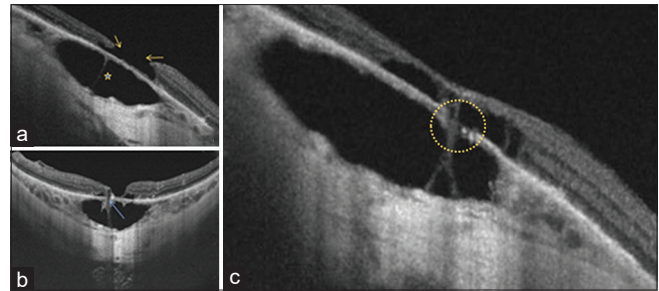
**Figure 1:** Fundus image of the OD showing peripapillary and focal chorioretinal atrophic patches in macula

Pathological myopia is characterized by degenerative changes at the posterior pole. Visual loss in such cases is attributable to patchy and diffuse chorioretinal atrophy, myopic traction maculopathy, myopic choroidal neovascularization, myopic macular hole, myopic macular retinoschisis, dome-shaped maculopathy, and intrachoroidal cavitation (ICC).<sup>[1]</sup> Optical coherence tomography (OCT) has proved to be a useful tool in determining the changes in the fundus of patients with pathological myopia. We report a rare case of association of full thickness macular hole with a macular ICC with retinal incarceration in a female with pathological myopia.

## Case Report

A 67-year-old woman presented with decreased vision in the right eye (OD) for about three months. She has had low vision in left eye (OS) for the last 15 years. She had undergone bilateral uncomplicated cataract surgery ten years ago. Best-corrected visual acuity was 20/60 (-0.75DS/-3.0X110) in OD and counting fingers from 1 m (-4.5DS/-3.0X90) in OS. Intraocular pressure in OD was 14 mmHg and OS was 16 mmHg.

Anterior segment examination showed well centered posterior chamber intraocular lens in both eyes. Fundus examination revealed peripapillary and focal chorioretinal atrophic patches in macula [Fig. 1] with no peripheral treatable lesion in both the eyes. Axial length was 28.42 mm in OD and 27.22 mm in OS. Swept-source OCT (SS-OCT) cross-sectional horizontal B scan using DRI OCT Triton (Topcon Corporation, Tokyo, Japan) across central patchy atrophy in the right eye demonstrated full thickness macular hole (FTMH) with hyporefective space in the choroid just below the FTMH suggestive of macular ICC [Fig. 2a]. Choroid and sclera at the site of macular atrophy were bowed posteriorly. Another horizontal scan showed intact inner retinal layers with absence of outer retinal layers and incarceration of retinal tissue into the macular ICC [Fig. 2b]. The site of RPE loss allowing sinking in of retinal tissue and a clear communication between the macular hole and the ICC can be



**Figure 2:** (a) SS-OCT of the OD showing full thickness macular hole with edges pointing outward toward sclera (Yellow arrows) with communication in the intrachoroidal cavitation with incarcerated retinal tissue (yellow star). (b) SS-OCT of the OD showing macular intrachoroidal cavitation with retinal incarceration into the intrachoroidal cavitation. Blue arrow shows the site of RPE loss and retinal incarceration through that area. (c) SS-OCT of the OD showing retinal incarceration through an area of RPE loss (yellow dashed circle)

appreciated in Fig. 2c. SS OCT of OS demonstrated an inactive myopic choroidal neovascularization with posterior bowing of choroid and sclera. In view of good vision in only one eye, the patient was kept under regular follow-up.

## Discussion

ICC was first described by Freund *et al.* in the peripapillary region.<sup>[2]</sup> On OCT, ICC is characterized by the presence of a hyporefective space underneath an unaltered RPE. Both peripapillary and macular ICC are noted around the region of patchy chorioretinal atrophy. Over time, patchy atrophy is suggested to progress to macular ICC.<sup>[3]</sup>

The mechanism of full thickness macular hole in pathological myopia is different from idiopathic macular holes, which is mainly due to macular tractional maculopathy. The various mechanisms involved are the anteroposterior vitreous traction on the posterior pole, tangential traction on the macula from posterior hyaloid, epiretinal membranes, internal limiting membrane and retinal vessels, and decreased chorioretinal adhesion from RPE atrophy.<sup>[4,5]</sup>

In our case, OCT clearly shows that edges of the hole are pointing toward the sclera proving that it is outward force which has opened up the hole and not anterioposterior vitreous traction. It seems that it is the centrifugal force due to posterior staphyloma which has caused retinal incarceration and subsequently development of FTMH. We hypothesize that it is the outward force due to posterior staphyloma and presence of macular ICC, which has caused sinking of overlying retinal tissue, thus we propose the term 'Macular sink holes' for such cases.

A similar case has been described by Ornek *et al.*<sup>[6]</sup> OCT has proved to be a useful tool in determining the changes in the fundus of patients with pathological myopia. They showed a patient, who had full thickness macular hole with ICC with direct communication between the vitreous cavity without evidence of any retinal incarceration. Our case seems to be precursor of what has been shown by Ornek *et al.* Macular ICC might facilitate the dissolution of retinal tissue in the area where the attachment between inner retina and sclera is considered to be weak. This, along with posterior bowing of sclera might be responsible for sinking in of retinal tissue into the space of cavitation.<sup>[7]</sup>

Cases of peripapillary sink holes have been described earlier in literature.<sup>[8,9]</sup> "Peripapillary sink hole" term was described by Fellman *et al.*<sup>[9]</sup> These sink holes are formed usually at the edge of myopic conus. The progression of peripapillary staphyloma may stretch and disrupt the tissue at the edge of the myopic conus and the adherence of the retina and the RPE at the conal margin prevents the break from opening into the subretinal space. Instead, it causes vitreous fluid to gain access into the choroidal tissue, creating fluid pocket.

## Conclusion

We thus propose to use the term "Macular sink hole" for such case of full thickness macular hole with a macular ICC with incarceration of retinal tissue. Long-term follow-up of such cases is required in order to know the natural history and timing of surgical intervention.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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