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SHORT COMMUNICATION

Case report

Optic disc pit maculopathy after blunt ocular trauma

C.H. MEYER, E.B. RODRIGUES

The Department of Ophthalmology, Philipps-University Marburg, Marburg - Germany

PURPOSE. *To present a symptomatic optic pit 3 months after a blunt ocular trauma.*
METHODS. *A 16-year-old male with unilateral decreased vision was examined with multiple cross-sectional scans using optical coherence tomography (OCT) and kinetic ultrasound at the optic disc and macula.*
RESULTS. *Visual acuity was 20/30 OD and 20/20 OS. Fundus examination OD demonstrated an optic pit with a corresponding serous macular detachment. OCT disclosed a schisis-like separation of the inner retinal layer emanating from the optic disc and an outer layer detachment of the retina. B-scan ultrasound disclosed attached Choquet's canal at the optic pit.*
CONCLUSIONS. *Patients with optic pit and firm adherent posterior vitreous may develop schisis-like retinal detachments after blunt ocular trauma. (Eur J Ophthalmol 2004; 14: 71-3)*

KEY WORDS. *Optic pit, Ocular trauma, Opthical coherence tomography*

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INTRODUCTION

Pits of the optic nerve head are rare congenital abnormalities contributing to imperfect closure of the upper edge of the embryonic fissure (1, 2). Although many patients develop serous retinal detachments during life, the underlying mechanism remains speculative. Because optic pits are congenital and corresponding macular detachments develop later during in life, certain unknown events may trigger macular detachments (3). Most eyes with an optic pit and macular detachment have a partial vitreous detachment with firm attachments at the margin of the optic head (4).

We recently determined a reduced retinal nerve fiber layer in optic pits by optical coherence tomography (OCT) and hypothesized that this *loco minoris resistenciae* may predispose a spontaneous schisis-like detachment by an unknown mechanism (2). This report describes a young patient with a unilateral optic pit, who developed a serous retinal detachment three months after a blunt ocular trauma.

A 16-year-old Caucasian boy complained about blurred vision, and metamorphopsia in his right eye for the previous 4 weeks. The patient reported a blunt ocular trauma to his right eye due to a bottle cork which had happened three months before.

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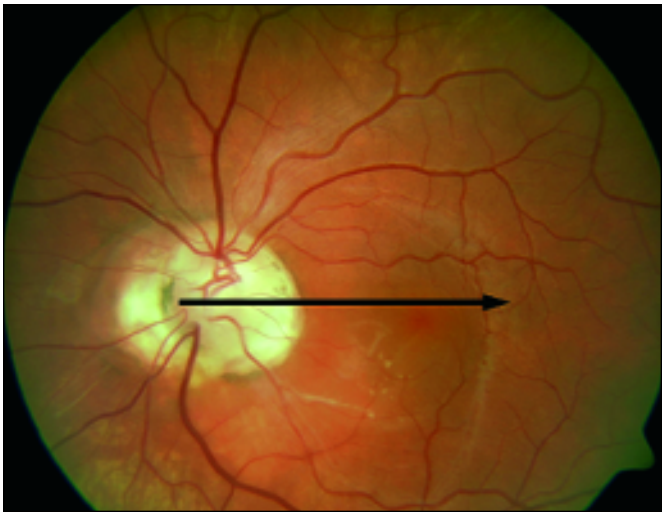

Fig. 1 - *Fundus image of the optic pit and the serous retinal detachment OS. A shallow retinal detachment extends from the optic nerve to the macula. The optic nerve has an inferotemporal pit and is surrounded by a hyperpigmented margin. The arrow indicates the location and direction of the corresponding OCT-scan.*

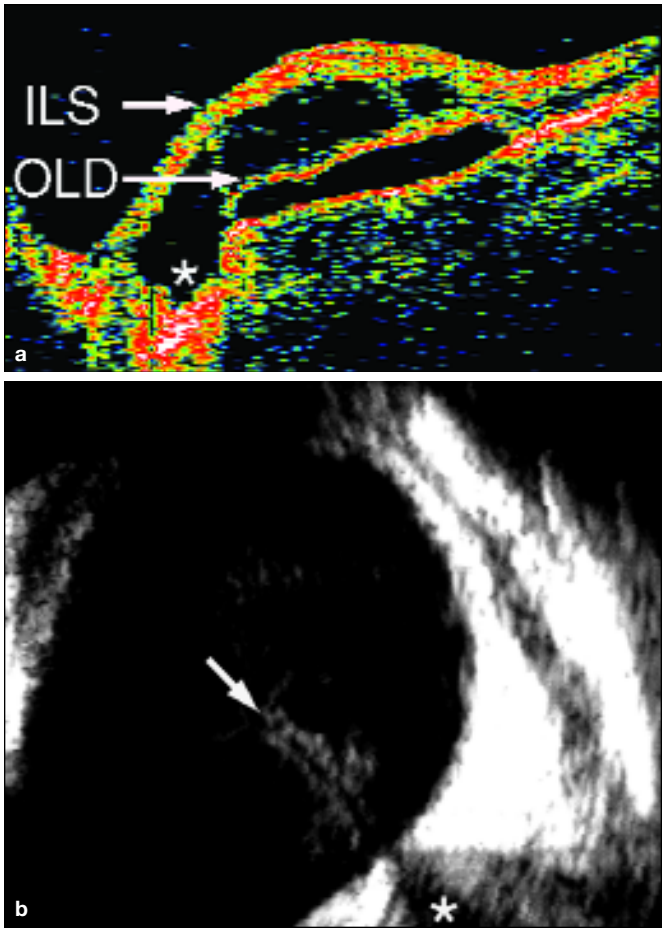

Fig. 2 - a) *Horizontal OCT-image of the temporal optic disc and the papillomacular region OS. The inner layer separation (ISL) has a thick hyperreflective orange to reddish color, consistent with nerve fiber detachment. It extends from the mid of the optic nerve across the papillomacular region to the margin of the fovea. The temporal edge of the optic nerve has a deeper hyperreflective reddish lesion, corresponding to the optic pit (white star). The outer layer detachment (OLD) of the neuroretina from the retinal pigment epithelium can be seen in a second hyperreflective band. The non-reflective space between the ILS and the OLD responds to a large schisis-like cavity The RPE–choriocapillaris-complex represents as a third hyperreflective band. The fluid under the OLD can leak through a hole in the outer layer into the subretinal space.*
b) *Sagital kinetic B-scan ultrasound of the optic nerve of the left eye. The location of the optic nerve is seen as a retrobulbare hyporeflective band (white star). An intravitreal tubular hyperreflective structure, consistent with the Cloquet's canal, extending perpendicular from the rim of the optic nerve into the vitreous cavity (white arrow).*

The patient's best-corrected visual acuity was 20/30 OD and 20/20 OS. On slit lamp examination the anterior segment appeared normal. Automated perimetry showed a dense accurate scotoma adjacent to the physiologic blind spot. Biomicroscopy OD revealed a gray oval pit in the lower temporal margin and a brownish rim at the temporal side of the disc. A shallow uniform opaque retinal detachment, about 2mm in diameter, extended from the edge of the optic nerve to the macula. The foveola was not affected by the serous detachment. Biomicroscopy OS was unremarkable. Fundus examination OD defined the origin of the intra- and subretinal fluid. There was an early hyperfluorescence from the margin of the optic nerve and late staining in the area of the detachment (Fig. 1). OCT disclosed an inner layer separation (ISL) with an outer layer detachment (OLD) of the retina. The non-reflective space between them responds to a large schisis-like cavity (Fig. 2a). Kinetic ultrasound demonstrated a hyperreflective tubular structure at the margin of the optic disc (Fig. 2b).

The pathogenesis of retinal detachments and the origin of subretinal fluid remain unclear. Lincoff et al hypothesized a concept of a two-layered structure in optic pit maculopathy (5). Serous retinal elevations in optic pits primarily emanate from the optic disc with a uniform schisis-like separation of the inner retinal layers. The ILS appears clinically transparent, the corresponding scotoma is mild and central vision remains good. When a hole in the outer layer develops, fluid

can leak through the hole into the subretinal space leading to a secondary OLD from the retinal pigment epithelium.

Our OCT scan confirmed the two-layered structure of the optic pit maculopathy, and fundus examination demonstrated the origin of the corresponding intra- and subretinal fluid from the margin of the optic nerve. Although we have no fundus images prior to the trauma, several facts support out hypothesis that the serous retinal detachment may have been caused by the traumatic event.

First, the patient did not complain about any visual symptoms prior to the trauma.

Second, ultrasound provided additional evidence of Cloquet's canal terminating at the margin of the optic disc in our case. This rare anomalous vitreous attachment was therefore also the case prior to the trauma and may have caused severe traction at the optic nerve during the traumatic event.

Third, optic pit maculopathies usually occur in older patients (>35 years of age) indicating that an unusual event may have triggered the serous detachment.

We hypothesize that vigorous radial forces transmitted through the abnormal vitreous attachment may exaggerate schisis-like retinal detachments in patients with optic pits.

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Reprint requests to:
Carsten H. Meyer, MD
Department of Ophthalmology
Philipps-University Marburg
Robert-Koch-Strasse 4
35037 Marburg - Germany
meyer_eye@yahoo.com

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