

# Optic Disc Pit Maculopathy Triggered by Childbirth

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## ABSTRACT

We describe a case of a healthy lady with a known optic disc pit who developed serous maculopathy a few hours after childbirth. We believe this is the first published description of a trigger factor responsible for serous macular detachment in eyes known to have a disc pit. She was successfully treated by means of pars plana vitrectomy and gas injection, resulting in slight visual improvement.

**Key Words:** *Optic disc. Maculopathy. Childbirth. Intracranial pressure.*

## INTRODUCTION

An optic disc pit (ODP) is a congenital cavitory anomaly of the optic disc resulting in an anomalous communication between the intraocular and subarachnoid (extraocular) spaces via the lamina cribrosa of the optic disc. ODPs are rare. The estimated incidence is 1 in 11000 people<sup>1</sup> and there is no predilection for gender. They are predominantly unilateral. An ODP may be present in any quadrant of the optic disc. By itself, an ODP causes no visual symptoms and the vast majority are discovered by chance. In about 25-75%<sup>2</sup> of cases of ODPs, a maculopathy is seen consisting of an accumulation of serous fluid in the macular area and this can have profound effects on the visual acuity. The source of this fluid is debatable but there is evidence that it may be cerebrospinal fluid. The majority have a poor visual prognosis;<sup>2</sup> although spontaneous resolution has been reported.<sup>3</sup> It is not known what factors cause maculopathy to appear in an eye with ODP. We believe this is the first published instance of a trigger factor being described in ODP maculopathy.

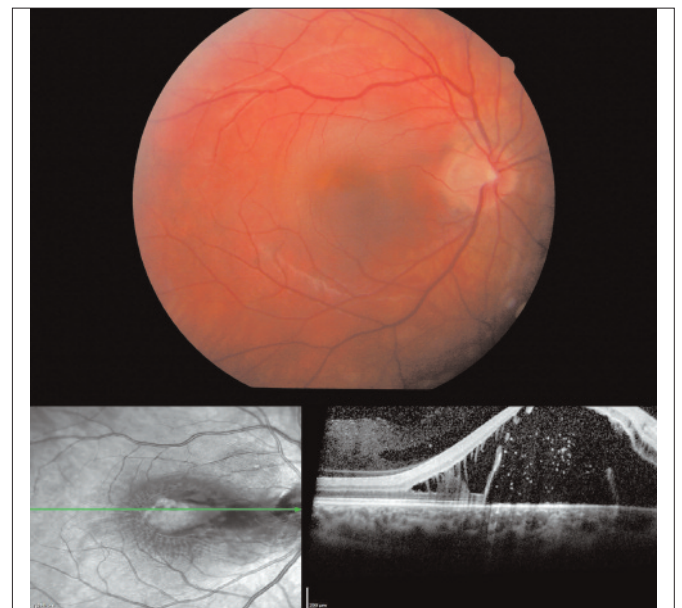
## CASE REPORT

A 20-year asymptomatic healthy lady was informed by her optometrist at a routine eye test that she had a "hole in the optic nerve" of her right eye. Ten years later (in January 2016), she delivered her first baby following an uncomplicated pregnancy. Labour was uneventful and no spinal block was used. Within a few hours of delivery, she complained of central visual blurring in her right eye. A few days later, she attended her optometrist for this

complaint, who referred her to our unit upon noticing macular elevation in the right eye.

Visual acuity was 3/60 in right eye and 6/6 in unaided left eye. Anterior segments were unremarkable and intraocular pressure (IOP) was 13 in each eye. Fundus examination showed a small optic disc pit (ODP) in the temporal part of the right optic disc. This was accompanied by a serous elevation of the macula (Figure 1), which was continuous with the temporal aspect of the disc. No posterior vitreous detachment (PVD) was visible. The left fundus was normal. Optical coherence tomography (OCT) scan showed considerable subretinal and intraretinal fluid, causing significant macular elevation.

After counselling, she opted to undergo surgery for this condition. Surgery consisted of 23G pars plana vitrectomy using the Alcon constellation system. Considerable effort was required to induce hyaloid separation from the disc, and membrane blue dye was used to visualise the vitreous and facilitate this manoeuvre. Once achieved,



**Figure 1:** Colour photo of right eye fundus and macular Optical Coherence Tomography (OCT) scan at presentation. Visual acuity was 3/60.

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hyaloid separation was extended anteriorly and gel trim continued up to the vitreous base. Brilliant peel dual was then used to stain the internal limiting membrane (ILM) over the macular area and a complete ILM peel was performed over the elevated macula using a 23g ILM forceps. The peel was extended to the disc. Some stained glial tissue was observed over the disc pit and this was gently picked off using the ILM forceps. No laser was performed. A fluid-air exchange was then performed, after which the air was exchanged with 14% C3F8 gas. No ports were sutured. The patient was instructed to posture face down for 24 hours postoperatively.

She was then followed up every three weeks in outpatients. The gas absorbed in about 7 weeks showing considerable reduction in the macular subretinal fluid (Figure 2). On her last visit at 2 months postoperatively, visual acuity (VA) had improved to 6/60 unaided.

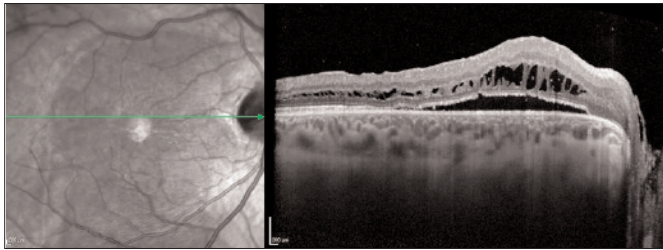


Figure 2: Optical Coherence Tomography (OCT) scan taken 8 weeks post-operatively. Visual acuity was 6/60.

### DISCUSSION

ODPs are asymptomatic unless they lead to a serous maculopathy. This is a rare occurrence. No known factors have ever been identified that trigger the actual maculopathy, although several hypotheses have been proposed.<sup>5</sup> One hypothesis is the pressure differential between the cerebrospinal fluid in the subarachnoid

space and the intraocular space.<sup>6</sup> These 2 spaces may be potentially connected if an ODP is present. Normal intracranial pressure (ICP) range is 5-15 cm of H<sub>2</sub>O. During labour, ICP increases to 40 cm of H<sub>2</sub>O with uterine contractions, whereas pushing during the second stage of labour can lead to pressures reaching 70 cm H<sub>2</sub>O.<sup>7</sup> Such a pressure differential can presumably force fluid from the subarachnoid space into the subretinal space. This observation may have preventative implications for planning childbirth in females known to have an ODP.

### REFERENCES

1. Georgalas I, Ladas I, Georgopoulos G, Petrou P. Optic disc pit: a review. *Graefes Arch Clin Exp Ophthalmol* 2011; **249**: 1113-22.
2. Rizzo S, Belting C, Genovesi-Ebert F, Di Bartolo E, Cresti F, Cinelli L, *et al.* Optic disc pit maculopathy: The value of small-gauge vitrectomy, peeling, laser treatment, and gas tamponade. *Eur J Ophthalmol* 2012; **22**:620-5.
3. Akça Bayar S, Sarigül Sezenöz A, Yaman Pınarci E, Yılmaz G. Spontaneous Regression of Optic Disc Pit Maculopathy in a six-year-old child. *Turk J Ophthalmol* 2017; **47**:56-58
4. Georgalas I, Petrou P, Koutsandrea C. Optic disc pit maculopathy treated with vitrectomy, internal limiting membrane peeling, and gas tamponade: a report of two cases. *Eur J Ophthalmol* 2009; **19**:324-6
5. Moisseiev. Optic disc pit maculopathy: when and how to treat? A review of the pathogenesis and treatment options. *Int J Retin Vitro* 2015; **7**:1-13.
6. Johnson TM, Johnson MW. Pathogenic implications of subretinal gas migration through pits and atypical colobomas of the optic nerve. *Arch Ophthalmol* 2004; **12**:1793-1800.
7. Griffiths S, Durbridge JA. Anaesthetic implications of neurological disease in pregnancy. *Contin Educ Anaesth Crit Care Pain* 2011; **5**:157-61.

