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## Case Report

# Bergmeister papilla: A unilateral case report

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## ABSTRACT

**Purpose:** To describe enhanced imaging for visualization of anatomic features and microstructures of Bergmeister papilla within the optic nerve in asymptomatic patient.

Primary measure is to see any change in the morphological characteristic in asymptomatic patient with Bergmeister papillae.

Secondary outcome measures is to see any effect on parameters of OCT in asymptomatic patient with Bergmeister papillae.

**Materials and Methods:** Carl Zeiss Cirrus HD 21 Line Raster OCT Model 5000 scanning protocol of the optic nerve and the optic disc cube 200×200 program obtains ONH images through a 3.46-mm diameter circle, and the algorithm automatically detects the circle and positions around the ONH and in the macular region were obtained in the both Eye. Fundus photo performed with Zeiss Fundus visucam 500. Clinical examination was carried out with Carl Zeiss Cirrus HD 21 Line Raster OCT Model 5000 scanning protocol of the optic nerve and the optic disc cube 200×200 program obtains ONH images through a 3.46-mm diameter circle was obtained in the both eye.

**Result:** Zeiss Cirrus HD 21 Line Raster OCT showed hyperreflectivity overlying traction on the right optic nerve with normal Foveal Contour while in the left eye (OS) optic nerve and macula were normal. Fundoscopic examination showed in the right eye (OD), a overlying traction was identified in the optic nerve supero-nasal region, while in the left eye (OS), the fundus was normal.

**Conclusion:** Optical coherence tomography helps in identification of Bergmeister papilla with peripapillary vitreous thickening is beneficial in monitoring vitreo-retinal alterations that may cause future vision impairment.

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## 1. Introduction

Bergmeister papilla also known as a peripapillary veil, develops from the center of the optic nerve and consist of a tiny bunch of connective tissue and represent a fibrous sheath encircling around the foetal hyaloid artery

during the period of embryonic development. The foetal hyaloid, which flows forward from the optic nerve to the lens, delivers nourishment to lens. The central supporting tissue surrounds the optic nerve and forms a fibrous sheath where the hyaloid artery leaves the optic nerve. The hyaloid artery regresses during birth, and by the time the eyelids open, it is usually entirely regressed. Bergmeister papilla is a fibre sheath that is remaining of the hyaloid

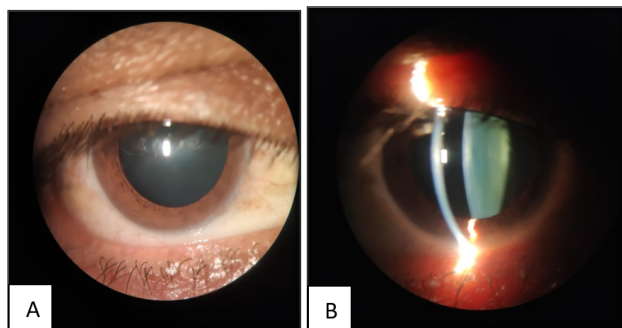
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artery.<sup>1</sup> According to Makino S (2015), the prevalence of Bergmeister papilla was determined to be 0.802 percent<sup>2</sup> in Japan and in South Indian population was 0.03 percent by using a fundus camera (one stereo pair of 20 degrees optic disc photographs) as suggested by Bassi ST et al., 2017.<sup>3</sup> In 2014, Liu et al.<sup>4</sup> detected PBPs in 11 eyes (50%) of 22 healthy subjects by using swept-source optical coherence tomography (SS-OCT), which was much higher than the prevalence observed by conventional ophthalmoscopy or fundography. In addition, persistent BMP is not thought to be an uncommon ophthalmic condition because the prevalence was 32.14% (n = 162/504) in an autopsy study.<sup>5</sup> The purpose of this study is used to describe anatomical features and microstructures of bergmeister papilla within the optic nerve in asymptomatic patient using enhanced imaging devices.

## 2. Case Report

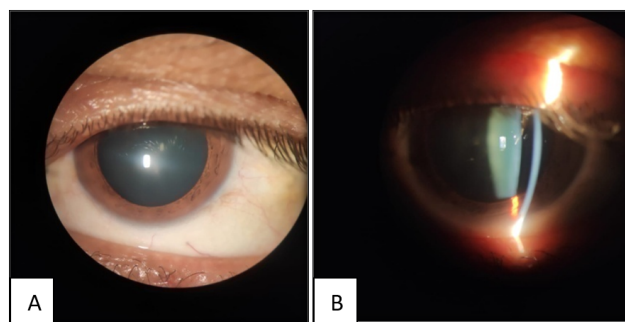
A 37-year-old male underwent an ophthalmology check-up in May 2022, at the Ophthalmology OPD of the Maharishi Markandeshwar Hospital, Mullana, Ambala, Haryana (India) for a Regular check-up as asymptomatic. Corrected visual acuity measured with Snellen Vision Charts at 6 meter was: (6/6) in the both eye (OU). Slit lamp examination showed a normal lens and cornea, with extra ocular muscles full and no nystagmus in both eyes (Figure 1 A & B & Figure 2 A & B).



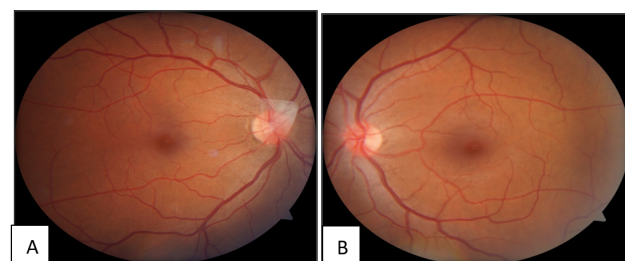
**Fig. 1:** A): Anterior segment photography of right eye; B): Slit lamp photo of right eye

Fundus photo performed with Zeiss Fundus visucam 500, showed a normal macula bilaterally. In the left eye the optic nerve looks normal (Figure 3 B), while in the Right eye, on the supero-nasal portion of the optic nerve, there was overlying traction on the optic nerve. (Figure 3 A).

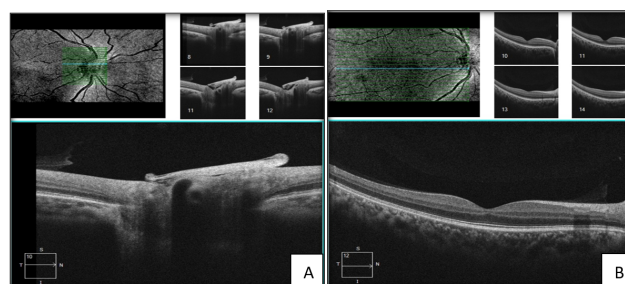
OCT with Zeiss Cirrus HD Scanning Protocol: 21 Line Raster OCT 5000, was performed and showed a hyper-reflective overlying Traction on the Right optic nerve (Figure 4 A) with Normal Foveal Contour (Figure 4 B) while on the left eye optic nerve and fovea looks normal (Figure 5 A & B).



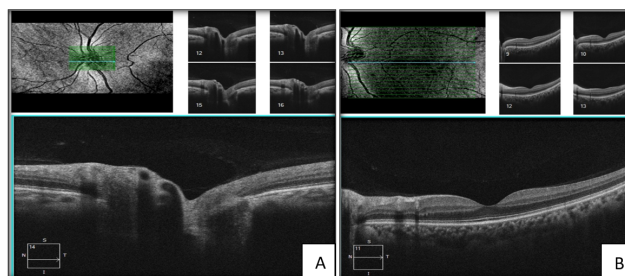
**Fig. 2:** A): Anterior segment photography of left eye; B): Slit lamp photo of left eye



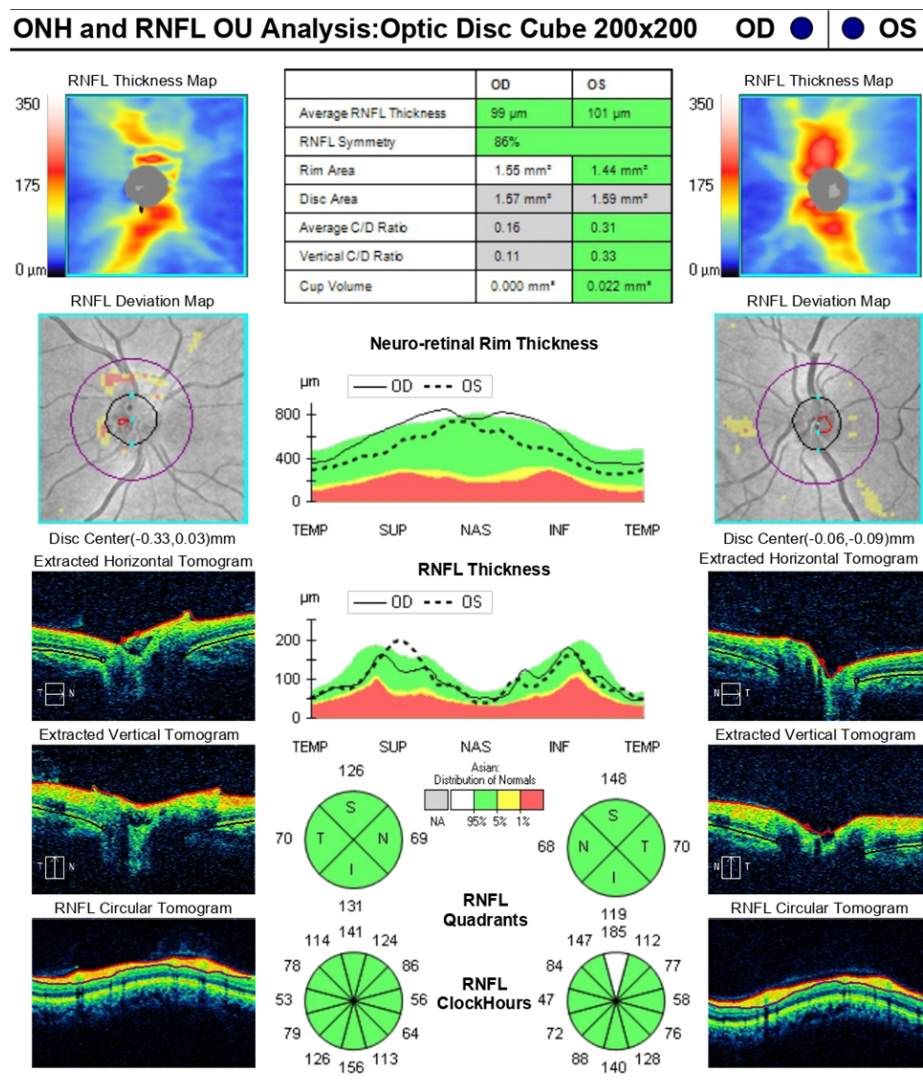
**Fig. 3:** A): Zeiss fundus visucam 500 posterior segment of right eye showing overlying traction on the optic nerve; B): Zeiss fundus visucam 500 posterior segment of left eye



**Fig. 4:** A): Zeiss cirrus HD 21 line raster OCT of the optic nerve with presence of hyper-reflective overlying traction on the optic nerve in the right eye; B): Zeiss cirrus HD 21 line raster OCT shows a normal foveal contour in right eye



**Fig. 5:** A): Zeiss cirrus HD 21 line raster OCT shows a normal optic disc with no overlying traction in left eye; B): Zeiss cirrus HD 21 line raster OCT shows a normal foveal contour in left eye



**Fig. 6:** The optic disc cube 200×200 program obtains ONH images through a 6×6×2 mm cube of data by means of 200×200 axial scans. From this data, the system extracts a B-scan in a 3.46-mm diameter circle, and the algorithm automatically detects the circle and positions around the ONH

Right eye showed a horizontal (upper image) and vertical (lower image) high-definition optical coherence tomography images show the persistent hyaloid tissue rides up along the neuroretinal rim of the optic disc (arrows) & optic disc cube scans centered on the optic disc show the automatic segmentation of the internal limiting membrane (red line) is raised in the area where the BMP is located.

### 3. Discussion

Bergmeister papilla, which is named after Australian ophthalmologist O which can be unilateral or bilateral.<sup>1</sup> In this case report we describe a unilateral case of Bergmeister papilla in a asymptomatic patient. Bergmeister, is a rare congenital optic disc anomaly, which can lead to future

visual impairment.<sup>6</sup> Bergmeister papilla, which is often composed of glial tissue and refers to the inability to regress the hyaloid artery in the posterior section of the optic disc, is a term for this condition as suggested by Makino S (2015).<sup>2</sup> Sherman J et al., (2008) studied using spectral-domain Optical coherence tomography suggested that Bergmeister papilla was present in the majority of young age, normal eyes, even though it could not be observed during funduscopy.<sup>7</sup> In some cases, it is sometimes associated with cataract, microphthalmia, pre-retinal hemorrhages, or even traction retinal detachment as suggested by Jeon H et al., 2019.<sup>8</sup> Lin Q et al., 2021 suggest Bergmeister papilla association with myopic eyes in relation to axial length in younger children.<sup>9</sup> However, a case in 50s with asymptomatic BMP demonstrated optic

nerve elevation with traction creating macular schisis on OCT has been reported.<sup>10</sup> This study had limitations that Visual fields had not been done in this case as the patient is asymptomatic. However, visual function is usually normal.<sup>11</sup>

#### 4. Conclusion

So, in the case of suspicious Bergmeister papilla, future monitoring of peripapillary areas with the help of visucam fundus photo and especially by Cirrus OCT HD model 5000, is crucial. Thus, the Cirrus OCT HD model 5000 is a sophisticated tool for detecting the hyper-reflective opacity and adjacent vitreo-retinal adhesions.

#### 5. Abbreviations

OD: Right Eye OS: Left Eye, HD OCT: High-definition Optical coherence tomography, BP: Bergmesiter papilla

#### 6. Case Presentation Permission

Department of Ophthalmology, Maharishi Markandeshwar Hospital, Mullana, Ambala, granted approval for the study case report and publishing.

#### 7. Source of Funding

None.

#### 8. Conflict of Interest

None

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