

# Place of Ocular Ultrasound in the Diagnosis of Optic Disc Druses in Developing Countries: About a Case and Review of the Literature

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## Abstract

**Background:** Druses of the papilla constitute abnormal deposits of calcified hyaline material at the level of the head of the optic nerve. They can be superficial or deep. **Aim:** The aim of this study is to show the utility of ocular ultrasound in ophthalmology in underdeveloped countries for the characterization of optic disc druse. **Case Presentation:** Our study relates to a clinical observation of buried papillary druses diagnosed by ocular ultrasound. The ophthalmologic examination revealed an aspect of false papillary edema in the fundus. The ocular ultrasound revealed hyperechogenic deposits buried in the papillary margins, which suggests the deep papillary druses. **Conclusion:** Ocular ultrasound still has a prominent place in the diagnosis of certain eye conditions despite the new sophisticated means available to ophthalmology to date.

## Keywords

Ultrasound, Druses, Hyperechoic, Globe

## 1. Introduction

Optic disc drusen (ODD) is benign calcified deposits which are located at the head of the optic disc [1]. It results from the accumulation of more or less secondarily calcified axoplasmic material [2] [3]. They can be superficial or deep. Most ODD patients are asymptomatic [1]. However, in some cases, even simple

visual discomfort can justify their discovery. Ocular complications, related to ODD, are considered rare. Optic disc drusen, especially if it is bilateral, may mimic the clinical presentation of papilledema. The clinical discrimination between ODD and papilledema may be a challenging task [1]. Screening for anatomical damage using new imaging can therefore be of interest in trying to understand the pathophysiological mechanism and to establish an early diagnosis of visual fiber distress [4]. But in many cases, a little simple ocular ultrasound examination is needed [1]. Through this observation, we come back to the interest of the ocular ultrasound in the diagnostic process in presence of a false papilloedema at the fundus examination.

## 2. Case Presentation

Our study relates to a clinical observation of optic disc drusen discovered from visual blur. Successive examinations such as a non-mydriatic retinography, an automated visual field, a brain scan were performed at the beginning but the ocular ultrasound was decisive in the diagnostic approach and a papillary optical coherence tomography made it possible to confirm and understand the rare functional manifestation in many cases.

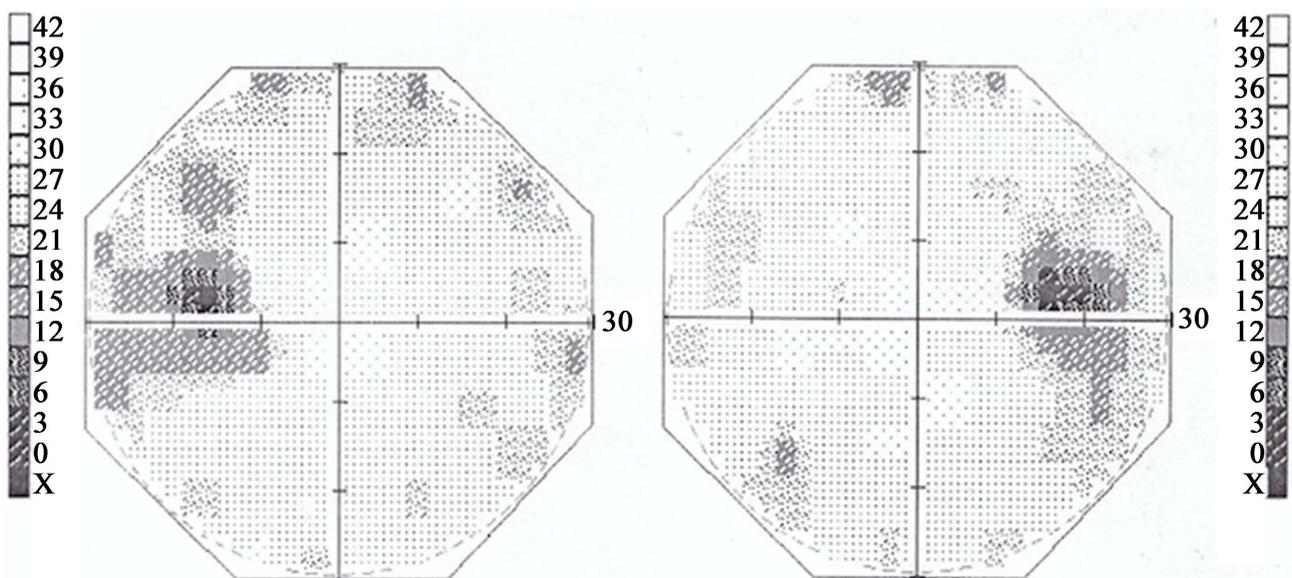
This was a 36-year-old patient who consulted for visual discomfort with an intermittent blur type felt like a veil in front of the eyes evolving for about 1 month. In terms of his history, the patient has no known familial disease. On a personal level there is no known general illness, he had been wearing an optical correction of  $-0.25$  at  $30^\circ$  on the right eye and  $+0.25$  ( $-0.25$ ) at  $105^\circ$  on the left eye 2 years ago. On ophthalmologic examination, there was no abnormality in the appendages such as the eyelids, eyelashes or eyebrows. There was no pain on palpation of the orbital rim. In the right eye, the best far visual acuity was LogMar 0.00 and Parinaud 2 in near vision. On the slit lamp, the structures of the anterior segment of the eye were normal with a good light reflex. The intraocular pressure on the automated tonometer was 17 mmHg. In the left eye, the examination is identical with an intraocular pressure at 15 mmHg. On examination of the fundus, there was a pseudopapilledema with a haze of the papillary edges with a filling of the papillary excavation. There was no hemorrhage, no cottony lumps in the retinal field or dilation of the retinal vessels. The macula also had a good reflection. A non-mydriatic retinography performed noted a fuzzy appearance of the papillary margins without exudates, haemorrhages, or turgor from the retinal vessels in the right and left eye (**Figure 1**).

A blank-white automated visual field demonstrated an enlargement of the blind spot in the right and left eye (**Figure 2**). An ocular ultrasound was then performed and showed a hyperechoic cystic formations buried in the optic nerve in front of the riddled blade of the optic nerve in favor of the buried optic disc druses (**Figure 3**). ONH OCT examination performed noted a double-humped appearance (**Figure 4**).

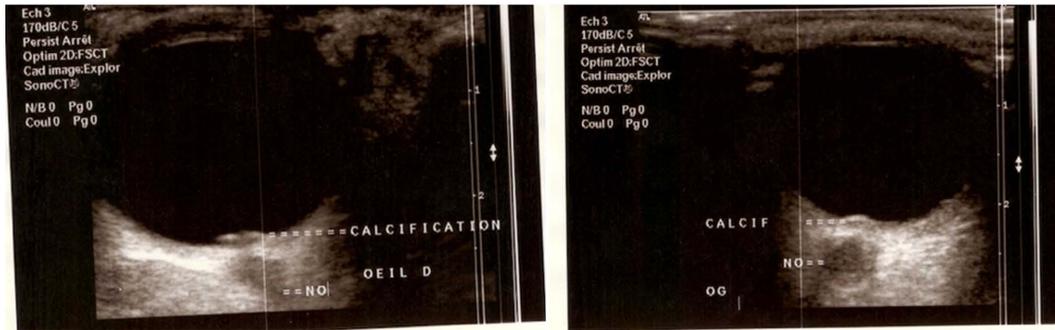
The sociodemographic and clinical characteristics of the patient could be summarized in **Table 1**.



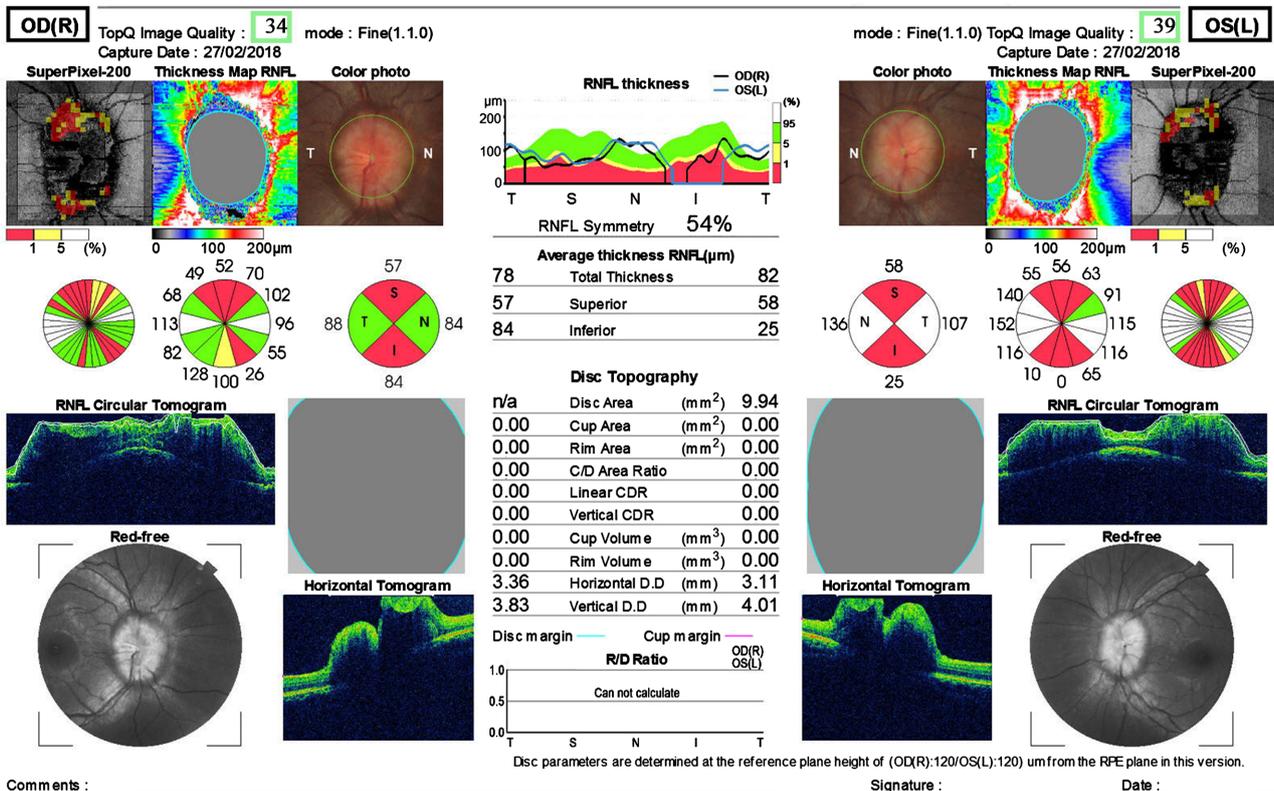
**Figure 1.** Non-mydratiac retinography: pseudopapilledema in the both eyes.



**Figure 2.** Automated visual field: Enlargement of the blind spot.



**Figure 3.** Ocular ultrasound showing calcified formations.



ONH: Optic nerve head.

**Figure 4.** ONH OCT: Image of double bump with involvement of the peripapillary optical fibers (RE & LE).

**Table 1.** Sociodemographic and clinical characteristics of the patient.

Age	36 years old
Sex	male
Ocular symptoms	Visual blur, dicomfort
History	Evolution since 1 month, no medical or surgical disease known
Ocular signs	Papilledema in fundus
Visual field	Enlargement of the blind spot
Retinography	Pseudopapilledema
OCT	Double hump, peripapillary fibers defect
CT Scan	Normal

### 3. Discussion

The first histological description of druses was made by Müller [4] where they were described as cell-free concretions which resemble geodes in crystal and which remain almost unchanged during life but often asymptomatic. It should be noted that in 60% of cases, papillary druses are visible in the fundus [5]. The prevalence of papillary druses in the general population varies between 0.3 and 0.5% [6]. They can be congenital or acquired. Congenital, they are due to a narrowing of the scleral duct [2] [3]. Acquired, they are secondary to chronic papillary edema [7]. This therefore results in a rapid slowing of axonal flow, with an increase in the volume of visual fibers and through the walls of the axon the elements that constitute axonal transport (mitochondria, neurofilaments, etc.) issue; these will surround themselves with calcium [3] [8] [9] [10]. The functional consequences result from the primary neuronal damage and/or the compressive or ischemic effect on neighboring axons [11] [12] [13] [14] [15].

The interest of the new papillae imaging has made it possible to understand the clinical symptoms in some cases. This is the example of fiber optic analyzers like the OCT. However, even less invasive is the ocular ultrasound, which reveals the druses buried in the head of the optic nerve. It should be noted that ocular ultrasound is considered to be a highly sensitive imaging tool, especially in cases of deep druses during which the persistence of low-gain hyperechogenicity due to calcification can be objectified [16] [17] [18] [19]. New ultrasound techniques using a 20 Mhz probe are even more sensitive in the detection of papillae druses [20]. In some cases, even the discovery of hyperechogenicity may not warrant further investigation, especially if the patient has functional signs. This justified in our case the papillary OCT and cerebral CT. The papillary OCT helped to understand the symptoms associated with the involvement of the peripapillary optical fibers in this specific case.

CT has eliminated an expansive intracranial process.

The sociodemographic and clinical characteristics of the patient could be summarized in **Table 1**.

### 4. Conclusion

Papillary druses are relatively rare and often without functional manifestation. However, their discovery can be motivated by visual symptoms. Despite the many imaging tools available to date in ophthalmology, ultrasound remains very useful and sensitive, especially in the diagnosis of deep druses.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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