ELECTRONIC CLINICAL CASE

Simultaneous vitreous hemorrhage and branch retinal artery occlusion after prepapillary arterial loop rupture

Hémorragie du vitré et occlusion de branche artérielle rétinienne après rupture d’une boucle artérielle prépapillaire

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Received 12 April 2012; accepted 16 July 2012
Available online 12 February 2013

Summary Prepapillary arterial loops are rare benign congenital vascular anomalies that may be complicated by vitreous hemorrhage and branch retinal artery occlusion (BRAO). We describe the first case in the literature of simultaneous occurrence of both these complications in the same eye of a patient with a bilateral prepapillary arterial loop, successfully treated with vitrectomy.

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MOTS CLÉS
Boucle artérielle prépapillaire; Hémorragie du vitré; Occlusion de branche artérielle rétinienne; Vitrectomie;

Résumé Les boucles artérielles prépapillaires sont de rares anomalies vasculaires bénignes, qui peuvent se compliquer d’hémorragie du vitré et d’occlusion de branche artérielle rétinienne. Nous décrivons le premier cas rapporté de la littérature chez un patient avec une boucle...
Décollement postérieur du vitré

Prepapillary arterial loops are rare congenital vascular abnormalities, usually benign and asymptomatic. Vitreous hemorrhage and branch retinal artery occlusion (BRAO) are the most frequent described complications [1–4]. To our knowledge, simultaneous occurrence of both these complications has not been previously reported. We describe a case of prepapillary arterial loop rupture resulting in vitreous hemorrhage and BRAO in a patient with a bilateral vascular anomaly.

A 64-year-old woman was referred to our clinic for sudden vision loss in her right eye (hand motion). No history of trauma or earlier visual dysfunction were reported. A dense vitreous hemorrhage was diagnosed. Best Corrected Visual Acuity in the left eye was 20/20 and a pulsating prepapillary arterial loop was noted at fundus observation, confirmed by fluorescein angiography (Fig. 1A). Ultrasound scan of the right eye showed a prepapillary vitreous adhesion next to a hyperechogenic vascular anomaly, consistent with prepapillary loop (Fig. 1B). No hemorrhage clearing was eventually noted during the strict follow-up. Three weeks after presentation the patient underwent a pars plana vitrectomy (PPV), and a leaking prepapillary arterial loop was intraoperatively found to be the source of hemorrhage. Endodiathermy of the vascular anomaly was required to stop the bleeding. On the 1-week postoperative examination the patient had full vision restoration (20/20), but a fluorescein angiography highlighted an inferotemporal BRAO (Fig. 1C and D), with macular blood supply provided by patent cilioretinal arteries. No hemorrhage recurrence or further complications presented during the 12-month follow-up.

Prepapillary arterial loops are optic disc vascular anomalies of one of the main branches of the central retinal artery. Vessels usually extend into the vitreous, twist and then return back, supplying the retina as a normal branch vessel. If the presence of a prepapillary arterial loop is very uncommon, bilateral anomaly is even more rare. Vitreous hemorrhage has been previously reported as

![Figure 1](image-url)

**Figure 1.** (A) Left eye fluoresceing angiography showing a prepapillary arterial loop. Optic disc, arterial and venous vascularization are not affected by further significant abnormalities. As the kinking course of vessels does not allow a complete visualization of the vascular course, the loop is probably upstream of the inferotemporal retina artery. (B) Preoperative right eye B-scan ultrasonography demonstrating the vitreous hemorrhage and a posterior vitreous detachment with residual adhesion on a prepapillary hyperechogenic vascular anomaly (arrow). (C) One-week post-surgical retinography showing a prepapillary vascular abnormality. (D) The one-week postoperative fluorescein angiography shows a prepapillary hyperfluorescent vascular abnormality with a hypofluorescent central spot corresponding to the surgically coagulated vessel. Inferotemporal retinal artery is characterized by a reduced lumen and a delayed perfusion.
Hemorrhage and BRAO in preapillary arterial loop rupture

consequence of traumatic loop rupture or related to physical straining. [5] Venous impairment due to a Valsalva-like mechanism, coupled with the presence of a preapillary arterial loop, was supposed to determine loop decompensation and consequent occlusion or hemorrhage [5–7]. Moreover, BRAO may be due to loop thrombosis or twisting [8,9].

Strassman et al. reported a case of recurrent vitreous hemorrhage as a result of vitreous traction on a preapillary arterial loop. In their report, for the first time, a standard PPV was performed to release the vitreous traction from the loop [10]. Furthermore, Gass suggested that hemorrhage could be caused by rupture of small vessels near the base of the loop caused by its movement [9]. Our case confirms the importance of vitreous tractions on preapillary arterial loops in the pathogenesis of persistent vitreous hemorrhage: a posterior vitreous detachment (PVD) was indeed supposed to be the triggering event.

Exact causes of BRAO could not be certainly established. However, our direct intrasurgical observation and the postoperative fluorescein angiography suggest for a presurgical occurrence of retinal ischemia. Loop rupture probably determined insufficient blood supply to the downstream vascular portion. Nevertheless, thrombosis or twisting of the loop could not be excluded at all. The coil-like structure of the loop could be associated with an increased turbulence of the vascular flow, predisposing its thrombosis [11].

We find that a PVD is likely to be the trigger cause of preapillary arterial loop rupture. In case of a vitreous hemorrhage at presentation, the finding of a vascular anomaly in the fellow eye strongly suggests the diagnosis of a preapillary arterial loop rupture. Furthermore a BRAO occurrence during the follow-up should be always considered as a possible complication.

Disclosure of interest

The authors declare that they have no conflict of interest concerning this article.

References