



## Central retinal artery occlusion after percutaneous nephrolithotomy lithotripsy in the prone position

Shenye Gu, MD · Nianci Shen, MD · Dongya Wang, MD · Jianping Lu, RN · Lvjun Yang, MD · Weidong Gu, MD, PhD

Received: 18 October 2016/Revised: 18 December 2016/Accepted: 9 January 2017/Published online: 17 January 2017  
© Canadian Anesthesiologists' Society 2017

A previously healthy 50-yr-old man complained of left eye blindness after awakening from uneventful general anesthesia for routine percutaneous nephrolithotomy and lithotripsy in the prone position. His head had been neutrally positioned on a foam head pad for 135 min, with no compression of the eyes on initial positioning.

Fundoscopy examination (Figure A, B) and optical coherence tomography (OCT) (Figure C, D) were performed immediately postoperatively. Based on the findings, central retinal artery occlusion (CRAO) was diagnosed. Despite immediate treatment with intramuscular vitamin B12, sublingual nitroglycerin, intraorbital injection of anisodamine (to relieve ocular

vasospasm), and 14 days of hyperbaric oxygen therapy, the patient's vision improved only from light/dark discrimination on postoperative day 1 to visual acuity of 0.1 (range 0.1–1.5) on postoperative day 17.

Postoperative vision loss is a devastating complication, with most cases due to ischemic optic neuropathy or CRAO. Central retinal artery occlusion can be caused by embolism, thrombosis, vascular compression, or spasm, with the latter least likely in this case. Patients with atherosclerosis or other vascular disease are at greatest risk, with the most common intraoperative risk factors being direct eye compression, often in the prone position, and arterial emboli. As the central retinal artery is responsible for the blood supply to the inner two thirds of the retina, occlusion of this vessel can lead to sudden, painless, monocular vision loss. As recovery of vision is unlikely if retinal ischemia lasts more than four hours, anesthesiologists need to be aware of CRAO to prevent delays in diagnosis and to obtain emergency ophthalmological consultation.

Optical coherence tomography is a relatively new technology that can provide an *in vivo* high-resolution quasi-histological image of the retina's ten layers in less than two minutes. It can be used to identify thickening and increased reflectance in the retina that are consistent with CRAO but not with ischemic optic neuropathy. Thus, OCT might be a useful adjunct to fundoscopy for establishing the cause of acute postoperative vision loss, provided that OCT equipment and personnel trained in its use are readily available.

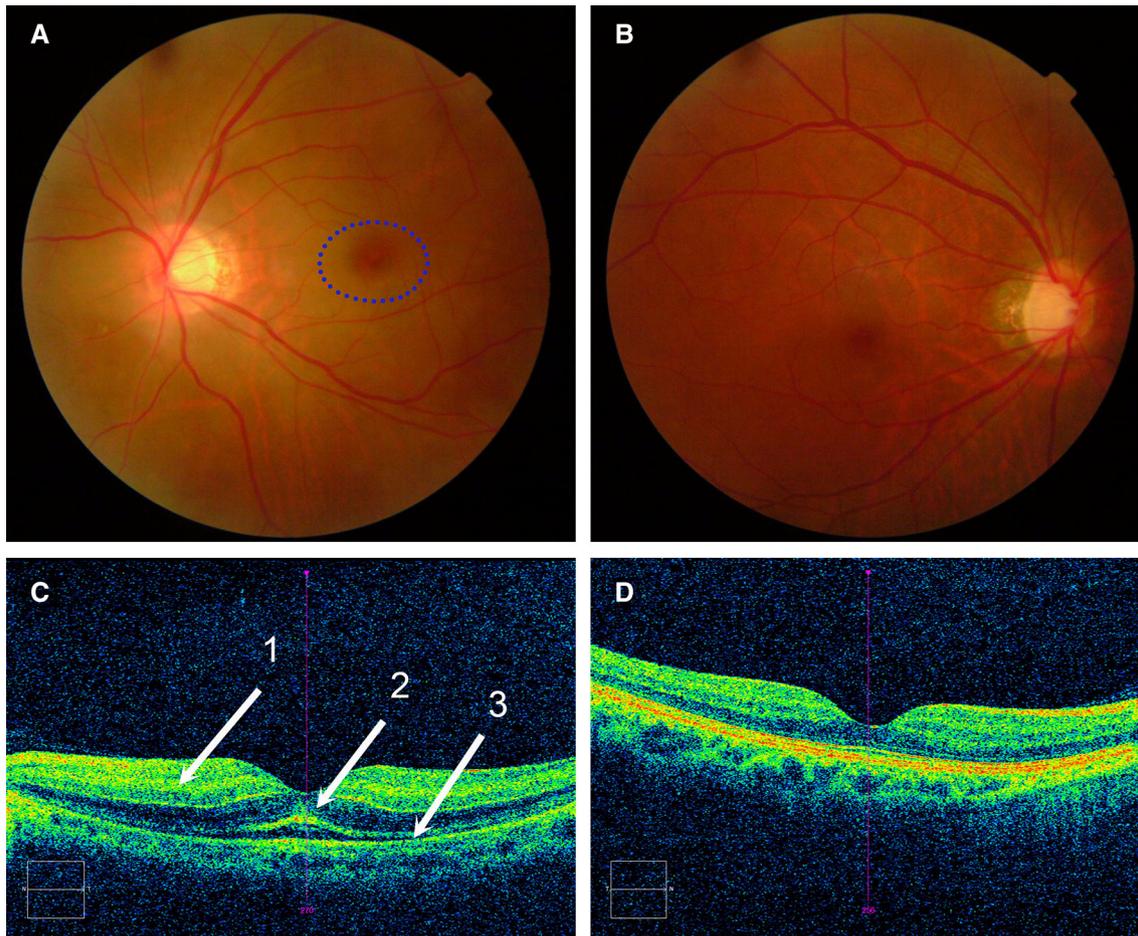
---

S. Gu, MD · L. Yang, MD · W. Gu, MD, PhD (✉)  
Department of Anesthesiology, Shanghai Key Laboratory of Clinical Geriatric Medicine, Huadong Hospital, Fudan University, Shanghai, People's Republic of China  
e-mail: mcwgwd@163.com

N. Shen, MD  
Department of Ophthalmology, Huadong Hospital, Fudan University, Shanghai, People's Republic of China

D. Wang, MD  
Department of Urology, Huadong Hospital, Fudan University, Shanghai, People's Republic of China

J. Lu, RN  
Department of Nursing, Huadong Hospital, Fudan University, Shanghai, People's Republic of China



**Figure** Fundoscopy and optical coherence tomography (OCT) images. A. Fundoscopy of the left eye revealed a pale retina and a cherry red spot (blue circle), which are the typical findings of central retinal artery occlusion. B. Fundoscopy of the right eye revealed a normal retina. C. Cross-sectional retinal image through the fovea of the left eye. Arrow 1 indicates increased thickness of the inner retina, suggesting the presence of intracellular edema. Arrow 2 indicates a hyperreflective quality at the central fovea at the level of the outer

retinal layers and retinal pigment epithelium (RPE), which was attributed to a contrast effect elicited by transmission of incoming light at the fovea and relative blocking of incoming light by the paracentral ischemic lesions. Arrow 3 indicates decreased reflectivity of the optical reflection from the outer retinal layers and the RPE–choriocapillaris complex, which was attributed to a shadowing effect of a thickened, highly reflective inner retina. D. Cross-sectional retinal image through the fovea of the right eye was normal

**Conflicts of interest** None declared.

**Editorial responsibility** This submission was handled by Dr. Hilary P. Grocott, Editor-in-Chief, *Canadian Journal of Anesthesia*.