

# Visual loss after coronary artery bypass surgery

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## ABSTRACT

Anterior ischemic optic neuropathy is caused by microvascular occlusion of the prelaminar or lamellar portion of the optic nerve head. The main types are arteritic, non-arteritic, and autoimmune. Few cases were reported following coronary artery bypass surgery. A 63-year-old man, who is both diabetic and hypertensive, underwent coronary artery bypass graft complicated postoperatively by sudden visual loss in his right eye. The diagnosis was non-arteritic anterior ischemic optic neuropathy. Possible predisposing factors were crowded disc and internal carotid artery stenosis.

**Keywords:** Anterior ischemic optic neuropathy, coronary bypass surgery.

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Anterior ischemic optic neuropathy is a relatively common cause of severe visual loss in middle age and elderly patients. The basic lesion is a segmental or generalized infarction within the prelaminar or lamellar portion of the optic nerve, caused by occlusion of the short posterior ciliary arteries.<sup>1</sup>

Causes include atherosclerosis, giant cell arteritis (arteritic type anterior ischemic optic neuropathy), collagen vascular diseases, emboli, papilloedema, and malignant hypertension. A few cases had been reported following coronary artery bypass surgery. We report a case of anterior ischemic optic neuropathy following coronary bypass surgery.

**Case Report.** A 63-year-old male with history of NIDM of 5 years duration, hypertension and ischemic heart disease for 9 years was admitted for coronary artery by-pass. Coronary angiography revealed: 60% stenosis right coronary artery, calcified main coronary artery, left anterior descending was subtotally occluded at its origin, hypokinesia of anterolateral and apico-inferior

segments. Carotid Doppler ultrasound showed echogenic plaque at origin of the right internal carotid artery causing 20% stenosis, and circumferential echogenic plaque at origin of the left internal carotid artery causing 40% stenosis.

He underwent coronary artery bypass surgery; (without pump technique), with no intraoperative or postoperative complications. However, 5 days postoperatively, the patient complained of sudden blurred vision in his right eye. Ophthalmic examination had shown: VA counting fingers 5 meters OD, 6/6 vision OS, he had right pupillary defect, normal lens and IOP in both eyes, funduscopy showed swollen optic disc in right eye, and small crowded disc left fundus. There were no cotton wool spots or emboli in either retinas. Visual field of right eye was constricted with altitudinal defect (Figure 1).

Patient denied history of jaw claudication, headache, weight loss, history of polymyalgia rheumatica or malaise. ESR (erythrocyte sedimentation rate) was 37mm/hour, PCV (packed cell volume) was 50%, no history of either anemia or blood loss. Fluorescein angiography was performed

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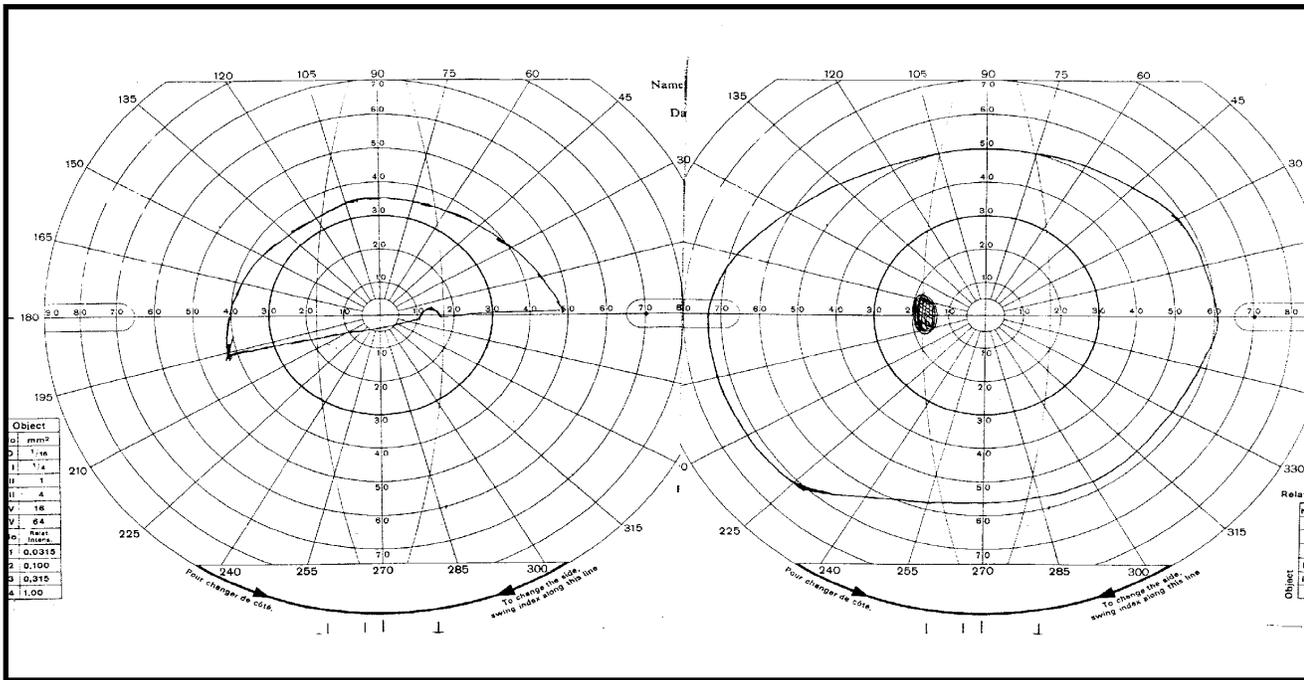


Figure 1 - Visual fields at presentation showing right altitudinal field defect.



Figure 2 - Venous phase fluorescein angiogram of the right eye showing leakage in the lower part of the optic disc.

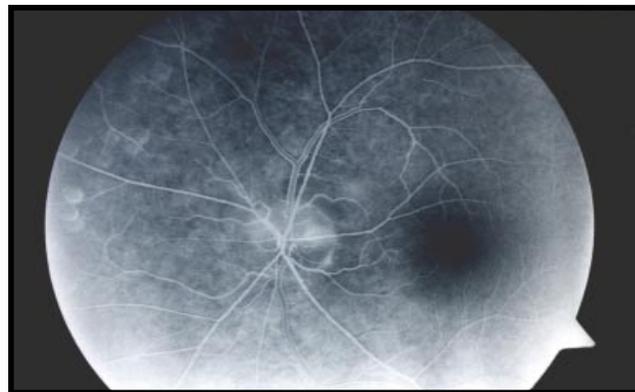


Figure 3 - Arterio-venous phase fluorescein angiogram of the (normal vision) left eye.

and it showed hypo-perfusion in right optic disc in choroidal phase. Venous phase showed leakage in the lower part of optic disc (Figure 2), and normal left optic disc (Figure 3), diagnosis of non-arteritic anterior ischemic optic neuropathy was established.

**Discussion.** This is a case of right non-arteritic anterior ischemic optic neuropathy post coronary artery bypass surgery; patient had the risk factors of hypertension, carotid artery stenosis, and crowded disc (disc at risk).

Three hundred and twelve patients with coronary artery bypass grafts were prospectively studied in (1985), for various neurological complications.<sup>2</sup> Such complications were found in 61% of the

patients and ophthalmic complications were observed in 25% of cases, 54 patients (17%) had new cotton-wool spots, and about half of these reported blurred vision. In 8 patients, one or more retinal emboli were observed postoperatively, half of them were symptomatic. In 8 patients, a visual field defect developed, one of which was a transient hemianopia. In 14 patients, at least 2 lines of reading acuity were lost without clear cause on clinical examination. However, no cases of Anterior Ischemic Optic Neuropathy (AION) were detected in this series.

In 1987, Alpert et al described 3 patients with ischemic optic neuropathy following coronary bypass surgery.<sup>3</sup> While in that same year Tice reported 3 patients, who underwent coronary artery bypass surgery, and subsequently had a fall in hematocrit

value (or hypotension postoperatively), which preceded the development of AION.<sup>4</sup>

Two cases were reported by Larkin et al of bilateral AION resulting in severe visual impairment complicating otherwise successful coronary artery bypass surgery.<sup>5</sup>

In 1998 a case of visual loss due to Anterior Ischemic Optic Neuropathy following coronary bypass surgery was reported by Moster, of which possible predisposing factors were hypotension, anemia, a crowded disc, and internal carotid stenosis.<sup>6</sup>

In conclusion, anterior ischemic optic neuropathy is the second commonest optic neuropathy of adults, the first being glaucoma. Typically it is seen in isolation, in a small and crowded disc (the disk at risk) without other systemic manifestations, although it is commonly associated with hypertension and diabetes mellitus.<sup>6</sup>

Like other neurological complications of

cardiopulmonary bypass, AION may occur in routine, seemingly uncomplicated operations, and can cause some of the most devastating long-term disability.<sup>5</sup>

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