

Case Report**Central retinal artery occlusion following cosmetic filler injection**

Duangmontree Rojdamrongrantana, M.D.¹,
Paiboon Bawornwattanadilok, M.D.¹
Sirineen Muangsiri, M.D.^{1*}

Abstract

A 37-year-old female presented to a tertiary referral hospital with sudden vision loss in her right eye following a filler injection in her nasal dorsum area. On initial examination, her vision was documented as no perception of light. The diagnosis was iatrogenic central retinal artery occlusion (CRAO) suspected from filler emboli. Her initial treatment was ocular massage, hyperbaric oxygen treatment, anterior chamber paracentesis and administration of aqueous suppressants. Subcutaneous hyaluronidase injection was attempted three times at her nasal dorsum area. The patient also underwent cerebral angiography with injection of 1500 IU hyaluronidase at the orbital branch of middle meningeal artery. Despite this management, the patient's final visual acuity is no light perception.

Keywords: Central retinal artery occlusion, Filler injection, Visual loss.

Volume 2023, Issue 2, Page 148-152

CC BY-NC-ND 4.0 license

<https://asianmedjam.com>

Received: 31 May 2021

Revised: 24 June 2022

Accepted: 15 May 2023

¹ Department of Ophthalmology, Faculty of Medicine, Thammasat University, Pathum Thani, 12121, Thailand

***Corresponding author:** Sirineen Muangsiri, MD., Department of Ophthalmology, Faculty of Medicine, Thammasat University, 95 M.8 Khlong-Neung Khlongluang Pathum Thani, 12121, Thailand. Tel: +66 2926 9523, E-mail: msirineen@gmail.com

Introduction

Iatrogenic Central retinal artery occlusion following a filler injection for cosmetic purposes is a rare ocular emergency condition that can lead to devastating consequence of permanent visual loss.

We report a case of blindness following a cosmetic filler injection along the nasal area. A retrospective review was performed.

Case Report

A 37-year-old female presented with sudden painless visual loss of the right eye following an injection of hyaluronic acid filler at the dorsum nasal area for cosmetic purposes. The visual loss was accompanied by ptosis of the right eye. She received the filler injection from an unknown clinic. The type of filler was unidentified. Approximately an hour after she had the symptom, she went back to the clinic and received multiple doses of subcutaneous hyaluronidase injection along the nasal part with no improvement. The patient then went to Pathum Thani hospital and was given 500 mg of oral acetazolamide followed by ocular massage and aqueous tapping. After 5 hours from the start of the initial symptom, the patient was referred to Thammasat University.

A review of system reveals neither history of previous ocular disease nor history of known allergies to medications. She had no known underlying disease. Her neurological exam was normal. No weakness or decreased sensation was noted.

On examination her right eye best corrected visual acuity (BCVA) was no light perception and relative afferent pupillary defect was positive. Fundus examination revealed a pale disc, generalized retinal whitening and cherry red spot (figure 2). The arterial vessel was mildly attenuated. Mild nuclear sclerosis cataract was noted in both eyes. Her anterior segment examination is unremarkable.

The initial management in this patient is retrobulbar hyaluronidase injection of 1500 international units (IU). Three attempts of retrobulbar injection with hyaluronidase was done. Her VA is still no light perception. Hyperbaric oxygen therapy was performed once, however due to the patient's financial problem, it was not repeated.

Computed tomography scan of orbit was performed with unremarkable result. Her blood examination included complete blood count,

electrolytes, and coagulation profile were normal. Fundus fluorescein angiography was done, which revealed focal hyperfluorescence in late phase and delayed retinal perfusion. Optical coherence tomography of the macula was performed 1 week after the injection and the result was normal, no evidence of macular edema was shown.

Cerebral angiography with hyaluronidase injection at right orbital artery was done. The guiding catheter was placed in right Internal carotid artery. The angiography showed total occlusion of right Ophthalmic artery with disappearance of right ophthalmic artery origin was seen. The right External carotid artery showed collateral blood flow from orbital branch of right middle meningeal artery and minimal collateral blood flow to retinal artery was seen. Hyaluronidase was infused for 1500 IU into orbital branch of middle meningeal artery (Figure 3). Post infusion angiography showed significant improvement of upper half of retinal brush.

Although, the angiogram showed significant improvement after infused 1500 IU of hyaluronidase into orbital branch of middle meningeal artery, her vision was still no light perception.

Following 5 months after filler injection. There is no sign of skin necrosis. Although the ptosis on the right eye is improved, her vision in right eye is still no perception of light.

Discussion

According to previous reports, the most common sites for CRAO complication are at glabella, nasal region, nasolabial fold, and forehead¹. Injections into the nose and glabella form a vast majority of reported cases of blindness. The main arterial supply for orbit is ophthalmic artery, which is a branch of internal carotid artery. The dorsal nasal artery, terminal branch of Ophthalmic artery, exits the orbit after passing the orbital septum above medial canthal tendon. It runs along the nose and anastomoses with lateral nasal branch of angular artery². Angular artery supplies inferomedial of orbital fossa and dorsal of nose. Intraarterial injection of filler into the dorsal nasal artery at the nasal area can access ophthalmic artery by such anastomosis. Cilioretinal artery, arises from posterior ciliary artery, is present in approximately 20% to 30% of individuals. The vision may be

better if the cilioretinal artery is present in CRAO³

The most common facial augmentation that can cause visual loss is autologous fat⁴. The occlusion to retina can be diffuse or localized. Diffuse occlusion is associated with worse visual outcome and may cause less visual gain compared with localized occlusion. Other severe adverse effects are not only irreversible blindness, but also brain infarction and phthisis bulbi, among others⁵

There are various therapies for managing CRAO. Treatments are attempted to improve retinal perfusion pressure and to dislodge the embolus. This may include ocular massage, hyperbaric oxygen treatment, anterior chamber paracentesis and administration of aqueous suppressants. Hyperbaric oxygen therapy (HBOT) is another treatment that can help maintain oxygenation of the retina,⁶ which was also performed in this case. Earlier in the report it says the causative agent is not known. This is the first mention of a “cause” and I think this needs to be discussed with the author. The prognosis of vision also depends on the time therapy is initiated, as the irreversible damage to the neurosensory retina occurs after 90 minutes of complete CRAO.

Iatrogenic occlusion of ophthalmic artery and its branch is a rare but possible complication from cosmetic facial filler injection. Reports from various papers^{7, 8} have noted that autologous fat

injection was associated with worse visual prognosis than other filler material. Other prognostic factors⁹ are the degree of visual loss and the artery the filler occluded. A “partial” vision loss has a better prognosis than complete vision loss. Branched retinal arterial occlusion was found more favorable visual outcome compared to CRAO. Most cases reported of retinal artery occlusion associated with HA injection, there are some cases are partially reversible with retrobulbar hyaluronidase injection. In comparison to our case, despite various treatments, the ptosis on her right eye improved but her vision remained no perception of light. The possible explanation to the poor outcome in this patient is the unidentifiable causative filler injected to the patient. The hyaluronidase injection was given in hope that the causative filler was hyaluronic acid.

Filler injections are widely performed for aesthetic purposes nowadays. To avoid such devastating complication. Physicians should be aware of this possible complication. Dangerous areas to operate are the nose, glabella⁹ and nasolabial fold area, and if possible should be avoided. Patients should be informed of the risk. Lastly, early recognition and urgent referral to tertiary hospital with experienced ophthalmologist can help optimized the outcome.

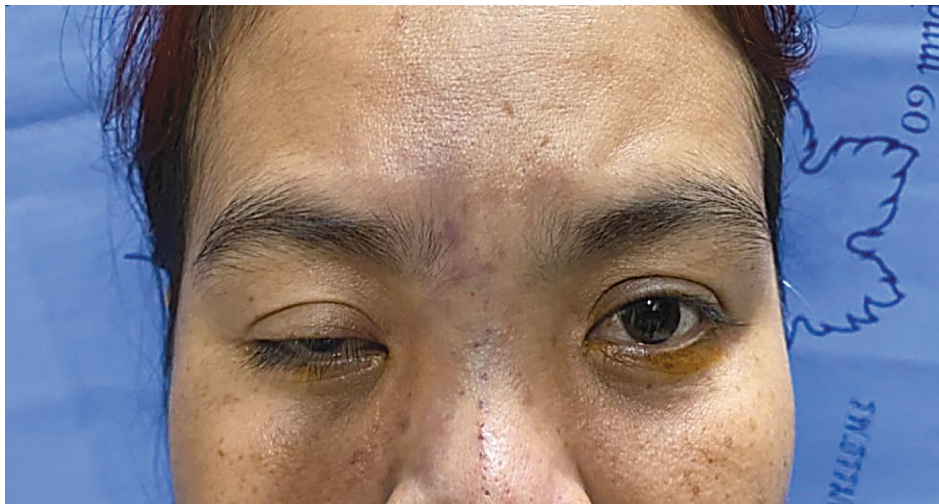


Figure 1 Primary position shows ptosis of right eye and skin decolorization in nasal and glabella area.

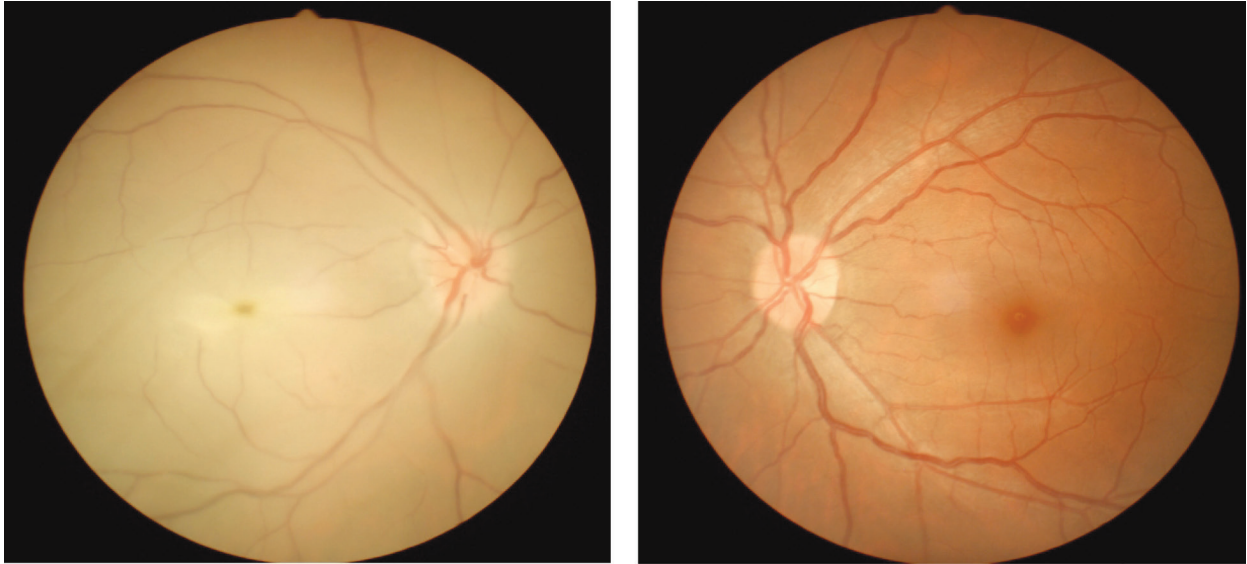


Figure 2 Fundus photo at presentation shows diffuse retinal whitening with cherry red spot in the fovea. The foveola remain the reddish color surrounded by superficial retinal whitening.

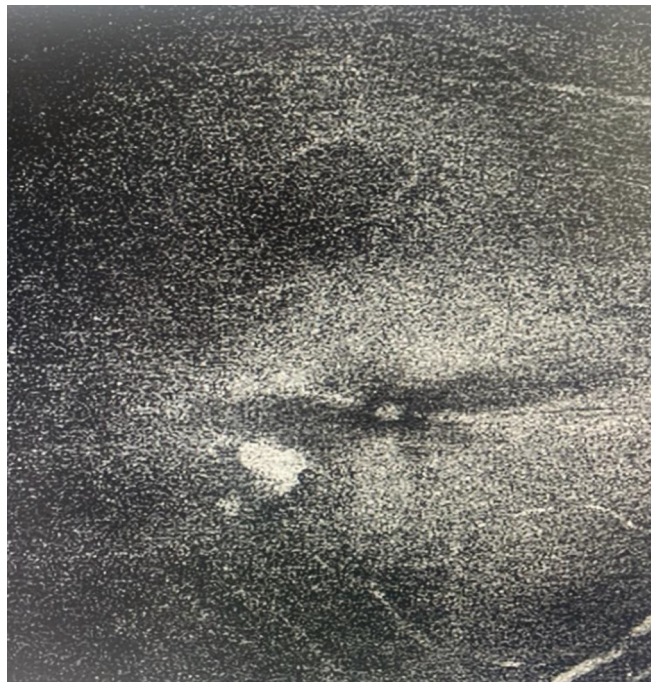


Figure 3 Cerebral angiogram with 1500 IU of hyaluronidase injection was injected to orbital branch of middle meningeal artery. The figure showed total occlusion of right Ophthalmic artery.

Acknowledgments

Financial support. None reported.

Conflict of interest. All authors report no conflicts of interest relevant to this article.

Reference

1. Park SW, Woo SJ, Park KH, Huh JW, Jung C, Kwon OK. Iatrogenic retinal artery occlusion caused by cosmetic facial filler injections. *Am J Ophthalmol.* 2012 Oct;154(4):653-662.e1. doi: 10.1016/j.ajo.2012.04.019. Epub 2012 Jul 25. PMID: 22835509.

2. Kim YK, Jung C, Woo SJ, Park KH. Cerebral Angiographic Findings of Cosmetic Facial Filler-related Ophthalmic and Retinal Artery Occlusion. *J Korean Med Sci*. 2015 Dec;30(12):1847-55. doi: 10.3346/jkms.2015.30.12.1847. Epub 2015 Nov 30. PMID: 26713062; PMCID: PMC4689831.
3. Klin Monbl Augenheilkd. Cilioretinal artery occlusion combined with central retinal vein occlusion - a report of two cases and review of the literature. 2010 Apr;227(4):302-5. doi: 10.1055/s-0029-1245291. Epub 2010 Apr 20. PMID: 20408080.
4. Carle MV, Roe R, Novack R, Boyer DS. Cosmetic facial fillers and severe vision loss. *JAMA Ophthalmol*. 2014 May;132(5):637-9. doi: 10.1001/jamaophthalmol.2014.498. PMID: 24604287.
5. Loh KT, Chua JJ, Lee HM, Lim JT, Chuah G, Yim B, Pua BK. Prevention and management of vision loss relating to facial filler injections. *Singapore Med J*. 2016;57(8):438-443.
6. Chander Y, Misra RN, Rai R. Hyperbaric oxygen therapy [HBOT] *Med J Armed Forces India*. 1999;55:89-90.
7. Park KH, Kim YK, Woo SJ, et al. Iatrogenic occlusion of the ophthalmic artery after cosmetic facial filler injections: a national survey by the Korean Retina Society. *JAMA Ophthalmol*. 2014;132(6):714-723. doi:10.1001/jamaophthalmol.2013.8204.
8. Chen Y, Wang W, Li J, Yu Y, Li L, Lu N. Fundus artery occlusion caused by cosmetic facial injections. *Chin Med J (Engl)*. 2014; 127(8):1434-1437.
9. Kapoor KM, Kapoor P, Heydenrych I, Bertossi D. Vision Loss Associated with Hyaluronic Acid Fillers: A Systematic Review of Literature. *Aesthetic Plast Surg*. 2020;44(3): 929-944. doi:10.1007/s00266-019-01562-8.