

# Successful Hyperbaric Oxygen Therapy In Complications Of Fillers Rhinoplasty-Cases Report

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## Abstract

A total of 4 cases with complications following filler rhinoplasty referred to plastic surgery with hospital out-patient division. They were between 20 to 40 years old and only one man involved. They felt extremely painful during injection. Initially the skin lesion was blanching, discoloration, hyperemia and bruising. They were treated with oral antibiotic, non-steroid anti-inflammatory drug (NSAID) and hyperbaric oxygen therapy (HBOT) at 2.0-2.5 ATA (absolute atmosphere), 80 -120 minutes for 2 to 8 sessions. The times of session were according to the outcome after every session. The outcome of treatment for three of the cases was satisfactory. In one case the treatment led to failure. Necrosis developed because of delay referral. Complete wound healing was achieved with early recognition and institution of treatment.

## INTRODUCTION

Use of dermal fillers for rhinoplasty has become an integral part of aesthetic practices. There are many options for use with fillers including Calcium hydroxylapatite (CaHA), hyaluronic acid (HA), collagen, poly-L-lactic acid (PLLA) and botulism. Those are popular used in Taiwan but only HA has antidote if an undesirable outcome occurs. The growing complications in filler injection occur ranging from mild bruising, blanching, hyperemia, violaceous to severe injection ischemia and even necrosis<sup>1,2</sup>. HBOT used as an adjunctive therapy to treat injection ischemia and prevent this complication.

## CASE REPORT

### Case 1:

43-year-old male healthy patient experienced immediate pain and blanching after HA injection. Left nasolabial fold and gingiva were hyperemic, his nasal tip was violaceous. There was concern for impending necrosis (figure 1a). He was under oral antibiotics, NSAID control. He accepted HBOT at 2-2.5 ATA, 80-120 minutes daily for total 15 sessions (Figure 1b). Non-surgical debridement is needed and completely recovery.

### Case 2:

A healthy 23-year-old female presented to our office four days after having 0.6cc of Calcium hydroxylapatite filler

injection by an outside clinic. She previously had filler rhinoplasty a year ago with no complications. She felt intense pain and blanching initially on the right side of her face. Her face including nose, cheek, upper cutaneous lip, and chin was tender and hyperemic. Her nasal tip was violaceous (Figure 2a). She was under oral antibiotic control and has 2 sessions of HBOT at 2.5ATA, 80-90 minutes daily (Figure 2b). Unfortunately her nasal tip developed to full thickness of necrosis and then she was hospitalized for surgical debridement. (Figure 2c)

### Case 3:

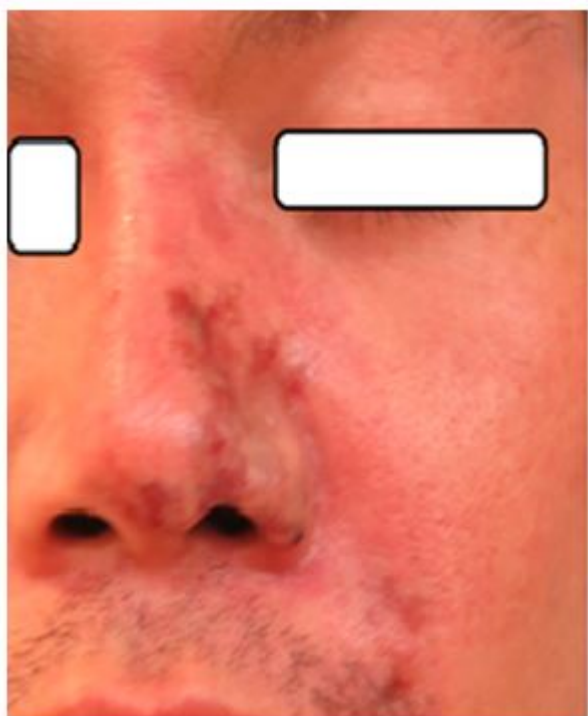
42-year-old healthy women referred from outside clinic because of developing hyperemic, reticular pattern and of her nose after CaHA injection 3 days ago (Figure 3a). She received total 7 sessions of HBOT at 2.5ATA, 80-120 minutes and completely recovery without surgical debridement (Figure 3b,3c).

### Case 4:

20-year-old female developed unilateral nasal blanching and intense pain following a HA injection. She was referred at next days because of developing hyperemic lesion. She received oral antibiotics control and 2 sessions of HBOT at 2.5ATA, 80-90 minutes. Complete recovery without scarring.

**Figure 1a**

shows hyperemic and violaceous of unilateral nasolabial fold and nasal tip before HBOT



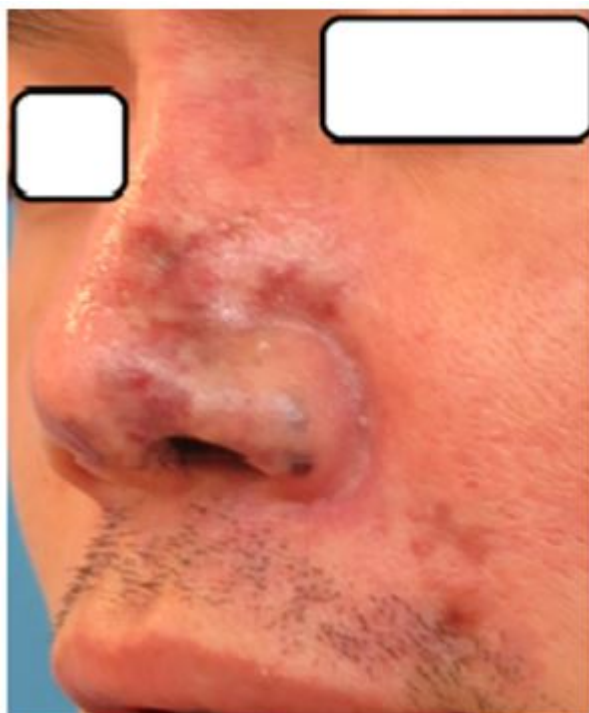
**Figure 1c**

Shows recovery after HBOT



**Figure 1b**

shows hyperemic and violaceous of unilateral nasolabial fold and nasal tip before HBOT



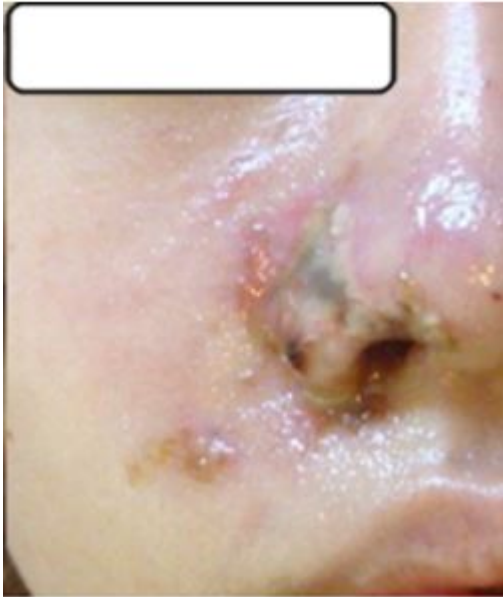
**Figure 2a**

shows Right facial hyperemic and alar violaceous at 3rd day post filler injection



**Figure 2b**

shows Right alar full thickness of necrosis at 8th day post filler injection



**Figure 2d**

shows Right alar wound after surgical debridement at 11th day



**Figure 2c**

Shows Right full thickness alar necrosis after 2 sessions of HBOT at 10th day



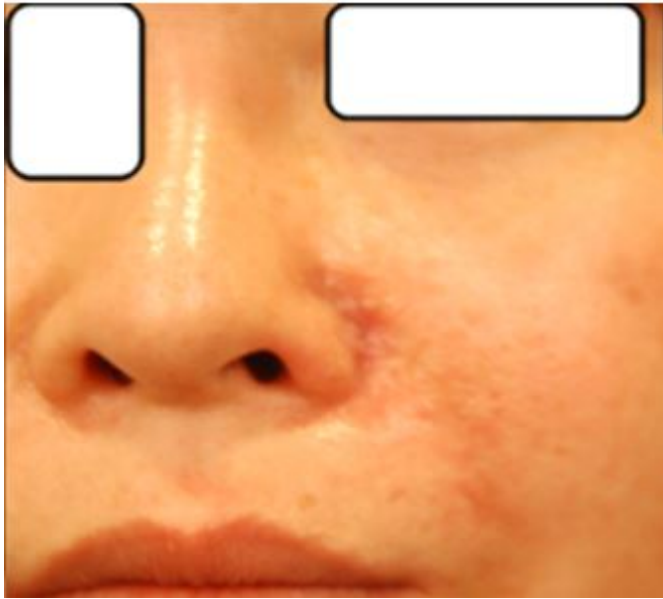
**Figure 3a**

shows hyperemic of Left nasolabial fold and cheek at 3rd day post filler injection



**Figure 3b**

Shows improvement after 7 sessions of HBOT



**Figure 3c**

Shows full recovery at 10th day post last session of HBOT



### DISCUSSION

Vascular compromise can occur either by direct injury to the vessel, compression of the vessel from nearby product, or arterial embolization from product injected into a vessel. There are only a few case reports of vascular compromise following fillers injection<sup>3,4</sup>. Patients with prior surgery or injection to the area may be at increased risk for vascular compromise due to altered blood supply and scarring in the area. More common reactions to injections include redness, swelling, pain, and pruritus, which must be distinguished

from true vascular compromise<sup>5</sup>. Early recognition of vascular compromise and even vascular necrosis with specific protocol for treatment after filler injection improves the outcome of wound healing<sup>6</sup>. "The Gold Standard of Therapy" for Necrosis has always been a wide surgical debridement and aggressive antibiotic therapy<sup>7</sup>. When used in conjunction with Hyperbaric Oxygen Therapy, it offers several mechanisms of action to improve ischemia and reduce tissue loss<sup>8</sup>.

Hyperbaric Oxygen Therapy increases the oxygenation of tissue, increases angiogenesis and also promotes osteoblast and fibroblast function<sup>9</sup>. Hyperbaric Oxygen Therapy is an important part of a comprehensive treatment program of ischemic injury following vascular occlusion. When a patient is given 100% oxygen under pressure, hemoglobin is saturated, but the blood can be hyper-oxygenated by dissolving oxygen within the plasma (blood)<sup>10</sup>.

### CONCLUSIONS

Treatment outcome was satisfactory in three cases. One was failure because of late referral. Report of HBOT in complications of dermal filler has positive effect but there is a lack of high quality, valid research evidence regarding the effects of HBOT on injection necrosis. The times of session were according to the outcome after every session. Those cases highlights the need for immediate recognition and treatment of vascular occlusion should it occur. Early recognition of vascular necrosis with specific protocol for treatment after fillers injection improves the outcome of injection necrosis.

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## References

- [1] Cohen JL. Understanding, avoiding, and managing dermal filler complications. *Dermatol Surg* 2008;34(1):92-99.
- [2] Requena L, Requena C, Christensen L, Zimmermann US, Kutzner H & Cerroni L. Adverse Reactions to Injectable Soft Tissue Fillers. *J Am Acad Dermatol*. 2011 Jan; 64(1):1-34.
- [3] Sclafani A & Fagien S. Treatment of Injectable Soft Tissue Filler Complications. *Dermatol Surg*. 2009;35:1672-1680.
- [4] Calcium hydroxylapatite associated soft tissue necrosis: A case report and treatment guideline. Tracy L, Ridgway J, Nelson JS, Lowe N, Wong B. *Journal of Plastic, Reconstructive & Aesthetic Surgery*. 2013 Aug 28. S1748-6815(13)00472-5.
- [5] Grunebaum LD, Bogdan Allemann I, Dayan S, Mandy S, Baumann L. The Risk of Alar Necrosis Associated with Dermal Filler Injection. *Dermatol Surg*. 2009; 35:1635-1640.
- [6] Ramtin Kassir, Aparanjita Kolluru, Martin Kassir. Extensive necrosis after injection of hyaluronic acid filler: case report and review of the literature. *Journal of Cosmetic Dermatology*, 2011;10(3),224–231.
- [7] Cooper, K. L. Skin and Wound Care. Drug Reaction, Skin Care, Skin Loss. *Crit. Care Nurse*. 2012; 32, 52-59.
- [8] Sourabh Bhutani and Guruswamy Vishwanath .Hyperbaric oxygen and wound healing, *Indian J Plast Surg*. 2012;45(2): 316–324.
- [9] Bhutani S, Verma R. Hyperbaric oxygen therapy in non-healing wounds. *Jour Marine Medical Society*. 2010;12:89–92.
- [10] Stephan R Thom, Hyperbaric oxygen-its mechanisms and efficacy, *Plasti Reconstr Surg*, 2011 jan(1):131s-141s.



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