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BRIEF REPORT

# A Case of Sterile Abscess Induced by Hyaluronic Acid Filler Injection

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Dear Editor:

A 37-year-old woman presented with a slightly erythematous swelling on her glabella that had occurred 10 days earlier (Fig. 1A, B). Five years ago, she had received hyaluronic acid filler injection to her glabella. There was no previous filler injection history. There was no sign of infection such as local heating sense, redness, pain, and tenderness. Multiseptated abscess formation was observed on the paranasal sinuses computed tomography (Fig. 1C). Histopathologic findings showed the suppurative necrosis, containing many neutrophils mixed with necrotic debris (Fig. 1D). Gram, Brown Brenn, D-PAS, and AFB stains revealed negative results. Laboratory results showed neither leukocytosis nor elevated CRP level. Also, there was no bacterial growth on the pus culture. The patient was treated with amoxicillin/clavulanate and prednisolone for 3 weeks with aspiration and the lesion healed completely (Fig. 2).

Hyaluronic acid has no organ or species specificity. Therefore there is no risk of an allergic reaction on theory[1]. However hypersensitivity reactions are caused by impurities from the bacterial fermentation process[1], and patients can react to sterile bacterial or avian proteins by forming sterile abscesses or granulomatous inflammatory nodules[2]. Also biofilm caused by contamination at the time of filler injection can cause granuloma formation or lead to localized pyogenic infections such as abscess or cellulitis[3]. In the case of biofilm, most bacterial cultures are negative because traditional culturing techniques may not allow enough time for the incubation of slow-growing organisms[3,4]. Although special media can be used to enhance culture sensitivity, the sensitivity of culture on biofilm is approximately 20%[5]. A negative culture result can't rule out infection. Therefore, the possibilities described above should be taken into account when a delayed reaction occurs after the filler injection. Delayed reaction due to hyaluronic acid filler can occur in a wide range of between 2 weeks and 24 months after filler injection[3].

In this case, there was a lack of clinical or laboratory results supporting the infection. Also the lesion wouldn't have healed when treated with amoxicillin/clavulanate, if the abscess had been induced by the biofilm infection. In the case of biofilm, 2 types of antibiotics, third generation macrolide and a quinolone, should be initiated until further data from cultures become available[4]. Amoxicillin/clavulanate is not effective in dealing with organisms of biofilm. Also hyaluronic acid fragment can act as substrates for cell trafficking and can activate macrophages, dendritic cells, and T cells[4]. Sterile abscess can be formed through this immune reaction. Therefore it was established that the lesion was more likely to be a sterile abscess caused by an immune reaction of hyaluronic acid rather than by a biofilm infection.

Until the time of the study, there was no literature showing any work done on sterile abscess induced by hyaluronic acid filler injection in the Korean literature. Also this case is well worth enough in that it occurred by far 5 years after the filler injection, and this study highlights the im-

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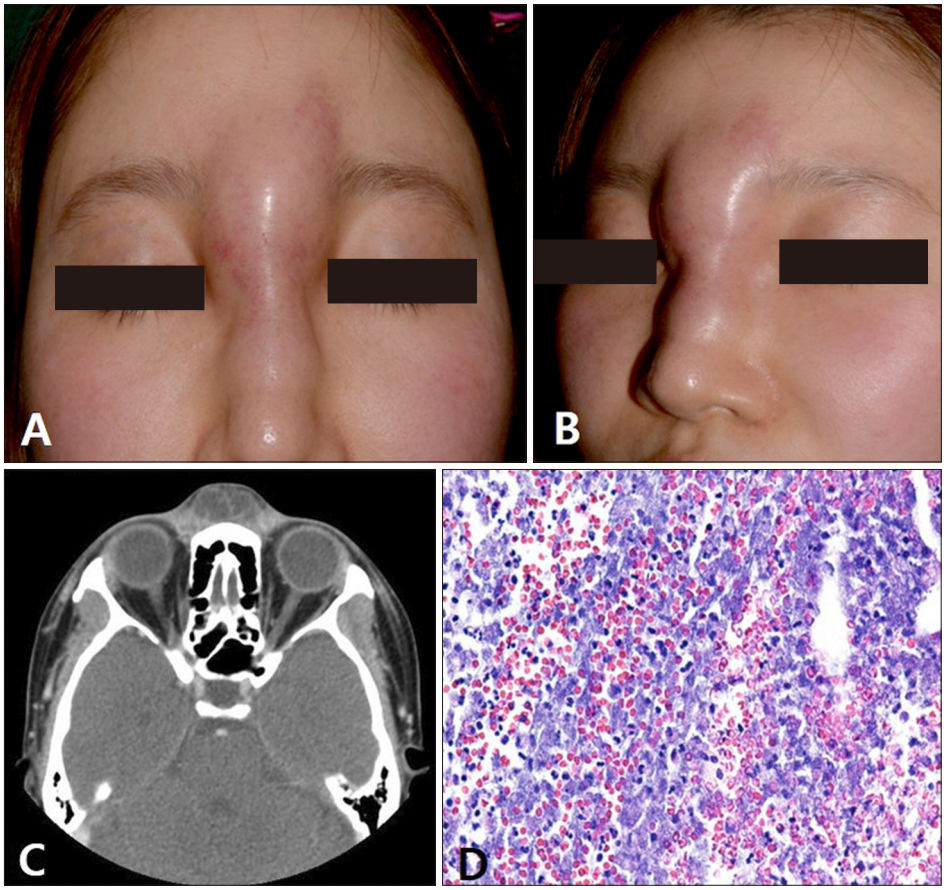


**Fig. 1.** (A, B) A slightly erythematous edematous swelling on the glabella (C) The computed tomography showing multiseptated low density lesion at the forehead and dorsum of nose (D) The suppurative necrosis, containing many neutrophils mixed with necrotic debris (H&E, ×400).

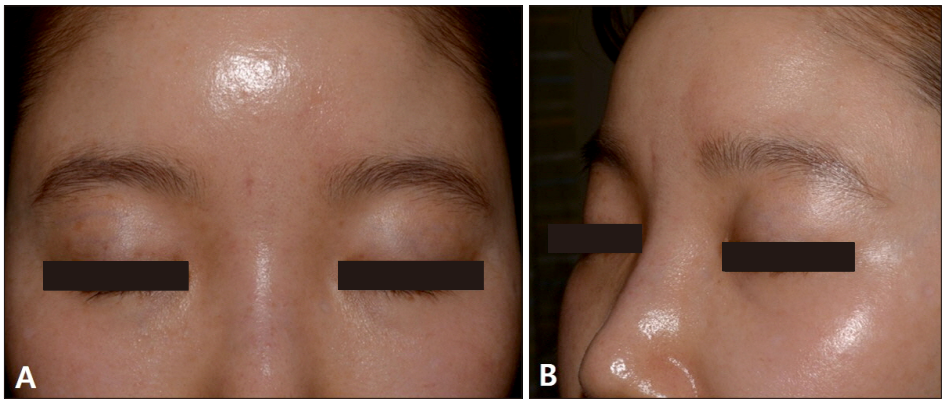


**Fig. 2.** (A, B) After 3 weeks, the lesion healed completely.

portance of awareness of this delayed reaction of hyaluronic acid filler which can occur after many years.

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## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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