

## Connecting Dots: Biofilms and Aesthetic Filler Treatments

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Before I go connecting the low-grade inflammation dots between biofilms and aesthetic filler treatments I would like to introduce myself to you all. I am an aesthetic dermatologist practicing aesthetic dermatology and medicine for the last twenty plus years with special interest in complication associated with cosmetic treatments. As the demand for aesthetic filler injections has risen over the last decade, so has the number of injectors joining the aesthetics field. This surge has resulted in ad valorem increase in the number of reported side effects.

Most medical specialties deal with biofilms on regular basis, but in dermatology the concept of biofilms is comparatively new. Till recently biofilms were mostly associated with long-term filler implants, but lately new cases are being reported where biofilms have been associated with temporary hyaluronic acid based fillers also. The obvious reason behind this new surge in biofilms is sub par sterilization observed during aesthetic injection treatments.

Biofilms after the aesthetic fillers treatment appear as delayed reactions generated by microorganisms adhering to the surface of fillers. They manifest weeks even months after the injection administration. Common presentation includes: painful fluctuant diffuse swellings and nodules that change into abscesses and sinuses if not treated promptly. Investigative cultures results are mostly negative. Based on that reasoning they have been considered as allergic or a foreign body reaction to the filler substance. The allergic hypothesis has not been proven scientifically till date and lab results in most reported cases show negative antibody formation. Treatment with broad-spectrum systemic antibiotics usually alleviates the troublesome side effects. To further explore the diagnosis of infective etiology fluorescence in situ hybridization and/or scintigraphy with radio-labeled autologous white blood cells have been tried. Both these techniques have positively established the infectious cause behind such reactions.

Correct diagnosis is vital for a successful management plan, hence identifying the phenomenon of biofilm as the causative factor behind such reactions is crucial. Administration of corticosteroids, either intra-lesional or systemic has been the first line of management when tackling such reactions, as they were hypothesized to be foreign body reactions or allergic in nature. As the emerging data is pinpointing towards an infective phenomenon, these reactions cannot be treated with steroids alone. According to new expert recommendations diagnosis of any tender swelling over any implant; temporary or permanent should always be treated without delay by the administration of broad-spectrum bactericidal antimicrobials for 2–3 weeks. In case of long-term fillers removal of the implant should be planned under the cover of antibiotics and in cases reported after HA based fillers hyaluronidase should be injected to melt the implant, this way the bacteria loose their breeding grounds making the antibiotic treatment more effective. If any steroids have to be used, they should be used purely as anti-inflammatory agents and only under the cover of a course of antibiotics.

Take home message here is: All aesthetic dermatologists and injectors need to understand the role of low grade infection and biofilms while tackling complications associated with filler injections. All filler treatments should be considered as minimally invasive liquid implants and should be carried out under meticulous sterilization cover. Further studies and research is required to further unfold the mystery around the biofilms associated with aesthetic fillers in order to establish evidence-based effective treatment protocols.

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