

## **The Hyaluronic Acid Injection in the Lower Eyelid Based on the Hooke's Law**

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**Background:** Lower eyelid retractions, either involuntary ones or resulted from surgeries, give the eyes angry and unfriendly looks, and are hence considered undesirable. There have been some reports of hyaluronic acid injection as a treatment in the literature. However the methods of the injection reported, especially the planes of the injection, were not the same and their results varied.

In this article we introduced our method of hyaluronic acid injection in the lower eyelid based on Hooke's Law. The aim of the article is to evaluate our method of injection and to discuss the mechanism of the treatment.

**Methods:** From 2011.2 to 2013.10 we carried out the injection of hyaluronic acid in the lower eyelid in 11 patients with mild lower lid retraction (9 post-op, 2 involuntary). In all cases, the hyaluronic acid was injected deep to the orbicularis muscle. 1ml-1.5ml of hyaluronic acid was injected in the lower lid area. The results and complications were followed for 6 months. We studied the physical effects that the fillers exerted on the lower eyelid to understand the mechanism of the treatment.

**Results:** Among 11 cases of retraction, 10 cases (90%) were completely corrected and did not recur until the last follow-up. None of the patients had complications such as induration. The mechanism of the treatment by injecting deep to the orbicularis muscle was explained based on the Hooke's law and the decomposition of forces.

**Conclusion:** The Injection of hyaluronic acid deep to the orbicularis muscle could be an effective method to improve the mild lower eyelid retraction. The effect of the injection would last at least 6 months. The method has relatively low incidence of complications.