

# **Hyaluronic acid filler in the correction of horizontal neck lines - A case report**

## **Abstract**

### **Background**

Horizontal neck lines can be a cause of distress; many people often get conscious with their prominence and so their social life gets affected. Juvederm Volbella® filler (Allergan Inc, Irvine Cal), even though used widely for the treatment of tear troughs and horizontal neck lines, has very few reports on its efficacy in horizontal neck lines.

### **Objective**

To assess the effectiveness and safety of Hyaluronic acid filler- Juvederm Volbella® (Allergan Inc, Irvine Cal) in treatment of horizontal neck lines.

### **Methods**

A 27 year old female having genetic horizontal neck lines underwent a single treatment session with 2ml Juvederm Volbella® filler (Allergan Inc, Irvine Cal) with 30Gx8mm needle via retrograde linear threading technique. Assessment of neck lines was done after 2 weeks and 1 month.

### **Results**

Significant improvement of neck lines was seen with one session of hyaluronic acid filler injection when injected in deep dermal plane without any complications.

### **Conclusion**

Hyaluronic acid filler – Juvederm Volbella® (Allergan Inc, Irvine Cal) is a simple and effective way of correcting horizontal neck lines without formation of lumps and irregularity and is an excellent alternative to surgery.

## **Introduction**

Young people often get distressed and get conscious in social gatherings due to prominence of horizontal neck lines. These can be caused due to ageing, external environmental conditions and excessive neck movement. However, our patient presented to us with a unique genetic history with her mother having similar neck lines.

A multimodality approach has been used for the treatment of horizontal neck lines. This includes use of neuromodulators (Onabotulinum toxin A),<sup>(1)</sup> fractional CO2 laser,<sup>(2)</sup> intradermal radifrequency device,<sup>(3)</sup> surgical lifting and hyaluronuc acid fillers.<sup>(4)</sup>

Hyaluronic acid fillers have been used widely in aesthetic soft tissue augmentation and their popularity has increased in the recent years because of prompt aesthetic rejuvenation without

the need of surgery.<sup>(5)</sup> There is increased popularity of treatment with dermal fillers in clinical practice but to the best of our knowledge there have been very few cases reported on treatment of horizontal neck lines with dermal fillers in literature and no case published on use of Juvederm Volbella® (Allergan Inc, Irvine Cal) for the same indication.

We present here the first ever case reported on treatment of genetic horizontal neck lines treated only with Juvederm Volbella® (Allergan Inc, Irvine Cal) hyaluronic acid filler without the use of any other treatment modality.

### **Literature Review**

Treatment of horizontal neck with dermal fillers is a challenging treatment as it requires correct product selection for the treatment and extreme precision in the depth of delivery of the product as delivery of product very superficially can cause lumps and if delivered very deep can give unsatisfactory results. Treatment has to be done with a needle and not with a blunt cannula as high precision is required. Treatment with dermal fillers does not completely erase the neck lines however it does help in partially concealing them and improving their cosmetic appearance.

## Case report

A 27 year old female presented with prominent horizontal lines on the anterior aspect of the neck since birth which further deepened as she aged. Her mother also had similar horizontal neck lines. No medical history of acute or chronic illness was reported. These horizontal neck lines caused significant psychological distress to the patient specially when she went to social gatherings and she felt conscious while getting her photos clicked. Due to this reason she wore clothes which could cover her neck.

She had 3 horizontal neck lines (top, middle and bottom) measuring 15cm, 15.5cm and 17cm respectively. According to the Allergan transverse neck line scale, patient had Grade 4 horizontal neck lines (Non effaceable neck furrows with redundant skin).<sup>(6)</sup>

Patient was very keen on quick and significant results as the neck folds were very prominent and deep. She was advised for Juvederm Volbella® filler (Allergan Inc, Irvine Cal) for instant results. She was also counseled about the limitation of the procedure that it would lead to concealing of the horizontal neck lines and will not completely erase them.

After a detailed discussion about the properties and advantages of Juvederm Volbella® dermal filler (Allergan Inc, Irvine Cal) the patient decided to undergo treatment with the same.

A total of 2ml Juvederm Volbella® filler (Allergan Inc, Irvine Cal) with 30 guage x8mm needle was used. The material was injected in the deep dermal plane (two bevels deep) with retrograde linear threading technique. Single injection delivered 0.02-0.04 ml filler material over a length of 6-8mm. Every injection was placed 1cm apart.<sup>(4)</sup> Manual moulding with cotton was done after injecting. Immediately after the procedure the neck lines were corrected visibly. No persistent complication of lumps, bruises, pain/ tenderness, infection developed at the site of injection but a short term adverse effect of mild swelling and erythema developed which subsided in five days.

The patient was called for a follow up after one week and after one month of initial injection.

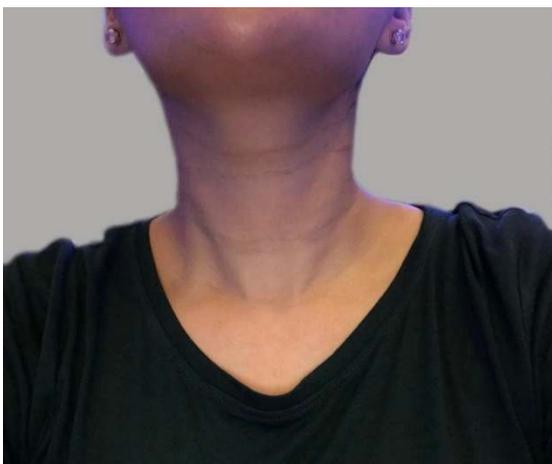
Figure 1 (Before Treatment)



Figure 2 (One week after treatment)



Figure 3 (One month after treatment)



## Discussion

Volbella® filler (Allergan Inc, Irvine Cal) belongs to the Vycross range of fillers containing 15mg/ml of hyaluronic acid.<sup>(7)</sup> It is the most dilute agent of Vycross range available in India having softness, maximum spread, smooth flow and least lift.<sup>(8)</sup> Every hyaluronic acid filler has specific and unique properties which determine their clinical behavior like G prime, cohesivity, elasticity and plasticity.<sup>(9)</sup> Juvederm Volbella® (Allergan Inc, Irvine Cal) is an excellent filler to diminish fine lines because of its lower cohesivity ( $G' 271$  Pa; cohesivity 19 gmf), good spreadability and malleability. It is an ideal filler to diminish horizontal neck lines as it leads to minimum gel swelling. The treatment becomes comfortable and relatively painless to the patient due to addition of lidocaine to the product,<sup>(10)</sup> but this does not compromise the result or change the rheological property of the filler in any substantial way.<sup>(11)</sup> This is probably the most useful filler in the treatment of fine lines like lateral canthal lines, lip lines, accordion lines and horizontal neck lines and has to be injected intradermally for maximal results. Even when this filler is placed very superficially it does not produce tyndall effect or blue appearance of the skin that is produced due to very superficial placement of hyaluronic acid filler.<sup>(12)</sup>

Horizontal neck lines are most commonly caused due to photoageing or intrinsic skin ageing,<sup>(13,14)</sup> but that is not necessarily the cause. They can occur at any age.<sup>(15)</sup> We have come across many cases of genetic horizontal neck lines in our practice where patients give history of similar neck lines in family members, however to the best of our knowledge, there is no data published on genetic cause of horizontal neck lines. The cause of horizontal neck lines can be multifactorial. It can be due to obesity, fat tissue accumulation, prolonged exposure to sun, gravity, poor hydration of skin and ageing.<sup>(2)</sup> These lines are caused by decrease in thickness and elasticity of skin of the neck, associated with submental and subplatysmal fat accumulation causing localized adiposity. Downward pull of platysmal muscle and downward vector effect of gravity further adds on to the laxity.<sup>(16)</sup> Transverse neck lines when caused by activity of platysmal muscle can be treated with neuromodulators. Other treatment modalities like energy based devices (radiofrequency, HIFU), thread lift and surgery mainly target multiple factors like skin laxity, volume loss and skin wrinkles.<sup>(17,18)</sup> Instant filling of horizontal neck lines are best done by dermal fillers.

Dermal filler injections in neck are more challenging and unpredictable due to the distinct structure of the superficial platysma muscle and negligible fat between the skin and fascia. Hence, filler with less cohesivity, good spreadability, smooth flow and least lift gives optimal results without any lumps and bumps and irregularity of skin. Juvederm Volbella® (Allergan Inc, Irvine Cal) of Vycross range has all the above properties. When injected in small quantities in the deep dermal plane, it levels up the deep furrows to the surrounding skin. A blunt cannula does not yield good results in this area as it requires high precision which can only be achieved by injecting with a needle.<sup>(4)</sup>

Even though horizontal neck lines are challenging to treat, patients are highly satisfied with the results of filler injection as instant results are seen.

## Conclusion

Juvederm Volbella® filler (Allergan Inc, Irvine Cal) is an excellent, simple and effective way of correcting horizontal neck lines in a single session. The filler material has to be injected in the deep dermal plane for most optimum results. With the low cohesivity, good spreadability and malleability of this HA filler, horizontal neck lines are significantly reduced with 30gx8mm needle without formation of any lumps and irregularities on the neck.

## References

1. Jeon H, Kim T, Kim H, Cho SB. Multimodal Approach for Treating Horizontal Neck Wrinkles Using Intensity Focused Ultrasound, Cohesive Polydensified Matrix Hyaluronic Acid, and IncobotulinumtoxinA. *Dermatol Surg.* 2017; 44(3):421-31.
2. Oram Y, Akkaya AD. Neck Rejuvenation with Fractional CO2 Laser: Long-term Results. *J Clin Aesthet Dermatol.* 2014;7(8):23-9.
3. Hyun MY, Li K, Kim BJ, et al. Novel treatment of neck wrinkles with an intradermal radiofrequency device. *Ann Dermatol.* 2015;27(1):79-81.
4. Lee, S-K, Kim, HS. Correction of horizontal neck lines: Our preliminary experience with hyaluronic acid fillers. *J Cosmet Dermatol.* 2017; 00: 1- 6.
5. Funt D, Pavicic T. Dermal fillers in aesthetics: an overview of adverse events and treatment approaches. *Clin Cosmet Investig Dermatol.* 2013;6:295-316.
6. Jones D, Carruthers A, Hardas B, et al. Development and Validation of a Photonumeric Scale for Evaluation of Transverse Neck Lines. *Dermatol Surg.* 2016;42 Suppl 1(Suppl 1):S235-S242.
7. Goodman G, Swift A, Remington B. Current Concepts in the Use of Voluma, Volift, and Volbella. *Plastic and Reconstructive Surgery.* 2015;136(5);139-48.
8. Muhn C, Rosen N, Solish N, et al. The evolving role of hyaluronic acid fillers for facial volume restoration and contouring: a Canadian overview. *Clin Cosmet Investig Dermatol.* 2012;5:147–58.
9. Sundaram H, Cassuto D. Biophysical characteristics of hyaluronic acid soft-tissue fillers and their relevance to aesthetic applications. *Plast Reconstr Surg.* 2013;132(4 Suppl 2):5S–21S.
10. Levy PM, De Bouille K, Raspaldo H. A split-face comparison of a new hyaluronic acid facial filler containing pre-incorporated lidocaine versus a standard hyaluronic

acid facial filler in the treatment of naso-labial folds. *J Cosmet Laser Ther.* 2009;11:169–73.

11. Raspaldo H, De Boule K, Levy PM. Longevity of effects of hyaluronic acid plus lidocaine facial filler. *J Cosmet Dermatol.* 2010;9:11–5.
12. King M. Management of Tyndall Effect. *J Clin Aesthet Dermatol.* 2016;9(11):E6-E8.
13. Han TY, Lee JW, Lee JH, et al. Subdermal minimal surgery with hyaluronic acid as an effective treatment for neck wrinkles. *Dermatol Surg.* 2011;37:1291-6.
14. Chao YY, Chiu HH, Howell DJ. A novel injection technique for horizontal neck lines correction using calcium hydroxylapatite. *Dermatol Surg* 2011;37:1542–5.
15. Carruthers A, Carruthers J. Botulinum toxin. In: Bologna JL, Jorizzo J, Rapini RP, editors. *Dermatology.* India: Elsevier; 2008. p. 2387-8.
16. Weinkle AP, Sofen B. Emer Synergistic approaches to neck rejuvenation and lifting. *J Drugs Dermatol.* 2015;14:1215-28.
17. Doh EJ, Kim J, Lee DH, Park JY. Neck rejuvenation using a multimodal approach in Asians. *E J Doh.* 2017; 29:4:1-5.