

A Literature Review: Esthetic Factors to Consider When Reestablishing the Occlusal Vertical Dimension (OVD)

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INTRODUCTION

Occlusal Vertical Dimension (OVD) is defined as the distance between two selected anatomic or marked points (usually one on the tip of the nose and the other on the chin), when in maximal intercuspal position¹. Increased or decreased OVD can have an influence on facial esthetics and oral function.

OBJECTIVE

This review aims to evaluate the literature on esthetic factors crucial for reestablishing the occlusal vertical dimension (OVD) and their influence on the human face.

METHODOLOGY

A Research Rabbit search for “occlusal vertical demension”, “VDO”, “OVD”, and “esthetics” was performed for literature in the last twenty years with focus on esthetic factors for determination of OVD. These aspects include, but are not limited to, the display of gingiva, lip position, age, gender, speech dynamics, and facial proportions.

RESULTS

Factors	Influence
Gingival display	Increase in OVD cannot fully compensate for excessive gingival display. ²
Lip position	Increase in OVD does not reduce maxillary gingival display but shifts lower lip downward on smile. Increase in OVD also lowers smile index by opening interlabial gap while keep intercommissural width unchanged. ³
Age and gender	Women tend to display more gingiva compared to men when smiling ^{4,5} shown in Figure 3. Although not statistically significant, males were shown to display more gingivae in the mandibular anterior region compared to females. ⁴ Increased OVD can give off a younger appearance and can improve on facial esthetics not just on the peri-oral areas but on the whole face. ⁶
Speech dynamics	“b”, “m”, “p”, “f”, and “v” sounds can be difficult to pronounce with increased OVD. “f” and “v” sounds are ideal for finding the occlusal plane. Dentures will touch and click when making “s” sounds if the OVD is too high, whereas gaps when pronouncing such sounds indicate OVD is too short. Short teeth make “v” sounds like “f” and long teeth make “f” sounds like “v”. ⁷
Facial proportions	Increased OVD increases the ratio of lower facial height to total facial height. More than 3mm increase in cases of no loss in OVD is perceived by both dentists and the general public as less esthetic. ⁸ Loss of facial height leads to diminished facial contour and leads to “witches profile” as seen in Figure 2. ⁶

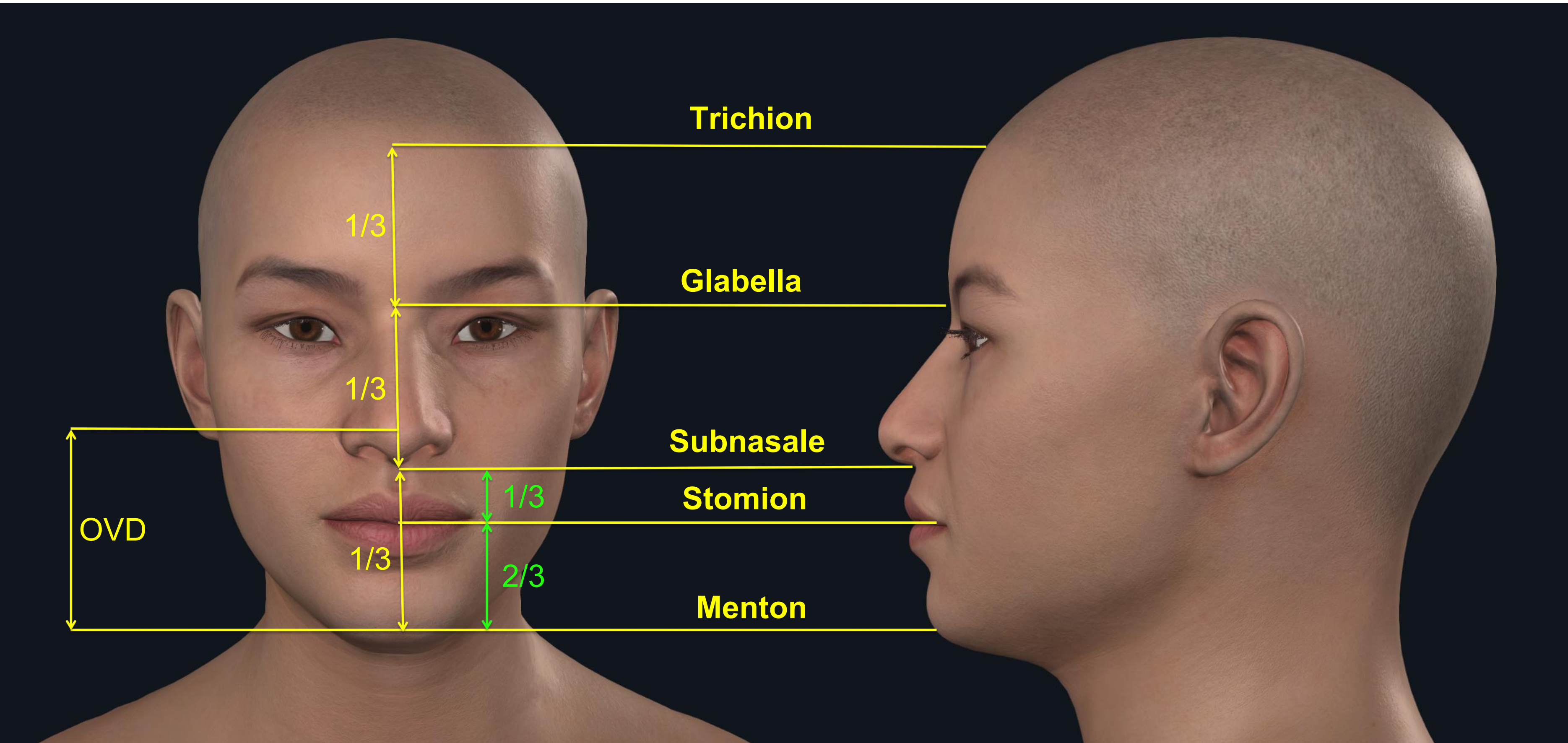


Figure 1. Facial thirds (model generated using Complete Anatomy Version 9.6.0, 3D4Medical Ltd)



Figure 2. Side profile of a patient with loss of OVD



Figure 3. a: female smile, b: male smile

CONCLUSION

Increasing OVD is an important element to consider when restoring dentition in patients with heavy occlusal wear and in edentulous patients. Function and esthetics are equally important factors when reestablishing OVD. While previous studies have introduced the technique of finding the OVD by using phonetic sounds, it is essential to incorporate overall facial esthetics. Small changes in OVD can either undermine a patient’s confidence and psychological outlook or it can enhance one’s overall facial appeal extending beyond the perioral region. This review investigates the esthetic aspect of OVD through gingival display, lip position, age/gender, speech dynamics, and facial proportions while balancing functionality.