

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

## قسم

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# **Evaluation of facial soft tissue changes in excessive gingival display cases after Le Forte I maxillary impaction surgery using 3D facial surface laser scanner**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

فَالسُّلْبُ بِحَنَائِلِ الْعَالَمِ لَنَا الْإِمَامُ عَلَيْنَا  
إِنِّي أَنْبَتُ الْعَلِيمُ الْحَكِيمُ

صَدَقَ اللَّهُ الْعَظِيمُ

سورة البقرة الآية: " ٣٣ "

# *Dedication*

*I would like to dedicate this work to my most beloved parents for their endless support and love, thank you for always standing by my side.*

*I would also like to dedicate this work to my dearly beloved wife Lara and my sisters Reem, Nada and Nouran who were always caring and supporting.*

*Finally I dedicate this work to my grandfather, Prof. Hasan Ali El Shazly may your soul rest in peace, I'm proud to be the grandson of a man who worked to the last day of his life in scientific research finding a common ground between medical advances & Islamic sciences.*

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## **List of Abbreviations**

**VME: Vertical maxillary excess**

**3D: Three-dimensional**

**CT: Computed tomography**

**MRI: Magnetic resonance imaging**

**2D: Two-dimensional**

**BSSO: Bilateral sagittal split osteotomy**

**3DFM: Three dimensional facial morphometry**

**NHP: Natural head position**

**CACAS: Computerized automatic cephalometric analysis system**

**CBCT: Cone beam computed tomography**

**Sts: Stomion Superius**

**Uie: Upper incisor edge**

**SD: Standard of deviation**

**OBJ: A 3D geometry definition file format**

**ICP: Iterative closest point**

## **Introduction**

A smile is a key facial expression for daily social interactions it gives the human face the aesthetic value needed to show happiness, pleasantness and it can give a good first impression in new relationships, This is not always the case sometimes excessive gingival display during smile which is referred to as “gummy smile” is an aesthetic concern to the patient, when the gingival display is more than 3 mm from the gingival margin up to upper lip line.<sup>1</sup> Vertical maxillary excess (VME) is one of the contributing factors to this problem.

Clinical diagnosis of VME is made when the lower third of the face is longer than the remaining two thirds, which depends on the facial soft tissue analysis.<sup>2</sup>, In 1907 Angle presented a paradigm based on skeletal and dental relationships as the main target of analysis and treatment planning for patients with dentofacial deformities. This paradigm changed after Proffit and Ackerman emphasized on idealizing the norms of the soft tissue proportions as the main target, while maintaining a functional occlusion as the second target, leading to the current gold standard of soft tissue analysis and restoring its norms in dentofacial deformity patients.<sup>3</sup>. various treatment modalities have been described to address the gummy smile which includes orthognathic surgery, Le Forte I maxillary impaction ,<sup>4 5 6 7</sup>