Different Surgical Modalities In Treatment Of Patients With Facial Asymmetry (Meta- Analysis Study)

Thesis

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To My Parents

- My Father
- My Mother

To My Family

- My Wife

To My Brothers and sisters

I wish them the best of all

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OSA : Obstructive sleep apnea syndrome

DO : Distraction osteogenesis

TMJ : Tempromandibular joint

JIA : Juvenile idiopathic arthritis

PA : Poster anterior

HFM : Hemifacial microsomia

MRI : Magnetic resonance imaging

TMD : Tempromandibular disorder

SSRO : Sagital split ramus osteotomy

IVRO : Intraoral vertical ramus osteotomy

IVSRO : Intraoral vertical sagital ramus osteotomy

Introduction

In the past, mild facial asymmetry was disregarded by clinician because it was believed that normal craniofacial skeleton had some asymmetry , and that was subclinical and could be compatible with normal dental occlusion[1,2].Facial symmetry has a high correlation with attractiveness, even a slight asymmetry is quickly noticed by the human eye[1,2].

Greater degrees of asymmetry are correlated with clinical depression , neurosis , inferiority complex , poor self-esteem, and general poor quality of life health problems. So many patients who is seeking maxillofacial treatment from those with facial asymmetry. This will lead us to how could make proper diagnosis, the facial asymmetry is bony or soft tissue[2].

There are a lot of surgical methods for treatment of facial asymmetry either by orthognathic surgery or by distraction osteogenesis , every one of these represent category of different procedures which could be applied according to different parameters .

One of important parameter is experience of oral and maxillofacial surgeon and own preference. In the past the orthognathic alone was widely used to correct congenital and acquired dentofacial discrepancies but nowadays there is another type of surgery which could use the bone itself in correction of facial asymmetry which called distraction osteogenesis[2].

The advent of orthognathic surgery has given the orthodontist in conjunction with oral surgeon the ability to correct skeletal deformities that previously could not be corrected by orthodontic alone[3]. Orthognathic

surgical procedures are designed not only to correct skeletal imbalances in craniofacial skeleton but also improve functional maxillomandibular relationship and to provide a more harmonious profile[3].

In some instances, orthognathic techniques can be used in treating patient with obstructive sleep apnea syndrome (OSA) that to provide better masticatory function, reduced facial pain, more stable results in sever discrepancies and improve facial aesthetics[3].

Distraction osteogenesis (DO) is the process of generating new bone in a gap between two bone segments in response to the application of graduated tensile stress across the bone gap[4].It depend on modification in bone itself through callus of the bone and it could be directed in three planes (antroposterior-medial-virtical) to provide proper facial symmetry[4].

Some authors[4],believe that DO is the method which could solve the asymmetric problems and in the same time prevent the complications of orthognathic surgery such as graft morbidity , multiple operations and relapse. Combination between both types of surgery was done in different cases which may refer to the need to orthognathic surgery in some cases. This could be done in sagittal osteotomy in mandible for placement of distractor and Lefort-I osteotomy in maxilla for adjustment of occlusion , so the combination between two surgery could be done .

The Considering these premises, the need for evidence based medicine, which has introduced well-defined rules for the critical evaluation of medical data based on explicit inclusion and exclusion criteria in addition to conducting well designed studies is overdue to reach answers that may patients with facial asymmetry[5].

Systemic review and meta-analysis can be used in critically evaluating data from published articles. In both methods, two steps are usually needed, the first is the proper collection of the published data then the synthesis of the information required. Such synthesis can be done by an expert in the field as in the traditional systematic review which may lend itself to the reviewer personal bias, or it can be done in a more illegible meta-analysis[6].

To conclude, systematic review and meta-analysis both make it possible to validate the efficiency of orthognathic surgery versus distraction osteogenesis with the meta-analysis being the best since it is an -objective not a subjective tool[6].

REVIEW OF LETREATURE

Facial asymmetry is defined as the variation in the configuration of one side of the face from the other when viewed in relation to a projected mid-sagittal line[7].Another definition is the difference in the size, shape, or relationship of two sides of the face, has high correlation with facial harmony, attractiveness, and beauty[8]. It was first observed by the early Greek artists, and the term normal facial asymmetry was used[8]. Later, Leonardo da Vinci and Albrecht Durer described the classic concept of human facial symmetry and found absolute bilateral symmetry a normal morphologic characteristic[8].

Minor asymmetries of the human skeleton are common in the general population and usually have no esthetic or functional significance [9]. It is reported that skeletal asymmetry is found even in the most pleasing and apparently symmetrical faces[9]. This is not observed externally because dentoalveolar structures and the facial soft tissues show compensatory changes to minimize the underlying asymmetry[8,9]. However, moderate and severe asymmetries are easily noticed by the human eye[9].

Unfortunately, prominent abnormalities of the facial structures play an important role in a growing individuals developing identity and often create undesired psychological results[8]. Waite and Urban[8],emphasized that great degrees of asymmetry are correlated with clinical depression, inferiority complex, poor self-esteem, and neurosis.

Development of jaw deformities are usually accompanied with significant disharmony between upper, middle, and lower thirds of face, that result in sever psychological problems and social handicaps with functional disability as speech and mastication deficits[9].

Among all dentofacial abnormalities, asymmetries are one of the most complicated problems in both childhood and adulthood[10].In a growing child, functional asymmetries often can be corrected by obtaining a proper function and eliminating occlusal interferences[11].

The etiologic factors that cause facial asymmetries and their underlying mechanisms are not yet completely understood[8,9] Nevertheless, it is thought that facial structures can show different degrees of asymmetries as a result of lowered genetic control over the formation and development of bilateral structures of the face or environmental influences and accidents during development[12].

It is appropriate to classify facial asymmetry to acquired and developental[13].Developmental asymmetries include agenesis, hypoplasia, hyperplasia, atrophy, hypertrophy, and malpositions of the facial bony structures[9]. Acquired asymmetries occur as a result of traumas, infections, functional shifts, and tumors[9].

Although the nature of asymmetry is complex and its characteristics are diverse, approaches to systematic classification of facial asymmetry have been few[14]. Hinds et al[15],classified mandibular asymmetry into two categories :unilateral condylar hyperplasia and deviation prognathism.

Rowe[16],classified asymmetry into 3 groups: unilateral condylar hyperplasia, unilateral macrognathia confined to the skeletal element only, and unilateral macrognathia of both osseous and muscular components.

Bruce and Hayward[17], classified mandibular asymmetry into deviation prognathism, unilateral condylar hyperplasia, and unilateral macrognathia. However, these classifications were mostly for severe