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Clinical Paper

American Association of Oral and Maxillofacial Surgeons

Statement by the American Association of Oral and Maxillofacial Surgeons Concerning the Management of Selected Clinical Conditions and Associated Clinical Procedures

Skeletal Anchorage Systems

Section 1: Parameters of Care as the Basis for Clinical Practice

Introduction

This statement is intended to summarize the procedures used in the management of patients presenting for care by oral and maxillofacial surgeons. The definitive guide to the management of such patients is *Parameters of Care: AAOMS Clinical Practice Guidelines for Oral and Maxillofacial Surgery (AAOMS ParCare) Sixth Edition 2017*. Any references used in the development of this statement can be found in *AAOMS ParCare 2017*. This statement is not intended as a substitute for *AAOMS ParCare 2017*, but rather as a synopsis of the information contained in *AAOMS ParCare 2017*.

Section 2: Skeletal Anchorage Systems

Skeletal Anchorage System (SAS) is an important surgical technique for positioning of teeth and dentoalveolar segments in conjunction with orthodontics. Skeletal Anchorage Systems were described in the literature in 1983 by Cockmore. Interest in this technique has been increasing, and many clinicians now advocate SAS as an adjunct to orthodontic movement. SAS has great potential for the correction of tooth alignment and improving the relationship of the maxilla and mandible. This enhancement to conventional orthodontics allows for minimally invasive procedures that may reduce the need for more-invasive corrective jaw surgery. Extensive long-term data is not currently available to document its precise role in orthodontic movement. The American Association of Oral and Maxillofacial Surgeons believes a statement is indicated relative to the role of skeletal anchorage systems in conjunction with orthodontics and oral and maxillofacial surgery.

The steps and the basic technique of skeletal anchorage systems are:

- Osteotomy phase. Osteotomies, if necessary, are performed intraorally in the maxilla or mandible.
- Installation and application of the Skeletal Anchorage System: An anchorage device is placed in the bony maxilla or mandible. This device allows the desired tooth or teeth to receive the intended forces.
- Latency phase. This is a period of time after the appliance is placed, during which the healing process is initiated. In most applications, the latency phase is five to seven days, but some clinicians believe forces can be applied immediately.
- Movement phase. At this time, the device is activated to create movement of the teeth. As the teeth are moved, bone changes allow for movement. The attendant tissues tend to adapt well to the tooth movement.
- Consolidation phase. This is the period in which the teeth are stabilized in order to allow for complete maturation of the bone. Activation is ceased during this phase.
- Removal of the Skeletal Anchorage System: The device is removed at this time or earlier at the discretion of the practitioner.

Indications for Skeletal Anchorage Systems

Skeletal anchorage systems are indicated when this technique would be more efficient or effective than other available treatment modalities. Use of skeletal anchorage systems would provide:

- Enhanced alternative treatment unavailable with conventional techniques.
- A desired orthodontic movement in a more efficacious way.

At present, the use of a skeletal anchorage system is increasingly popular as the orthodontic community becomes more familiar with the techniques. It is proving to be an excellent adjunct to conventional orthodontics and a less-invasive and less-costly technique as compared to surgical repositioning of dento-osseous segments. Examples of these situations include: molar uprighting, creation of posterior anchorage, intrusion and extrusion of tooth position, and additional anchorage for movement of impacted non-third molars away from other teeth/roots.

Use of these systems may offer promise as an adjunct for the correction of facial skeletal deformities. The principles and techniques are the same as those already accepted in traditional orthodontics. It is nevertheless important that basic clinical research in this area be continued, and long-term data be collected and published to corroborate the early successes. As with any procedure, skeletal anchorage systems should be utilized primarily when superior results can be achieved compared to conventional techniques.