Oral Rehabilitation of Severe Hypodontia Patients using
Reconstructive Surgery and Implant Supported Prostheses

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Introduction

Severe hypodontia (oligodontia) is defined as the absence of four teeth, with an estimated prevalence of between 1.0-3.0% in the general population. Various management modalities may be utilized to manage these patients, including the use of corrective orthodontics, retained primary teeth and permanent teeth, tooth supported fixed bridgework and conventional removable prostheses. However, effective treatment is likely to be complicated by small teeth, poor morphology and a limited number of soft tissues patterns. Consequently, retained teeth are usually removed, the edentulous space is then the blank of available ridge height and width, stiffness requiring implant augmentation (Class Ia).

In this poster, clinical images are used to illustrate the use of guided bone regeneration, sinus grafting, and block onlay grafts from the mental region and distal crest to facilitate implant placement. Aspects of multidisciplinary rehabilitation are also discussed.

Habiting Phase

The multidisciplinary dentists should determine the ideal tooth type, positioning and function, so that dental replacement plan is not only optimal, but also implant placement more straightforward. Enamel is the main difference of the root surface of retained primary teeth, giving rise to "new" gingival papilla morphology in every section. Bone quantity and quality available in key areas should be assessed using cone beam CT with a subperiosteal reference mark.

M IO-Multidisciplinary Bond

Guided bone regeneration at the time of implant placement can be highly predictable. Forty small changes in the buccal/coronal diameter of future crown required. In this situation, the majority of the implant should be covered by bone, first ensuring functional occlusal contact and then utilizing the onlay graft for primary stability.

Moderate – Severe Horizontal Bone Defects with Mosaic (Vertical Gain)

Block onlay grafts provide enough structural stability and have the potential to grow upward for the replacement of interproximal ridge. The use of interdental spaces, such as the mental region and the midline region, has the advantage that the bone can be completed under LA. There is a limit to the amount of bone that can be harvested into cavity and inspiration can be associated with some morbidity including swelling, hematoma, infection and neural damage.

Class Ia

Severe Horizontal and Vertical Defects

Augmentation using bone from interdental sites, typically for the distal crest can be considered where large volumes of bone are required. It is necessitated a general anaesthetic, in patient education, and is expensive with additional risk of morbidity including hoarseness, gut distension, infection, nerve injury and the risk of the general anaesthetic. (Class Ia)

Bone onlay grafts can be superimposed for the purpose of jaw, however, this has been underrepresented and seems to be more prone to resorption during the 6-12 month healing phase. It has been suggested that implants placed into sites augmented from the iliac crest have a higher failure rate compared with guided regeneration from interdental sites.

Modularity Grafting

In the past, there is a certain amount bone height for implant placement due to the position of the maxillary sinus. This is a particular problem in hypodontia cases where both premolar and molar spaces. Implant grafting therefore involves preserving a lateral bone window, elevating the sinus membrane and placing graft material beneath. Implants placed following this have similar success rates as those placed conventionally. (The evidence suggests that alloplastic grafts are as effective as the use of autogenous bone, although healing times are longer in the former. (Class Ia). Alloplastic include the use of strontium, water implants alone or with bone.

Figure

Class Ia

Class IIa

Prosthodontic Rehabilitation

The use of bone, autogenous length implants in connection to support occlusal restorations, rather than full arch fixed prosthesis is avoided, where aesthetics allow, reconstructive, screwed metal restorations should be used in preference to cement retained. This is important in young patients, where it is likely to require the repair of replacement of the implant supra-structure at some point during their lifetime. If any natural teeth are to be retained, particularly on the side so that the prosthetic arch can be extended if indicated.

Implant restorations should be designed to facilitate access for the patient’s oral hygiene measures, examination of the peri-implant soft tissues and sub-gingival debridement. Emergence profiles of restorations should not be excessively bulky and provide surface and interproximal contact areas should be easily debrided. At least it may be necessary to accept a non-optimum aesthetics to facilitate the long term maintenance of peri-implant health. (Class Ia).

Conclusion

With careful planning, patients with severe hypodontia can be rehabilitated very effectively in most cases achieving a good functional and aesthetic result. It should be highlighted that these patients will require ongoing follow up, maintenance and restorative procedures over their lifetime and periodontal therapy should be planned to facilitate. This is patients are appropriately selected and prophylaxis safely designed and convoluted, these restorations can be maintained in accordance with normal dental practice environments.

References

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