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CASE REPORT

Pre-Prosthetic Orthodontic Implant for an Aesthetic Rehabilitation : A Case Report

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ABSTRACT
A combination of dental problems such as missing teeth, proclination of teeth and occlusal problems cannot be satisfactorily treated by prosthodontic approach alone. The rehabilitation of patients requiring an esthetic smile demands the collaboration of multiple dental specialists. the need for orthodontic tooth movement prior to restorative treatment is necessary for some patients, in order to optimize both esthetic and functional aspects of dental treatment. The present case report achieved successful implant based oral rehabilitation in a patient with absence of the right maxillary central incisor utilizing a preprosthetic orthodontic implant site preparation for the purpose of space gain

KEYWORDS: Preprosthetic Orthodontics; Aesthetic Rehabilitation; Interdisciplinary Treatment; Implant.

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INTRODUCTION

Adult patients with missing teeth often present with a skeletal malocclusion, a reduced vertical dimension and some degree of temporomandibular disorder, which often require a multidisciplinary approach for the effective treatment of such complex cases (1).

Orthodontic movement of tooth usually become necessary when tooth is rotated medially or distally tilted or shifted extruded or intruded to enhance the relationship with the adjacent tooth and to correct alignment in combination with multiple missing teeth before starting a prosthetic treatment. (2) planning for treatment of patients who require pre-prosthetic orthodontics must always begin with a diagnostic wax-up, which is an important tool that enables both the orthodontist and the restorative dentist to visualize the final results. The orthodontist should confirm that the changes in tooth position on the diagnostic cast can be achieved in the patient's mouth; the restorative dentist should confirm that tooth position is ideal for future restorations that are both esthetically and functionally acceptable. Adequate communi- cation and planning between the restorative dentist, orthodontist, and other clinicians before the implementation of any treatment is a very important step; each of these clinicians should know the particular stage at which he or she should intervene, how much time is needed to fulfill the objectives of his or her intervention, and the cost of the provided treatment. The patient will expect to know this information before agreeing to the proposed treatment plan (Kokich and Spear, 1997). Beflanning for treatment of patients who require pre- prosthetic orthodontics must always begin with a diagnostic wax-up, which is an important tool that enables both the orthodontist and the restorative dentist to visualize the final results. The orthodontist should confirm that the changes in tooth position on the diagnostic cast can be achieved in the patient's mouth; the restorative dentist should confirm that tooth position is ideal for future restorations that are both esthetically and functionally acceptable. Adequate communication and planning between the restorative dentist, orthodontist, and other clinicians before the implementation of any treatment is a very important step; each of these clinicians should know the particular stage at which he or she should intervene, how much time is needed to fulfill the objectives of his or her intervention, and the cost of the provided treatment. The patient will expect to know this information before agreeing to the proposed treatment plan (Kokich and Spear,1997).

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CASE REPORT

A female of 22 years old was refered by her prosthetic for orthodontic preparation before prosthetic rehabilitation. On clinical examination (fig.1), there was a symmetrical oval face with a shy smile because of the absence of tooth 11 (old trauma) .The intraoral examination (fig. 2) revealed the absence of teeth 11, 36 et 46, a class II canin relation, crossbite of the right upper lateral incisor and light crowding of lower teeth in anterior mandibular segment. The teeth 21, 37 and 47 was mesialized on the missing tooth's space of there controlaterals and midline shift to right side. The panoramic x-ray study (fig. 3) showed the presence of the third lower molars The cephalometric analysis (fig. 4) revealed 3° ANB, 23°FMA with retroclined mandibular incisor.

Treatment Plan

in the mandible, it was planned to align anterior teeth by a controlled vestibuloversion movement and to close the posterior spaces by mesialization of second and third molars. in the maxilla, it was planned to extract first premolars to provide space for the anterior implant and to correct the class II canin relation

Treatment Progress

Upper and lower leveling and bite opening (of the tooth 12) was achieved with a progression of round wires (.016¨, .018¨, .020¨) with seconnd order bends

In the maxilla, the modification of the torque of the incisors and the placement of a spring compressed between teeth 12 and 21, allowed the opening of a sufficient space to place the implant position 11

When the space was sufficient between teeth 12 and 21 an aesthetic cover was bonded to hide the space (fig. 5)

Upper canines were retracted with the help of closed coil niti springs on .018¨ × .025¨ wire with molar stops and slight tip back bends to prevent anchorage loss.

Lower molars were mesialized with closing loops (fig.6)

After 20 months of treatment, the appliance is debonded (fig.7) and the splint were cemented in the mandible and upper removable retainers given until the implant placed in order to assure the stability of the results (fig.8)

Clinically, the lateral and frontal occlusal views show the advantage on the quality of occlusion and the repercussions on the smile of the patient after prosthetic realization (fig.9, 10).

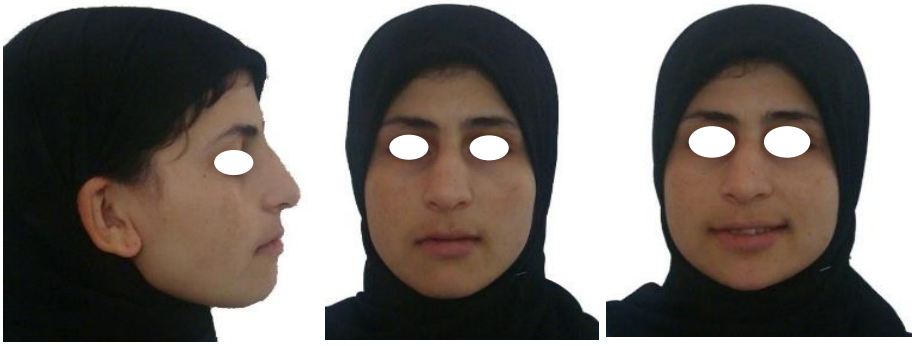

Fig 1 : Pretreatment Extraoral Photographs.

Fig 2 : Initial Intraoral Photographs.

Figure 3 : Panoramic X-ray Shows the Presence of 38 et 48.

FMIA	67°± 3	68
FMA	25°± 3	23
IMPA	**88°± 3**	89
SNA	**82°**	**81**
SNB	**80°**	**78**
ANB	**2°± 2**	**3**
Ao-Bo	2mm± 2	2
Plan d'Occ	**10°**	**8**
Angle Z	**75°± 5**	**70**
Upper Lip	/	**10**
Total Chin	/	**13**
Ht Faciale Post	**45mm**	**50**
Ht Faciale Ant	**65mm**	**63**
Index Post Ant	0.69	0.79
Rapport d 'évolution	2/1	

Figure 4 : Cephalometric Analysis.

Figure 5 : Intraoral photograph during treatment of aesthetic cover to hide the space of 11.

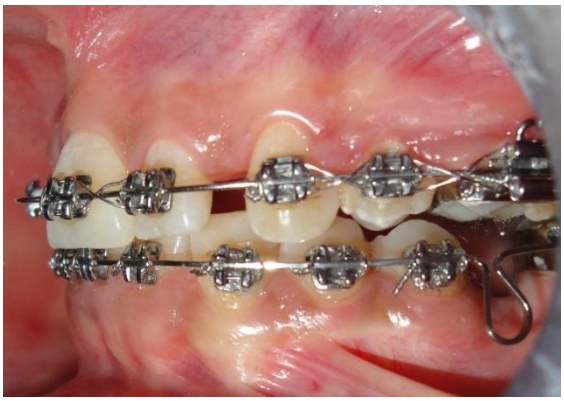

Figure 6 : Intraoral photograph of mid treatment during mandibular molars mesialization.

Figure 7 : Posttreatment intraoral photographs.

Figure 8 : Intraoral photograph of retentions.

Figure 9 : Posttreatment Extraoral Photograph.

Fig 10 : A- X-ray check up after implant placement
B- intraoral photograph of the Final result after implant placement.

DISCUSSION

The necessity for an interdisciplinary approach to treatments of routine dental problems has been recognized for a long time. (5,6) A thorough communication between the restorative dentist and the orthodontist is essential in order to decide whether space closure or space opening is more appropriate for the final treatment outcomes. Moreover, the selection of the final prosthetic treatment, whether removable partial denture, fixed partial dentures, or implant-supported prosthesis is also required at the start of the planning process, to correctly plan spaces between the teeth for future pontics or implant-supported crowns (7,8)The present report with the aesthetic rehabilitation of a young adult, demonstrates successful treatment by inter-disciplinary collaboration between Orthodontics and Prosthodontics to provide proper prosthetic treatment of the missing tooth ensuring long-term predictable success.
Several factors guided the choice of our treatment plan :

- In the anterior maxilla : after the extraction of first premolars, a judicious repartition of the space was required initially to achieve the class I canin and to provide the space for the compensatory implant.

According to several autors, an anterior implant restoration offers an excellent solution for patients that have missing dentition and require a conservative esthetic solution**.** (9,10).

- In the mandible : the presence of the third molars rule out the choice of prosthetic restoration. However, the mesialization of the second and third molars to close the first molars spaces requires more time but it's corresponding to the patient's demand (patient does not like a mandible prosthetics because of financial reasons)

This pre-prosthetic orthodontic treatment exactly replies to the demand of the patient and aslo allowed her prosthodontic to place anterior implant supported crown in the new dental equilibrium and function.

CONCLUSION

Pre-prosthetic orthodontic treatment facilitates the prosthetic rehabilitation in a harmonic aesthetic and a functional occlusion. Adequate communication between the orthodontist and the prosthodontic prior to orthodontics intervention and during treatment, is essential for success in multidisciplinary treatment.

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AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals of the International Committee of Medical Journal Editors. Indeed, all the authors have actively participated in the redaction, the revision of the manuscript, and provided approval for this final revised version.

COMPETING INTERESTS

The authors declare no competing interests with this case.

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PATIENTS CONSENT

Written informed consents were obtained from the patient for the publication of this case report.

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