

Implant Supported Fixed Hybrid Prosthetic Treatment in A Sjogrens Syndrome patient. A Case Report

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Abstract

The case report presents the prosthetic management of a 47 year old female patient with Sjogren's syndrome using a full mouth implant retained fixed (hybrid) prosthesis. The use of osseointegrated dental implants and the design of the superstructure showed that this treatment option could be successfully used in-patient with xerostomia. The objective of this report is to describe the clinical steps and comment on the factors that may have influenced the final results. The patient showed great compliance in smoking cessation and maintenance phase which are known to have great impact on the success of implant treatment. The fixed hybrid implant retained fixed prosthesis offers good patient acceptance along with aesthetics, comfort and function in cases of edentulism.

Introduction

Sjogren's syndrome (SS) is an autoimmune disease of the exocrine glands that mainly affect the salivary and lacrimal glands [1,2]. Adult population is predominantly effected, specially the females from 35-60 years (3-4%) [2]. The syndrome may occur in isolated form or along with other autoimmune diseases. The pathological mechanism involves destruction and increased infiltration of exocrine glands with lymphocytes and plasma cells [3]. Oral manifestation mostly includes dryness (Xerostomia) as a result of reduced salivary flow³ which leads to discomfort and difficulty in speaking, and swallowing. In addition, altered taste, difficulty wearing dentures, oral candida infections and dental caries are also common findings in SS [4-8]. As health status measures are increasingly being used to assess the impact of oral disorders [9,10]. It is suggested that oral symptoms of SS can have a profound impact on health-related quality of life in general [2,7,8].

A comprehensive approach to the measurement of oral health related quality of life (OHRQOL) combines the use of generic, oral specific and condition specific measures [11,12]. Among oral-specific measures, the oral health impact profile (OHIP) is presently one of the most comprehensive measures of the impact of oral condition on health-related quality of life [13-15]. In the measurement of xerostomia, single item and multi-dimensional approaches have been used [16,17]. A disease-specific SS questionnaire has also been developed that seeks to determine oral conditions of direct concern to patients [18]. Treatment of xerostomia varies from the use of replacement fluids with artificial salivary formulations like (gels, rinses, sprays) to using salivary stimulants (cevimeline or pilocarpine), sugar-free gums and mints. However, before starting the treatment, identification of the causative agent is tremendous measure which can be bacterial in nature (required antibiotics) or neoplasm (required surgery) [19].

Individuals with SS commonly are denture wearers. Many attempts have been used to reduce the effect of xerostomia and make the dentures more successful with minimal discomfort. Denture soft liner, denture adhesives and denture reservoir have been employed and suggested to minimize the patient discomfort and increasing the success of dentures [20-22]. In cases where all treatment modalities have proven

unsuccessful, shifting to implant retained prosthesis has been proposed.

This case report presents the successful use of implant retained full mouth rehabilitation (Fixed-hybrid prosthesis) of an edentulous female patient with SS. The treatment has a follow up of three years with high level of satisfaction.

Case Report

A 47-year-old edentulous female patient reported to the dental hospital, complaining of dry mouth and severe discomfort when wearing denture with frequent blisters in the mouth. Her dental history revealed that she is regular attendee with her general dental practitioner and she has been completely edentulous for 5 years. She had 3 sets of maxillary and mandibular dentures made but was always unable to wear them due to constant irritation. In 2008, patient was treated in the oral medicine clinic for episodic right parotid gland swelling and dry mouth. Systemically, she suffered from chronic obstructive airway disease, Grave's disease, Sjogren's Syndrome and Anaemia. Patient was also allergic to penicillin.

Prosthodontic assessment showed low lip line and reasonable form of maxillary and mandibular ridges, with poor retention, support and stability of dentures. The interarch space was 17 mm. Implant retained hybrid prosthesis was selected to be the treatment option for the patient. Patient received 6 maxillary implants and 4 mandibular implants (OsseoSpeed Astra Tec AB, Mölndal, Sweden) in addition to right sinus lift under general anaesthesia. The treatment was made according to the following steps: Firstly, old denture was adjusted and relined with soft liner (G C Reline Soft) to fit the existing implants. Then, primary impressions were made with hydrocolloid impression material (Plastalgin; Septodont, Saint Maur des Fosses, France). Centric jaw relation was recorded using acrylic base and occlusal rims then anterior and posterior teeth were selected. This followed; teeth try in with 2 sets of try in for the upper arch, one with flanges and the other one was without flanges. At this stage the patient decided to go with the flanged dentures for better lip support. Silicon Polyvinylsiloxane Putty mould (3M ESPE Dental Products, St. Paul, USA) was made for the buccal surfaces of the upper and lower teeth of the try in denture to help for selection of the correct abutment angulations.

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Figure 1. Maxillary implants with Uni-abutments



Figure 2. Mandibular implants with Uni-abutments

In addition to the above details, following clinical procedures were used to fabricate full upper and lower implant retained hybrid prosthesis:- (1) 45U angled abutments (Astra uni-abutments) were used for the upper arch and 20°c for the lower arch with different height (*Figures 1 and 2*).

All uni-abutments screwed to the recommended torque (15Ncm), covered with pro-heal caps and dentures were adjusted to fit (2). Final abutment level impression of maxillary arch and mandibular was done with polyether (Impregum Soft™, 3 M ESPE) using open tray technique and uni-abutment impression pick-up (*Figures 3 and 4*).



Figure 3. Maxillary impression copings



Figure 4. Maxillary impression

(3)- Centric jaw relation was recorded using screw retained occlusal rims. (4)- Teeth were tried-in using screws to retain the try-in denture (5)- Maxillary and mandibular precious gold framework was tried in and passive fit was achieved with good access for cleaning underneath the framework (*Figures 5 and 6*).



Figure 5. Metal framework tyr in mandible

(6)Teeth were tried-in with the metal frame work and Occlusion, aesthetics and phonetics were satisfied.



Figure 6. Metal framework tyr in maxilla

(7)- Maxillary and mandibular Hybrid prosthesis was screwed to the torque recommended by the manufacturer's (15 Ncm) (*Figures 7-9*). (8)- Screw access openings were closed with cotton pellet and resin composite; (3M ESPE, St. Paul, MN, USA).

Discussion

In the literature, many attempts have been made to make the traditional complete dentures more satisfactory especially with the patients having Xerostomia [21-23]. The treatment presented in the case report was challenging and equally rewarding to plan and execute. Implant treatment requires close integration between the surgical and restorative components involved. The treatment should be restoratively driven to ideally distribute the functional forces and preserve the long-term success of implants [24]. Options for treatment were limited to either implant retained fixed porcelain fused to metal restorations, implant retained fixed hybrid acrylic prosthesis and implant retained overdentures. As the patient choice was fixed prosthesis and inter arch space was 17 mm a fixed hybrid prosthesis was deemed optimum for this particular case. In addition, fixed hybrid prosthesis offers ease of maintenance, passivity of fit, lower cost due to less number of implants, lower supra-structure cost and excellent aesthetic for both soft and hard tissue.

Presence of good number of implants which are long enough and well integrated with good distribution and perfect angulations makes treatment options for this patient more versatile. Other factors effecting the final decision are patient preference, phonetics, aesthetic of upper anterior teeth and lip support. These factors were determined during the teeth try in stage. To address the demands of the patient for a fixed restoration, the treatment plan of choice was to restore upper and lower implants with screw retained fixed prostheses with acrylic teeth. The Hybrid prosthesis utilized in the maxilla has been documented with high success rate over a long period of time (5 years) with easier restorative procedure and manageable technical complications compared to porcelain faced fixed reconstructions [25].

Many studies have identified smoking as a risk factor for implant failure [26,27]. Patient was a previous smoker, however she commenced smoking cessation 2 years before the treatment started and showed great bone level around the implants (for short term - evaluation). Importantly, passive fit is critical for the survival of implants under frameworks and not achieving it results in biological and mechanical complications [28,29]. Producing passive fit in implant fixed hybrid prosthesis is challenging and multiple techniques are used for it, however errors can be introduced in the framework during procedures like, wax-up, casting, pouring, indexing and soldering. In addition, the length of cantilever can significantly increase mechanical complications, including fractures of metal and resin. However if the cantilever is kept half of the antero-posterior distance (1/2 A-P) between the most anterior and posterior implants, the torquing forces are minimal. Therefore the number of cantilevered units was reduced to one unit in the lower bridge for favorable biomechanics. Moreover, six implants were placed in the maxilla to allow for better management of failures which can occur even in well planned cases [25].

Conclusion

Edentulism in a Sjogrens syndrome patient with xerostomia was predictably managed using a full mouth implant retained fixed (hybrid) prosthesis. The fixed hybrid implant retained



Figure 7. Definitive maxillary prosthesis



Figure 8. Definitive Mandibular Prosthesis

The patient was seen for up-to two years (Figure 10) with minimal maintenance required and she showed great level of satisfaction and self-confidence compared with when she wore her old dentures. Patient referred back to her GDP and to be seen annually for recall.



Figure 9. Definitive Prosthesis



Figure 10. Post operative radiograph at 2 years recall.

fixed prosthesis offers good patient acceptance along with aesthetics, comfort and function in cases of edentulism.

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