THE IMPLANT TREATMENT OF TWO PATIENTS SUFFERING FROM SJÖGREN'S SYNDROME WITH MULTIFACTORIAL REGENERATIVE PROTOCOL

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Abstract

The purpose of the work is to show that it is possible to rehabilitate with Multifatorial Regenerative Protocol (MFRP) also the patients with diseases considered to be absolute contraindications to the implant rehabilitation.

For the rehabilitation it has been used the PBR rehabilitation technique, that allows to insert prosthetic roots not excessively traumatizing the bone tissue and to avoid the use of high speed rotary burs. Despite the disease and the poor bone quality, it has been possible to obtain the osteo-connection only in 45 days.

Using the MFRP implants, it is possible to rehabilitate with a high percentage of success also patients with poor bone quality and density.

Keywords: PBR, bCGF, autologous bone, growth factors, Sjögren's syndrome

Introduction

The Gougerot-Sjögren syndrome is a multifactorial chronic inflammatory autoimmune disease.

Described by Sjögren in 1933, it strikes about 2% of the elderly general population, affecting mainly females (Giannetti, 2007) compared with males with a 9:1 ratio and with the highest incidence in the 40-50 years age bracket (Fegis-Marrano-Ruberti,1996).

This disease affects the exocrine glands resulting in a progressive atrophy that involves a serious secretory insufficiency.

The Sjögren's syndrome can be classified as follows:

1. Primitive form, when it doesn't shows itself associated to another autoimmune disease (Moutsopoulos,1980; Youinow and Miossec, 1982). In rare cases, the primitive form evolves into a pseudolymphoma (Zulman et al., 1979);

2. Secondary form, when it is associated to other autoimmune diseases such as the rheumatoid arthritis, SLE, scleroderma, vasculitides and connectivitides.

The disease's cause is attributed to a hyperstimulation of the B lymphocytes that attacking the glandular acina provoke ingravescent sclerosis and finally atrophy of the glandular parenchyme.

The suffering of the salivary glands is highlighted still further by the prominence of the Stensen's duct exit, parotidean tumefaction and viscous secretion.

Inside the glands one can observe islands composed of myoepithelial cells that have a marked diagnostic significance (Todesco).

The extraglandular symptoms caused by the Sjögren's syndrome are various and they strike various organs and can be summarized and arranged as follows (Tab 1) (Zoppini, 1996).

The diagnostic safety of Sjögren's syndrome it is made through particular examinations that appraise the exocrine glands functionality.

The examinations that are usually carried out are:

- rheumatological examination;
- Shirmer's test, that examines the health condition of the lacrimal glands measuring the production of tears;
- Saxon text: that measures the saliva production and accordingly determines the degree of compromission of the salivary glands.
- sialolithography, scintigraphy, echography, MR or sialoresonance in the most particular cases;
- biopsy of the minor salivary glands (of the lower lip) and histological examination through which it is appraised the degree of infiltration of the inflammatory cells in the salivary glands
- hemochrome, in which there is the reduction of the leukocytes;

- ESR (in the patients suffering from the syndrome there is an increase of ESR) PCR, creatinine, ANA autoantibodies (antinuclear antibodies), anti-ENA (anti-SSA and anti-SSB) count and detection of rheumatoid factor;

- complete urine examination to appraise the possible pathological involvement of the urinary system.

There is only a symptomatic therapy with the application of artificial tears, emollient mouthwashes, frequent liquid intake. To deal with the systemic symptomatology instead it is indicated the use of corticosteroids, immunosuppressors, FANS.

Material And Methods

Clinical Case N°1

The patient M.A., female, age 60 years old, non smoking, discovered the first systemic symptom of the disease when she was 20 years old with the manifestation of the Raynaud's phenomenon, both in the hands and in the feet.

The patient, always when she was 20 years old, underwent to successful appendectomy surgery. When she was 24 years old underwent cholecystostomy and the next year she underwent to surgery to remove a breast nodule.

The pathological interest of the salivary glands, that provoke poor/low salivary secretion, showed itself for the first time when she was 45 years old. The salivary glands show themselves partially. The parotidean region is periodically interested by tumefaction phenomenona that are fought /cured/treated with the administration of antibiotics and cortisone.

It has been suspected a bilateral benign breast cancer because the nodules that were present there tend to grow, but the endocrinologist contradicted the diagnosis, showing that with homeopathic treatment with *arnica lymphomyosot* and *spongia tosta* (OTI - Boiron) the dimensions of the nodules decreased. The homeopathic treatment had also a positive action on the cheek tumefaction, whose showing frequency decreased.

At clinical examination the patient's oral and cheek mucosa and the tongue, both in the ventral and dorsal aspect, did not show signs of pathology.

The patient underwent pre-operative OPT radiography as a preventive measure (Fig.1).

Both at clinical examination and at radiological examination the maxillary bone quantity was satisfactory in the vertical dimension but instead very poor in the horizontal dimension.

By taking advantage of these characteristics and of the good elasticity that in general shows the maxillary bone, it has been decided to rehabilitate

the patient with implant fixtures using the split crest technique (Osborne, 1984).

The rehabilitation of the site was carried out following the MFRP guidelines (Corigliano et al, 2001, 2005, 2006, 2010).

The surgical site was treated with ozone as a preventive measure in order to reduce the levels of bacterial colonization and hyper-oxygenate the site.

After the design of a suitable flap and having undermined the tissue the full thickness with a split crest chisel one incises the bone crest to create the needed bone gap for the insertion and the primary stability of the prosthetic roots (Fig.2-3).

After the separation of the palatal and vestibular cortical plates it begins the real preparation of the implant site with the initial use of a 3.7mm probe (TMI,Italy) at 40 rpm to ascertain/determine the depth of the work and then completed with the special expander.

The definitive form of the implant site was carried out with the UNICA osteotome (TMI,Italy) used below 60 rpm without irrigation.

In total, in the whole maxillary arch, 7 prosthetic roots were inserted (TMI,Italy), having all excellent primary stability in the zones 12,13,15,17, 23, 26, 27. (Fig.4-5).

The defects in two walls that did form in consequence of the insertion of the fixtures were filled with autologous bone (Fig.6).

The autologous bone inserted into the bone defects has been obtained directly from the surgical site during the preparation of the implant sites thanks to the particular design of the working part of the UNICA osteotome (TMI,Italy) (Fig.7).

The autologous material is protected with a fibrin membrane obtained from the venous blood of the patient, thanks to a blood phase separator VLAD (TMI,Italy) and pericardium resorbable membrane (Osteobiol, Roen).

With the same MFRP technique it has been possible to rehabilitate also the lower arch. (Fig.8-9)

In the lower quadrants it has been possible to insert 4 fixtures, fairly distributed among the 2 quadrants 35,36,45,46 avoiding the mandibular nerve following the AANT technique (Corigliano, Baldoni, 2007).

In the post-operative course the patient underwent to Combined Magnetic Fields (CMFs) (Crescentini et al, 2008,2010,2011) .

Clinical Case N°2

Pazient C.E, fermale, age 74 years old, no smoking, suffering from hypertension, chronic obstructive pulmonary disease, gallstones and 20 years of Sjogren's syndrome.

On physical examination, the oral mucosa was glossy and dry with difficulty in speech.

There were no major signs of pathology, however, either in oral mucosa or on the dorsal and ventral surfaces of the tongue.

During the first visit, was submitted to radiographic OPT (Fig. 10) to assess the state of health of the bone structure and the Vertical Dimension.

After the clinical examination and radiological, the rehabilitation technique considered more appropriate for the rehabilitation was the overdenture.

Even for the rehabilitation of this case, we have followed the dictates of MFRP.

In the pre-surgical phase the implant site was treated with ozone to break down the bacterial load and iper-oxygen the site.

There have been two micro incisions lozenge in area 43-44 with minimum detachment of periosteum to minimize bleeding and bone resorption.

The implant site preparation in area 44 was made initially using the probe 3.7 mm (TMI, Italy) and subsequently completed with an rotating osteotome UNICA 3.7 mm (TMI, Italy) followed by insertion of a prosthetical root 3,7 x13 mm (TMI, Italy).

On the site 43 instead, the implant site was prepared with 4.2 mm probe and completed with the osteotome UNICA 4.2 mm to accommodate a fixture 4,2 x13 mm (TMI, Italy).

To improve the osteoconnection of the prosthesic roots, they were covered with a thin layer of fibrin obtained from patient's venous blood. After the surgery, it was made a radiograph OPT control (Fig.11). Also this patient, was treated with CMF, in the post-surgical phase. After 60 days, the implants were loaded permanently.

Results

In the first case, at radiographic follow-up at 45 days it has been observed that, despite the disease, the implants were osteo-connected to the surrounding bone without signs of suffering (Fig.12).

Finally, it has been carried out a radiographic examination with the loaded final prosthesization (Fig.13) with an optimal aesthetic result (Fig.14).

Clinical and radiographic follow-up of the second case, after 60 days and after 48 months, indicate how the fixtures were well osteo-connected to the bone with no signs of pathology. (Fig.15-16)

Conclusion

The Sjogren's syndrome is a chronic inflammatory autoimmune disease that affects a growing number of individuals. It is increasingly common to meet them as patients in a dental clinic, due to the effects of this disease on the masticatory apparatus.

Approximately 90% of patients with Sjogren syndrome are fermale (Scully, 1986) and all patients in the present study were fermale.

In almost all cases, patients present few dental elements and almost completely destroyed by destructive caries.

With the traditional techniques, rehabilitation is very difficult and in most cases the attempts end with failures.

The two described cases, show that the satisfaction of the edentulous patients suffering from the Sjögren's syndrome rehabilitated with the new protocol it increases compared with a treatment with mucous supported prostheses, since the mucous support prostheses, because of the xerostomia, provoked problems both of retention and of very annoying inflammations for the patient.

The treatment with MFRP showed itself more reliable also compared with the traditional osseointegrated implant rehabilitation techniques, underlining a longer permanence of the prosthetic roots on the spot.

In both cases, at a distance of years from the treatment, the prosthetic roots are still well integrated in the bone.

The MFRP is proposed as a novel technique for the treatment of these patients particularly complicated with predictable results.

Thanks to the MFRP technique it is possible to treat also the bone defects in patients affected by serious diseases that were considered until some time ago as absolute contraindications.

The wide application fields of this technique are to be attributed to the fact that the blood undergoes a particular treatment, that makes immediately available to the organism all the growth factors needed for the regeneration to which it is then added the help of the physical medicine.

It was still possible to fabricate prosthetic restorations that significantly improved the well-being of the patient.

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SJÖGREN'S SYNDROME EXTRAGLANDULAR SYMPTOMS OVERVIEW	
Respiratory System	- Laryngotracheitis - Recurring Bronchitis - Lymphocytic Interstitial Pneumonia - Pseudolymphoma with nodular infiltrates - Pleural Effusion - Pulmonary Hypertension - Lymphoma
Urinary System	- Interstitial Nephritis - Tubular acidosis - Renal lithiasis - Nephrocalcinosis - Glomerulonephritis
Gastrointestinal System	- Dysphagia - Atrophic Gastritis - Primary Biliary Cirrhosis - Sclerosing Cholangitis - Pancreatitis
Circulatory and lymphohematopoietic system	- Pseudolymphoma - Angioplastic Lymphadenopathy - Lymphoma - Myeloma - Lymphopenia and neutrophilopenia - Aplastic Anemia
Integumentary System	- Purpura - Raynaud's phenomenon - Vasculitides
Further symptoms	- Arthralgias and arthritides - Thyroiditides - Symmetrical Peripheral Neuropathy - Multiple Mononeuritides - Myalgias

Tab. 1 Sjögren's syndrome extraglandular symptoms

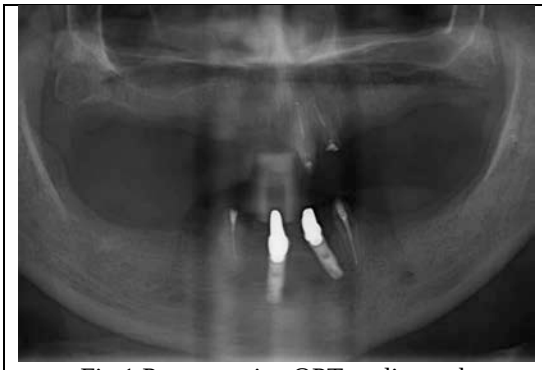

Fig.1 Pre-operative OPT radiograph

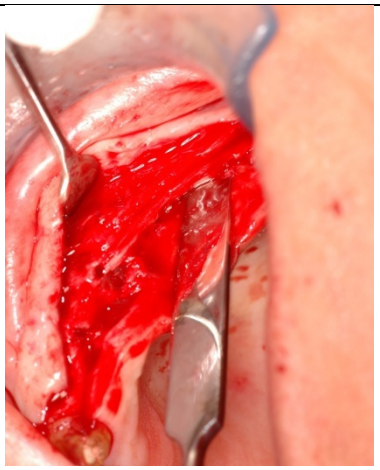

Fig.2: Chisel used for the incision and the stretching apart of the alveolar bone in the quadrant 1.

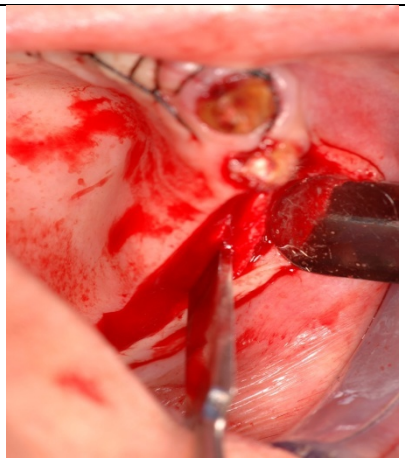

Fig.3: Chisel used for the incision and the stretching apart of the alveolar bone in the quadrant 2.

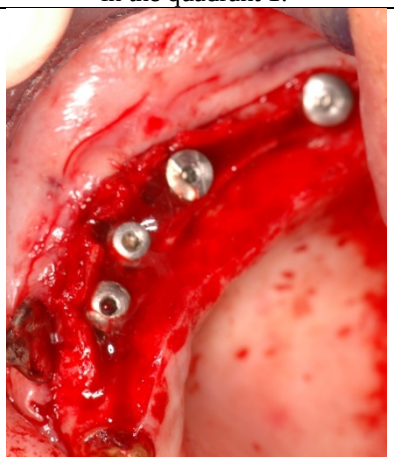

Fig.4: The prosthetic roots applied in the first quadrant in the zone 12, 13, 14, 16.

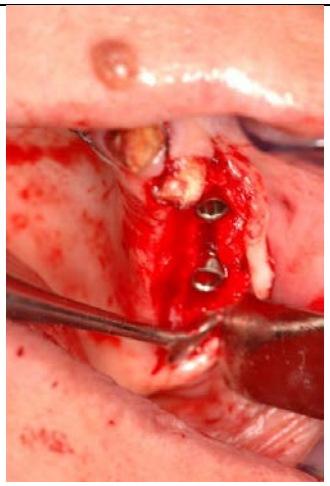

Fig.5 The prosthetic roots applied in the second quadrant in the zone 23, 24, 27.

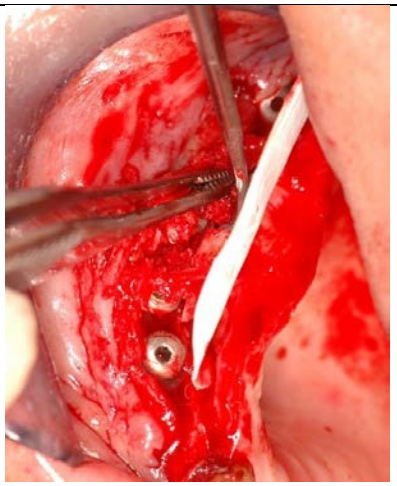

Fig.6: Autologous bone inserted into the bone defects to fill them and the membrane applied to cover them.

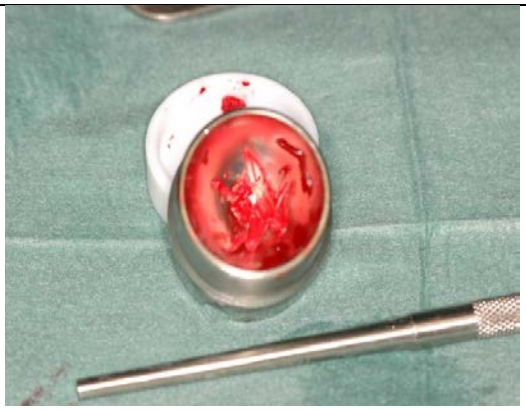

Fig.7: Autologous bone spicules obtained with UNICA osteotome.

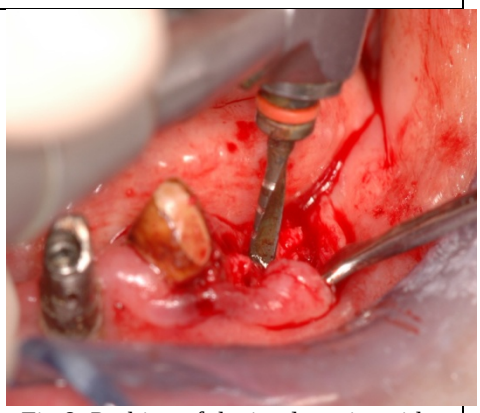

Fig.8: Probing of the implant site with TMI probe in the zone 45-46.

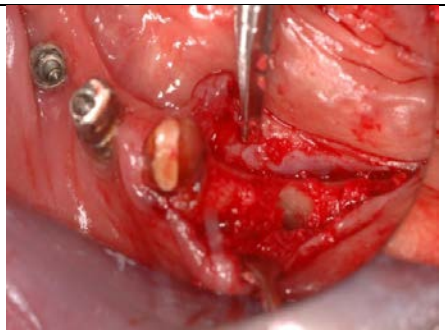

Fig.9: Implant site prepared with UNICA osteotome

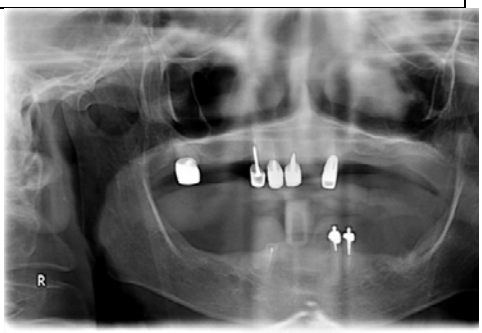

Fig.10: OPT radiograph before surgery

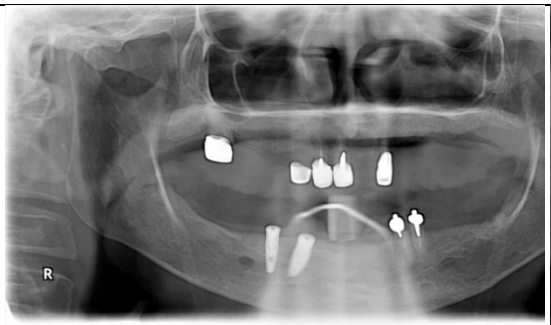

Fig.11: Post-operative OPT radiograph

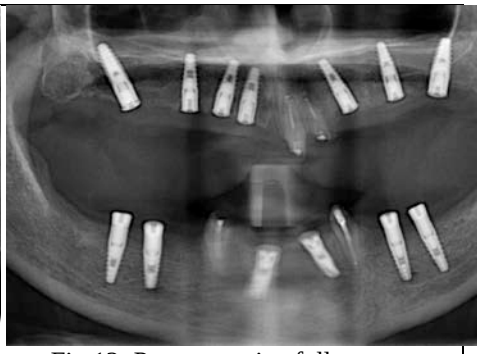

Fig.12: Post-operative follow-up OPT radiograph at 45 days following the AANT Techinique [33].

Fig.13: OPT radiograph carried out at 6 months

Fig.14:. Aesthetic result at the end of the rehabilitative therapy

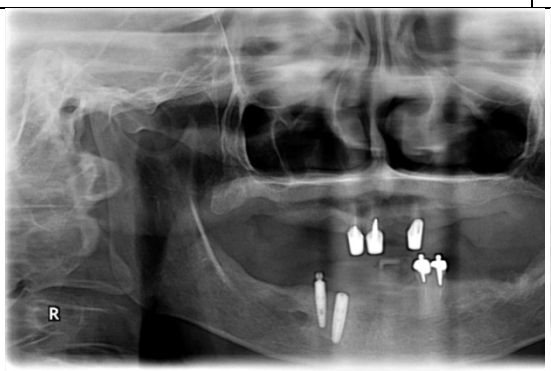

Fig.15: Follow-up after 60 days

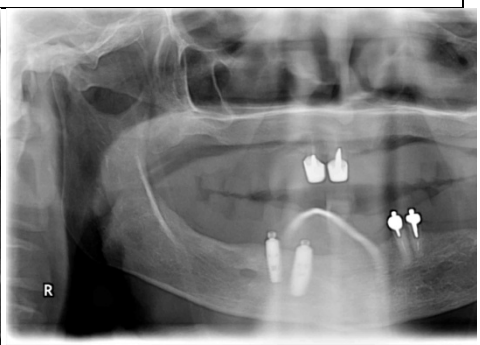

Fig.16: Follow-up OPT after 48 months