CLINICAL CASE

"The importance of maintenance in the evolution of a patient with aggressive periodontitis and peri-implantitis"

Morera Cuenca M, Vázquez Pérez M, López Roldán A, Gil Loscos FJ, Buitrago Vera P, Alpiste Illueca F. Postgraduate programme in Periodontics and Osseointegration. Universidad de Valencia.

- ***INTRODUCTION***

Aggressive periodontitis is defined as a rapidly progressive, destructive periodontal disease which has two forms of occurrence: localised and generalised (Armitage 1999). This disease has shown a much lower prevalence in comparison to chronic periodontitis, with up to 28.8% in some populations (Albandar JM 2002).

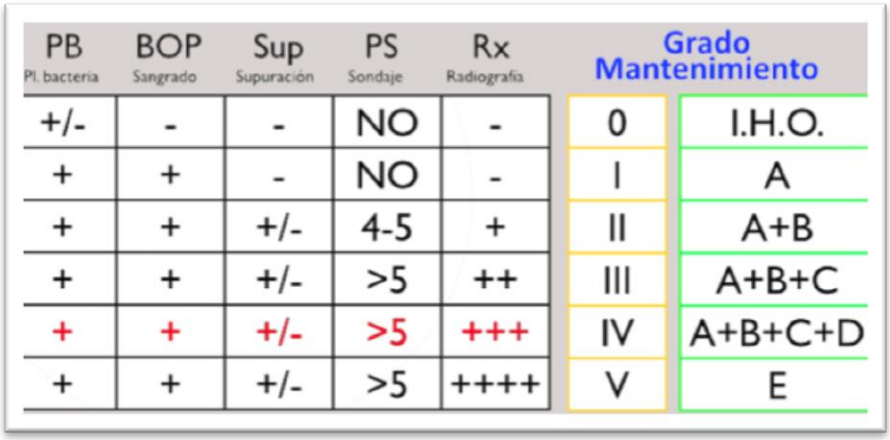
In the early loss of teeth, implant rehabilitation has been considered one of the preferred therapeutic options. According to some authors, these patients are more prone to peri-implantitis, which directly affects the survival of dental implants (De Boever AL 2009).

Both mucositis and peri-implantitis, with incidences of 63% and 43%, respectively, are very common clinical conditions surrounding implants (Renvert S 2009 and Swierkot K 2012).

Mucositis is a reversible lesion that is limited to the gingiva, while peri-implantitis is an irreversible inflammation of both soft and hard peri-implant tissues.

Prevention is the basis of peri-implant treatment. It involves the disinfection of peri-implant tissues and the control of risk factors affecting the implant, by way of rigorous periodontal and peri-implant maintenance therapy (Costa FO 2012).

In 1997, Lang suggests an evidence-based peri-implantitis treatment, focusing on the risk factors and known as Cumulative Interceptive Supportive Therapy (CIST).



PB Pl. bacteria	BOP Sangrado	Sup Supuración	PS Sondaje	Rx Radiografía	Grado Mantenimiento	
+/-	-	-	NO	-	0	I.H.O.
+	+	-	NO	-	I	A
+	+	+/-	4-5	+	II	A+B
+	+	+/-	>5	++	III	A+B+C
+	+	+/-	>5	+++	IV	A+B+C+D
+	+	+/-	>5	++++	V	E

BP	BOP	Sup	PD	Xray
bacterial plaque	Bleeding on probing	Suppuration	Probing depth	Radiography

A. Mechanical cleaning (manual/ultrasonic scalers for implants) + OHI

B. Local Antiseptics (CHX in mouthrinses, irrigators or topical gel)

C. Antibiotics: systemic (10 days), local (tetracyclines, etc.)

D. Surgery: debridement, cleaning, regeneration….

E. Explantation techniques and alveolar regeneration.

The aim of the case presented below is twofold; firstly to show that the lack of a maintenance programme is linked to the onset of peri-implant disease (Costa FO 2009) and secondly, to point out that a diagnosis of aggressive periodontitis with subsequent implant placement requires a more stringent maintenance regimen, given that the onset of peri-implantitis in these patients is much more common than in healthy patients.

- ***CLINICAL CASE***

Patient diagnosed with generalised aggressive periodontitis at the age of 35 years by the Department of Periodontology at the Universidad de Valencia.

The patient undergoes basic and surgical periodontal treatment over the course of years 2004 and 2005. In 2006, it is decided to place 8 upper implants with cement-retained implant-supported prostheses.

1. History

45 year old female patient.

2. Overall medical history

The patient is an ex-smoker of 5 months (10 cig/day for the past 20 years).

Classified as an ASA I patient.

3. Family history:

The patient reports a family history of periodontal disease. She does not report any other type of disease.

4. General dental history

The patient is diagnosed with generalised aggressive periodontitis at the age of 35 years. She undergoes basic and surgical periodontal treatment, is initiated on a maintenance programme and attends her visits throughout years 2004, 2005 and 2006.

During this period, she is placed with 8 upper implants after teeth are extracted due to poor periodontal prognosis.

After being warned of the seriousness of aggressive periodontal disease, the patient drops out of the programme until year 2013.

There are no existing baseline photographs, although a radiographic series from 2004 is available.

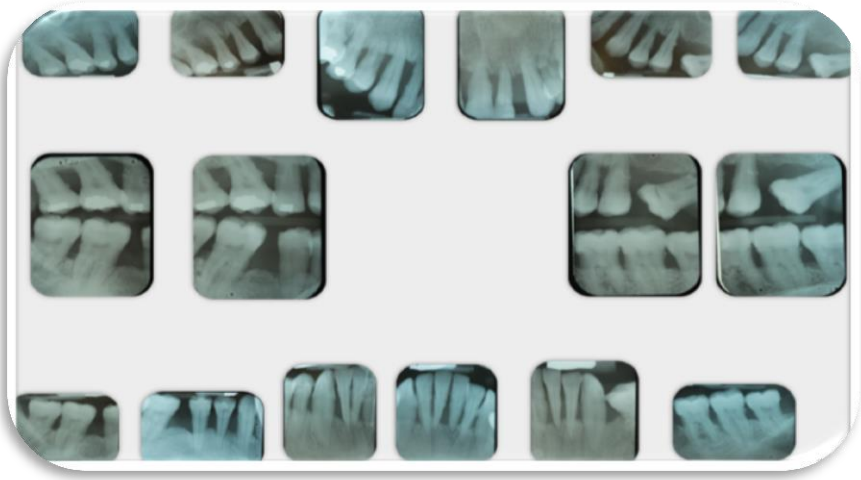


Fig. 1 Periapical radiographs. Diagnosis of aggressive periodontitis

5. Currently

The patient seeks emergency care due to pain in the second quadrant.

On examination, we observe implant position 2.7 showing pain on percussion with deep probing and grade III mobility.

Anti-inflammatory (ibuprofen 600 mg/ 3 per day on patient demand) and antibiotics (amoxicillin + metronidazole 500 mg/250 every 6 hours for 10 days) are administered.

In reviewing patient history, it is observed that she has not attended maintenance visits for over 7 years. A complete clinical examination is performed and the patient is immediately reinstated in the periodontal maintenance programme.

On examination of the maxillary arch, peri-implant disease is found with different degrees of involvement in the 8 placed implants.

After assessing the need for treatment according to Lang's guide, surgical intervention in the maxillary arch is decided.

Fig. 2 Initial intraoral photograph (year 2013)

5.1 Extraoral examination

Normal face morphology with an oval shape. Competent lips, without alteration of the temporomandibular joint and without satellite adenopathy.

5.2 Intraoral examination

Abundant plaque index is observed at the cervical area of teeth and implant necks as well as the presence of supra- and subgingival calculus observed radiographically, along with recession surrounding implants.

Fig. 3. Initial intraoral photographs (year 2013)

5.3 Periodontal and peri-implant examination

Deep pockets (5-9 mm), gingival bleeding and suppuration are observed in 6 of the 8 implants (positions 1.5, 1.4, 2.2, 2.4, 2.5 and 2.7), as well as grade II mobility in implant positions 2.4 and 2.5 and grade III mobility in position 2.7.

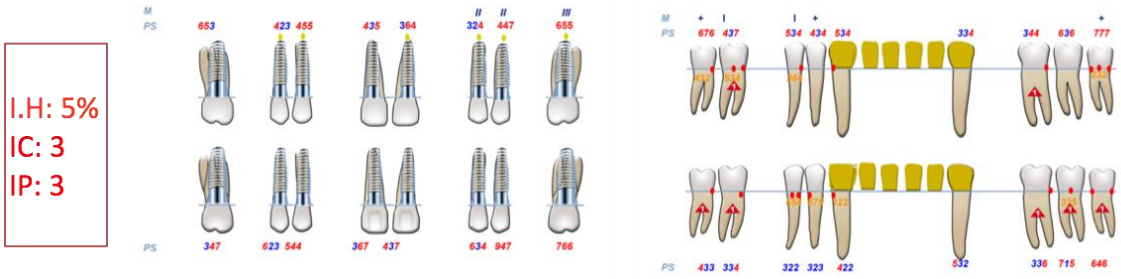


Fig. 4. Initial periodontogram

5.4 Radiological examination

Revealed generalized bone loss of over 50% overall and of over 70% in implant position 2.7.

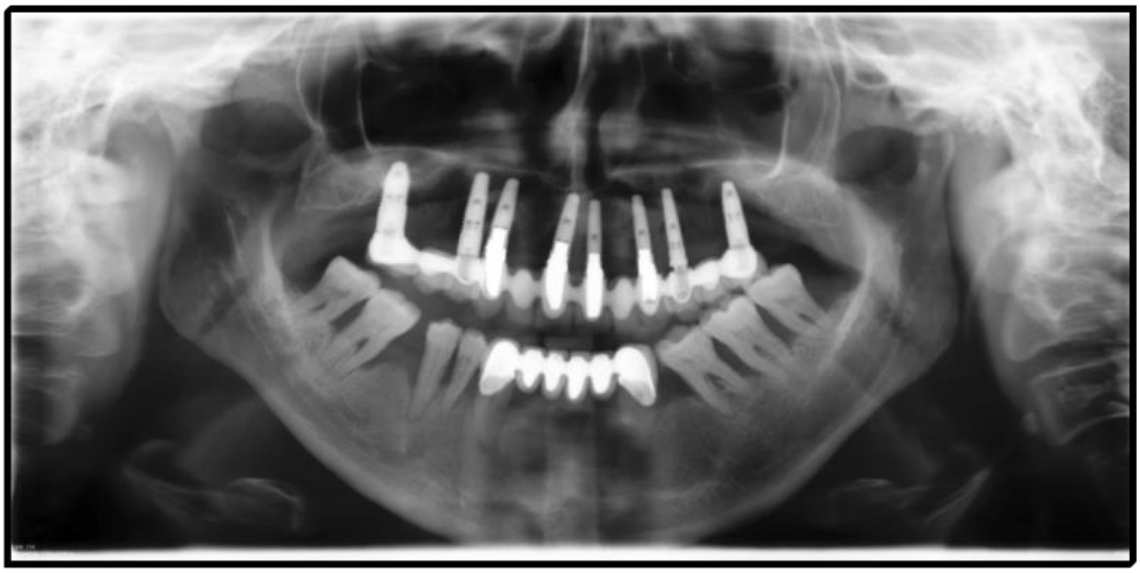


Fig. 5. Orthopantomography

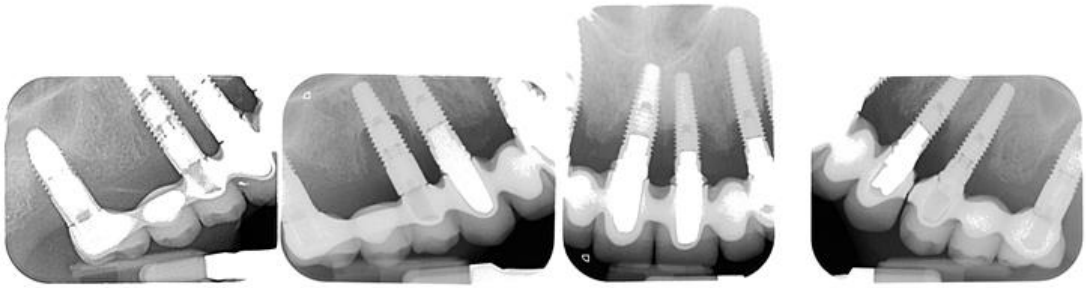


Fig. 6. X-rays obtained from an initial radiographic series

- ***DIAGNOSIS***

The patient is diagnosed with peri-implantitis (Swierkot K, 2012)

- ***TREATMENT PLAN***

First: to inform the patient about the disease and the importance of attending the maintenance visits.

Non-surgical treatment

Mechanical infection control

Debonding of the sectioned prosthesis, in order to assess the condition of peri-implant tissues.

Subsequently, tephlon-coated ultrasonic scalers are used to remove as much bacterial load as possible.

Fig. 7. Photographs of the debonded prosthesis and the appearance of the soft tissues

Oral hygiene instructions and motivation

Patient is instructed on the Stillman brushing technique and the use of interproximal brushes.

Chemical infection control

Administration of local antiseptics, including 0.12% Chlorhexidine and 0.05% Cetylpyridinium chloride (Perio.Aid® tratamiento), for 30 seconds, two times per day for 15 days.

Reassessment

Following the non-surgical phase, advanced peri-implant infection persists. Therefore, surgical intervention is decided.

Surgical treatment

The following is performed: debridement, cleaning and decontamination of the peri-implant surfaces with 10% hydrogen peroxide and Povidone-Iodine Oral in the first and second quadrants, as the cement-retained implant-supported prosthesis is sectioned.

First, the surgical phase is performed (access flap surgery) in the first quadrant.

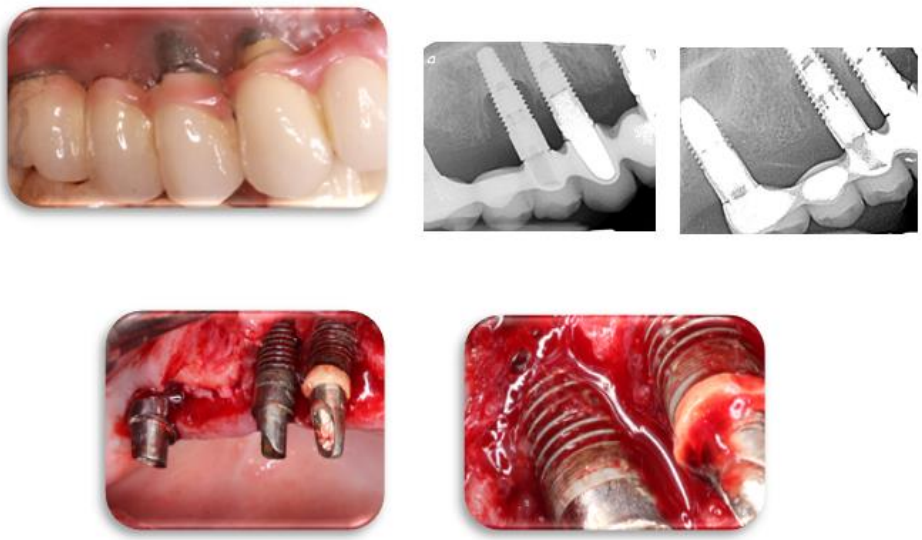


Fig. 8. Surgical procedure in the first quadrant

Subsequently, after 2 weeks, access flap surgery is performed in the second quadrant.
Given that implant position 2.7 shows grade III mobility, bleeding and suppuration, the fixture is then explanted.

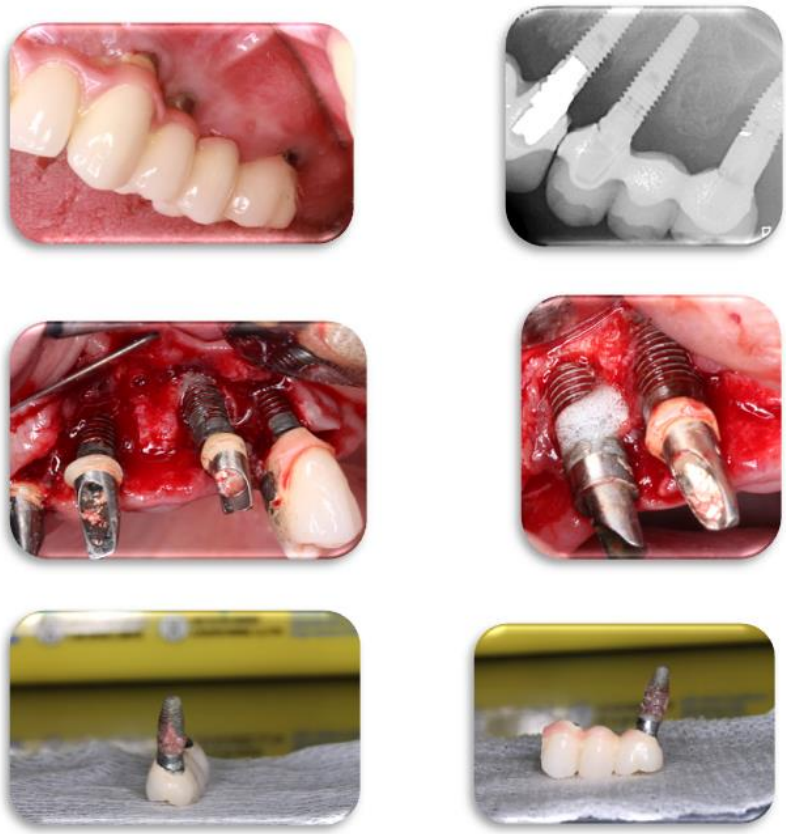


Fig. 9. Surgical procedure in the second quadrant

Postoperative guidelines

Rinsing with 0.12% chlorhexidine and 0.05% Cetylpyridinium chloride (Perio.Aid® tratamiento) for 30 seconds, two times per day for 15 days.

The patient is advised not to brush the treated area until the week following reassessment.

Adjuvant treatment with antibiotics

Amoxicillin with clavulanic acid (875/125mg) 3 times per day for 7 days, paracetamol 650mg 3 times per day and ibuprofen 600mg every 3 days.

Evolution

Stitches are removed after 7 days and peri-implant tissue healing is assessed. The area is cleaned with 0.2% chlorhexidine gel and healing of the soft tissues is evaluated.
After 2 weeks and after one month the area is disinfected again with 0.2% chlorhexidine.
The patient is reassessed after 3 months, reinstated in the maintenance programme and given the corresponding periodontal treatment. She is motivated in each visit and given oral hygiene instructions, and plaque and calculus deposits are removed.

Fig. 10. Photographs of the reassessment

Periodontal treatment resumes with quadrant-by-quadrant scaling and root planing and the corrective phase of aggressive periodontitis is planned in the mandibular arch.

We observe how these 6 years in absence of maintenance care have resulted in significant bone loss in the mandibular arch.

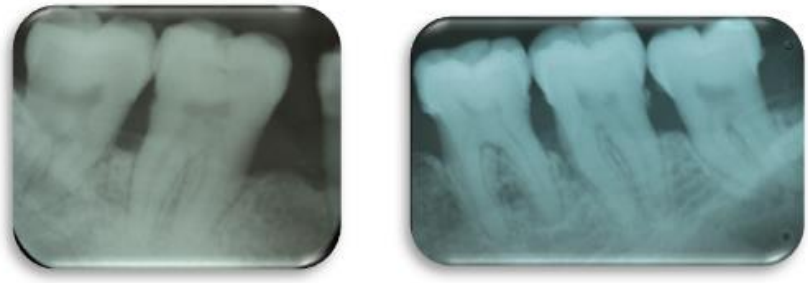


Fig. 11. Periapical radiographs of the mandibular arch (year 2004)

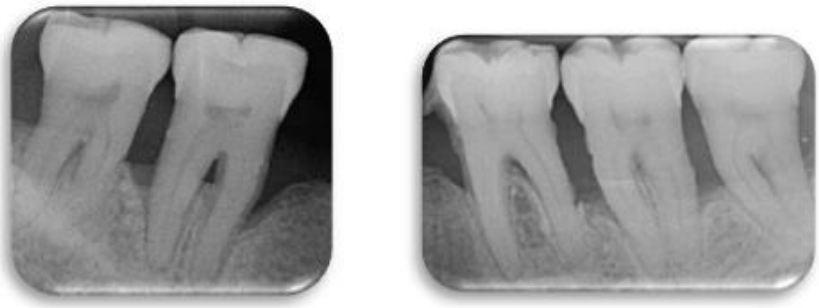


Fig. 12. Periapical radiographs of the mandibular arch (year 2013)

- ***DISCUSSION***

Managing patients with aggressive periodontitis is quite challenging in comparison to patients with chronic periodontitis.

When faced with the loss of teeth, as in this case, one therapeutic option is implant rehabilitation.

Today, it is known that patients diagnosed with aggressive periodontitis have increased likelihood of developing peri-implantitis, either by bacterial reservoirs which result in the presence of periodontal pockets or by alterations in the host immune response observed in patients affected by aggressive periodontitis.

The patient, diagnosed with aggressive periodontitis at 35 years of age, receives periodontal treatment, and then attends maintenance visits (every 3 months). Despite being forewarned

of the seriousness of the disease, she drops out of the programme after her implants are placed.

After 7 years, the patient finally returns to the department, reporting pain in the second quadrant.

As every implant patient is susceptible, and therefore, must be strictly controlled (Heitz-Mayfield 2008), this patient is immediately reinstated in the maintenance programme following clinical and radiographic examination.

The first step in this programme is to collect all clinical and radiographic parameters (Swierkoy K 2012, De Boever 2009, Mombelli A 2000 and Costa FO 2012) in order to obtain an initial diagnosis, which will dictate the treatment approach. In 2009, Renvert described the risk factors we must take into account in each rigorous maintenance visit.

The diagnostic parameters recommended include:

1. Peri-implant probing
2. Presence or absence of gingival bleeding
3. Presence or absence of suppuration
4. Mucosal recession with implant surface exposure
5. Implant mobility

We observe that the patient has a probing depth of 5 to 9mm, gingival bleeding, suppuration in 6 of the 8 implants (positions 1.5, 1.4, 2.2, 2.4, 2.5 and 2.7) and mucosal recession with exposed implant surfaces. Mobility is only observed in implant position 2.7.

After collecting all of the data, a diagnosis of peri-implantitis is established, and a treatment plan is suggested.

Mombelli in 2000 and Heitz-Mayfield in 2008 discovered a series of procedures to diagnose the disease and interrupt its progression as early as possible.

Numerous studies describe surgical and non-surgical treatment options for peri-implantitis (Claffey N 2008, Kim KK 2012, Heitz-Mayfield, LJA 2008 and De Boever FO 2009).

Due to the substantial generalised bone loss, surgical intervention is performed, in which implant position 2.7, with a loss of over 75%, is explanted.

Debridement, decontamination and antibiotic therapy are performed for 7 days in the remaining implants.

After completing the treatment, the patient enters the maintenance programme in which the previously described clinical and radiographic parameters are monitored, the condition of peri-implant tissues is assessed and oral hygiene instructions and motivation are reinforced.

In conclusion, compliance with the maintenance program is very important for patients diagnosed with aggressive periodontitis in order to control the progression of peri-implantitis.

The aim of basic and surgical treatment of peri-implant disease is to stop the bacterial infection and stabilise tissues, always with an adjunctive 0.12% chlorhexidine treatment as well as supplemental oral hygiene methods.

Non-compliance with her periodontal disease maintenance visits did not only cause more rapid progression of the patient's aggressive periodontitis, but it also prompted the presence in the mouth of bacterial colonies that may seriously affect the already placed implants.

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