

Placement of Dental Implants in a Patient Infected with Hepatitis C

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ABSTRACT

In our daily practice, we encounter patients in whom the use of dental implants is contraindicated due to underlying systemic diseases. Hepatitis C infection is one such common condition. The management of this condition, in relation to rehabilitation through dental implants has remained controversial till date. It has been noticed that the improvement in design and surface treatment of dental implants, used for anchoring the definitive prosthesis, has subsequently improved the possibilities to use them, even in elderly patients with hepatitis C.

We report on a case of multiple dental implants in a patient suffering from hepatitis C and his clinical condition one year after the operation. We have to specify that this pathology often has a negative result, and the treatment is very expensive for the patient.

KEYWORDS: Dental Implant, Dentistry, HCV, Hepatitis C Virus, Oral Surgery

INTRODUCTION

Hepatitis C is an infectious illness caused by the hepatitis C virus (HCV) which affects the liver. The infection is often asymptomatic, but its chronicity can cause the continuous scarring of the liver and in the end lead to cirrhosis. The HCV is generally transmitted by direct contact with infected blood, frequently associated with the use of intravenous drugs, medical instruments that have not been properly sterilized or during blood transfusions.¹⁻³

Hepatitis C is a disease that is commonly found in dentistry patients. The management of dental surgery, in a patient with hepatitis C, is a complicated matter, and many aspects of the illness should be kept in mind.^{1,9}

- The functional deficit of the liver causes disorders of hemostasis, drug metabolism

and immune response.⁴

- The viral origin of the disease constitutes a risk of biological infection for the operator.⁵
- Hepatocarcinoma, often found at the final stage of cirrhosis caused by HCV, is a malignant tumor with a relatively low survival rate. When preparing a correct plan of dental treatment, this fact must be kept in mind in order to avoid over treatment.⁶

Before proceeding with the surgical intervention, patients with a high risk of haemorrhage must be carefully evaluated by means of coagulopathy, whereas if the liver function is good; the systemic preparation, based on the use of vitamin K, must be taken into consideration as in any surgical intervention. It is necessary to reduce the risk of infection and bleeding, and this is obtainable only by modifying the extent of the intervention itself, staggering the extractions over a period

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of time, or by using a very precise surgical approach and an accurate local hemostasis.⁷

CASE DESCRIPTION AND RESULTS

A detailed medical history of the patient (a retired Caucasian male of 78) was collected. In 2002 the patient, following a form of physical tiredness, underwent an Ultrasound Examination with the diagnosis of hepatic steatosis; then he decided to undergo blood tests from which the presence of total antibodies (meth. EIA) Hepatitis C-HCV emerged. Since then, the patient has maintained a healthy diet and immediately suspended any consumption of alcohol. The patient did not need drug treatment with Ribavirin or Interferon.

Blood tests were systematically carried out to evaluate the blood values. The patient had been taking LOSARTAN GRP*100MG for hypertension for almost three decades (one tablet once a day in the morning). The blood pressure which led the doctors to the administration of this drug was a stable pressure of 170/90 mmHg at rest. After a period of two months on the drug the blood pressure had stabilized at 130/70 mmHg.

Once every day in the evening, the patient takes a Simvastatin 20 mg tablet for cholesterol, and Doxazosin as treatment of benign prostatic hypertrophy. The patient does not have any other health problem worthy of note.

We decided to perform a pre-surgical evaluation via an Orthopantomography (OPG) of the dental arches, that revealed a serious state of reabsorption involving all the elements in the upper arch. The upper arch had been rehabilitated years before by using a bridge in metal-resin. The examination of the oral cavity showed a very high mobility of the dental elements (2nd/3rd-degree mobility) which led

the operator to choose a total extraction therapy because it was impossible to resort to any other type of removable or permanent rehabilitation. The gingival tissue was particularly edematous and reddened, with the presence of little periodontal abscesses. The pharyngeal examination did not show any signs of redness and therefore is not worthy of note.

The patient wanted a permanent rather than removable prosthesis because of his physical intolerance to mobile prosthetic devices.

We have examined the presence of two implants in the upper arch, inserted many years before, with a positive outcome and before hepatitis had been contracted: this condition gave us the confidence to carry out the rehabilitation, using 6 osseointegrated dental implants in the maxilla. With the hepatologist who was following the patient at the other structure, it was decided to carry out a coagulation blood test from which emerged a good INR index.

The patient started an antibiotic therapy composed of Macladin RM 500 mg Claritromicin (Guidotti spa Abbott®) and complex vitamin K in tablet form (Konakion fitomenadione®) the day before the surgery. During the extraction session, the anesthetic was administered by infiltration (Scandonest 2% with adrenaline Septodont®). Once the extraction had been completed, we proceeded with the surgical toilette of the infected parts with rifamicin (Rifocin, Sanofi Aventis); stitches were applied using interrupted stitches in nylon 3/0 (polyamide Nylon, Peter Surgical France), in order to avoid plaque deposit. After one week, the stitches were removed. After having waited for the customary 120 days, to be sure that the bone structure had properly healed, we proceeded to perform a radio diagnostic examination: a TC CONE BEAM dental scan of the upper arch. This exam clearly revealed the excellent state of the bone tissue and the

presence of sufficient space in which to insert the narrow diameter implants. So we went on to insert the 6 dental implants (Addenta, Gruaro, Italy) System "L" 3.20x12, characterized by a particular aggressive perimeter topography; by means of a surgical intervention, minimally invasive, using a circular scalpel mounted on a motor system. The insertion of these implants took place at a velocity of 400 revolutions per minute; the drills were cooled with large amounts of physiological solution, stored at a temperature of 7°C with a 40 Nm Torque, which was systematically controlled. All the elements were inserted with crestal stops.

Every single implant was bathed in an antibiotic solution (Rifocin) shortly before being inserted. It was possible to immediately insert the healing screws at the end of the operation. The patient was discharged with indications regarding oral hygiene and the drugs therapy that he has to follow, consisting of antibiotic for seven days, analgesic as needed, a mouthwash containing Clorexidine 0.2% and jelly containing sodium hyaluronate (Aminogam® Errekappa), which was to be applied to the wound inside the prosthesis, two or three times a day, for seven days. We recommended that he should stay on a semiliquid diet for at least seven days, as well as prohibiting the use of his removable prosthesis. After seven days we were able to permit the use of the completed prosthesis, rebased with Hydrocast. After a further 120 days we proceeded to take the impressions and to manufacture the definitive product using the CAD-CAM technique (Fig No.1,2).

Once the new product had been inserted the patient was monitored for a year at monthly intervals, and some parameters were measured:

- The index of MPI plaque (1: plaque highlighted by sliding the probe on the surface)

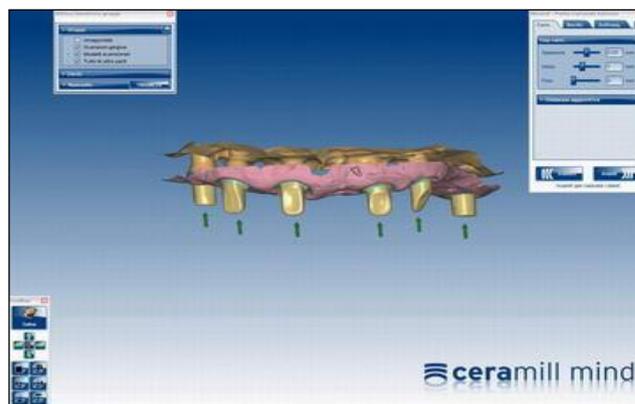


Fig No.1: The abutment project



Fig.2. The structure design project

- The index of MBI bleeding (0: no bleeding)
- The level of keratinized mucosa (0,6 mm)
- The attachment level (1,8 mm)
- DNA and Microbiological test

One year later, all the values were close to 0. The distance of the DIB bone was determined by high-level resolution panoramic radiographic. The peri-implant parameters measured, indicate a stable osseointegration with a slight vertical bone loss.



Fig No.3: Panorex of the pre-existing condition

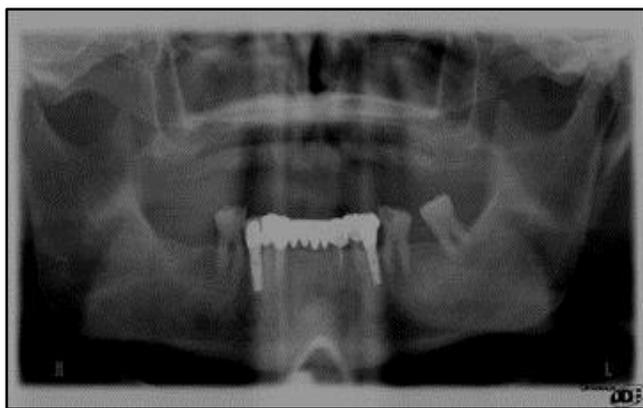


Fig No.4: After extraction



Fig No.5: Implant placement



Fig No.6: The implant placed (after one year)



Fig No.7: Details

In addition, cultures were detected, and microbiological tests showed antimicrobial resistance.

Low levels of *Aggregatibacter Actinomycetemcomitans* ($2,55E+0,5$), *Tannarella Forsythia* ($1,21E+0,3$), *Prevotella intermedia* ($2,55E+0,5$) were detected. Higher levels of *Porphyromonas Gingivalis* ($3,33E+0,3$) and *Treponema Denticola* ($7,00E+0,5$) were found. The oral swab revealed the presence of an abundant and normal oral flora, including *Escherichia Coli* and *Candida Albicans*. The antibiogram found multiple resistances to antibiotics.

In conclusion, the gingival and the periodontal condition is good. The upper implants are perfectly osseointegrated, and the percentage of the PSR is close to 0.



Fig.No.8: The final manufacture



Fig.No.9: The result after one year in situ

CONCLUSION

This case report suggests that patients suffering from Hepatitis C can undergo implant surgery

and can be rehabilitated through dental implants with a good chance of success even in old age. Dentists must be continuous learners so as to keep up with changes in techniques and in preserving the health and clinical outcome of their work.^{8,9}

Careful monitoring of implant patients should be regularly performed in order to identify, at the earliest opportunity, any clinical or radiographic markers of peri-implant disease.

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