Medical and Research Publications
International Open Access

Review Article **Journal of MAR Dental Sciences (Volume 4 Issue 5)**

A Combined Cemented and Screw Retained Implant Supported Prosthesis. Review of Cases

Dr Jimoh Olubanwo Agbaje BDS, DMD, FMCDS, MMI, PhD [1], Dr. Henri Diederich[2,*]

1.OMFS-IMPATH Research Group, Department of Imaging and Pathology, Faculty of Medicine, Catholic University Leuven, Belgium.

2.Dr. Henri Diederich, 114 av de la Faiencerie, L- 1511 Luxembourg.

Corresponding Author: Dr. Henri Diederich Dental surgeon, 114 av de la Faiencerie, L- 1511 Luxembourg.

Received Date: January 25, 2022

Published Date: February 01, 2022

Abstract

Cemented and screw-retained prostheses offer advantages and limitations. The dual retained restorations (i.e. screw and cemented retained restoration) combine the advantage of both screw and cement-retained restorations. The major advantage of dual retained restoration was the ease of retrieving restoration when needed. In the following article, we present a review of patients' cases treated with a combination of cemented and screw-retained prostheses that have been successfully followed up over between 2 and 15 years.

Keywords*: implant prosthesis, one-piece implants, two-piece implants, pterygoid implants, one-piece tissue-level implants, dual retention, retrievability.*

Introduction

The fabrication of an implant-supported reconstruction involves detailed clinical and technical planning **[**1-6**]**. The selection of a prosthetic retention system is also of important consideration for the success of restoration **[**7**]**.

Numerous options exist for attaching implant-supported restorations to implants. The cement and screw retentions are the two most common used methods **[**1,2,7-11**]** The choice of either of these two techniques depends on many factors such as the indication for use, type of retention provided, retrievability, esthetics and clinical performance **[**1,2,10**]**

Both screw and cement-retained fixed dental restorations have their advantages and limitations. Screw-retained implant reconstructions are easy to retrieve, they are easier to remove for maintenance, repairs, or when surgical interventions when required, it also requires minimal interocclusal space. The disadvantage of screw-retained reconstructions requires precision, and prosthetic placement is determined by the position of the screw hole about the position of the implant in the mouth **[**8,9,12,13**]**.

The cement-retained reconstructions are less technique sensitive and therefore are cheaper to produce, other advantages include improved esthetics, passive fit, correction of implant position discrepancies and better control of occlusion **[**9,10,13,14**]**. The major disadvantage of cement retention is the difficulty of removing excess cement, which has been associated with the development of peri-implant diseases such as peri-implant mucositis and periimplantitis **[**2,9,10,13**]**.

The dual retained restorations (i.e. screw and cemented retained restoration) combine the advantage of both screw and cement-retained restorations. The major advantage of dual retained restoration was the ease of retrieving restoration when nedeed9,13. The retention screw of the posterior abutment offered most of the restoration retention. The telescopic ones were luted with temporary cement to avoid food leakage and microbial colonization. The restoration could be easily retrieved if the retaining screw was removed **[**12,13**]**.

Review of Cases:

15 years ago (2006) a 61-year-old lady (now 76) was treated by an immediate loading technique.

In the same session, her teeth were extracted and implants inserted, Two-piece implants with a screwed abutment, disk implants and pterygoid implants were inserted under local anesthetics, 10 days later metallic ceramic bridges were placed in the maxilla and the mandible. The bridges were cemented with a temporary cement (Temp bond) on the disk implants, screwed on the pterygoid implants and screwed in position11,12,23. The patient had no complications over the years.

Figure 1: shows the panoramic radiograph of the patient at presentation.

The result after 15 years was shown below

Figure 2 : shows the panoramic radiograph of the patient after 15 years.

Figure 3 : shows the clinical photo of the patient a) Soft tissue around implant b) Metal- ceramic bridge

In 2006 another lady of 53 years with a full upper prosthesis with poor retention attended the clinic for fixed restoration of the upper and lower jaw. Figure 4 show the the panoramic radiograph of the patient at presentation. Patient wanted a minimal invasive treatment option without bone graft or sinuslift.

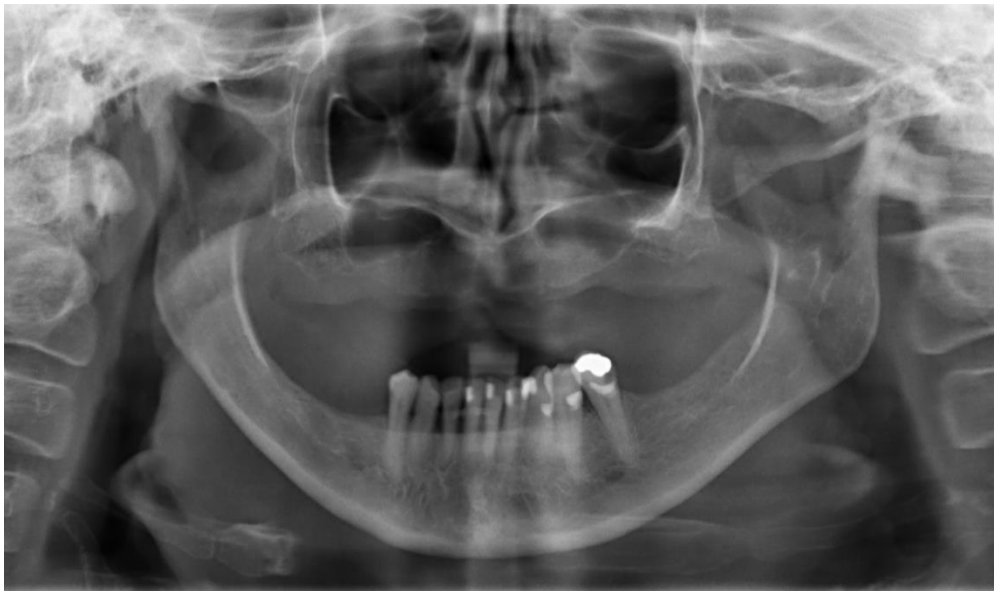


Figure 4 : the panoramic radiograph of the patient at presentation

Rehabilitation of both jaws were done with disk, pterygoid and 2 piece implants. Immediate loading of implants were done in the maxilla and mandible.. Ten days later implants were loaded with a metal ceramic bridge. The restoration in the maxilla was cemented and screwed, screwed at the pterygoid implants and in position 11,17. The result is presented in figure 5.

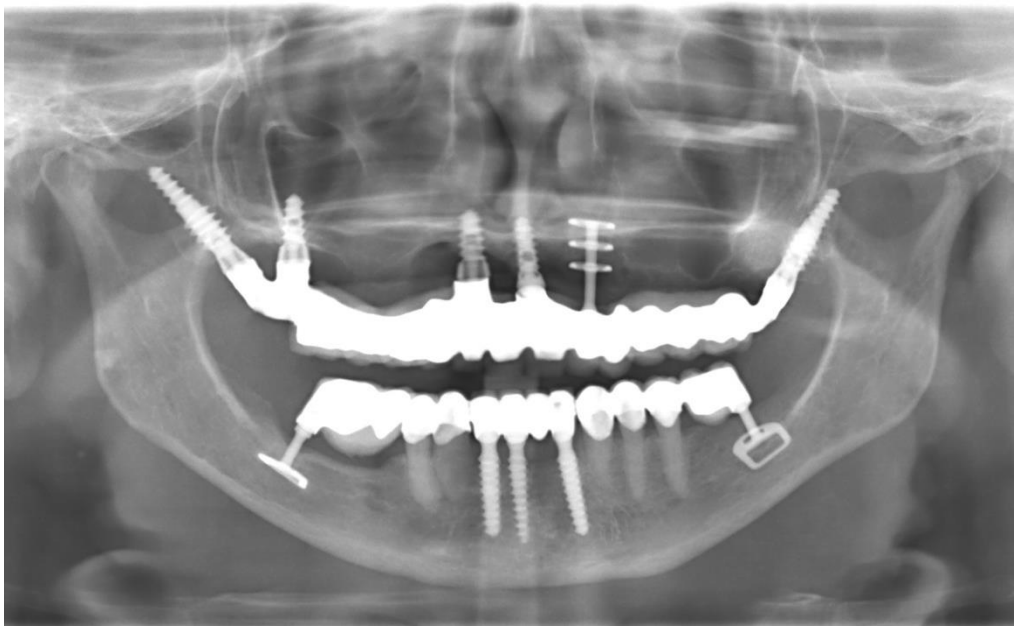
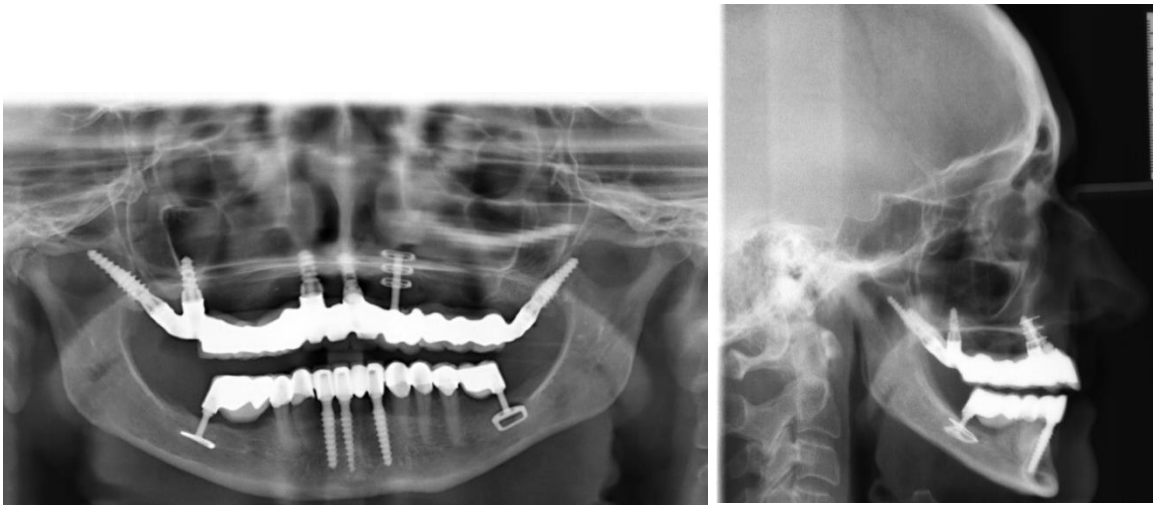


Figure 5 : the panoramic radiograph of the patient after treatment

The control radiographs (panoramic and lateral cephalometric) after 15 years are shown below



a b

Figure 6 : a) the panoramic and b) lateral cephalometric radiograph of the patient during control 15 years later

A 63 year old lady attended in 2006 for rehablitation of her upper and lower jaw with fixed restorations. Figure 7 show the panoramic radiograph of the jaws at presentation.

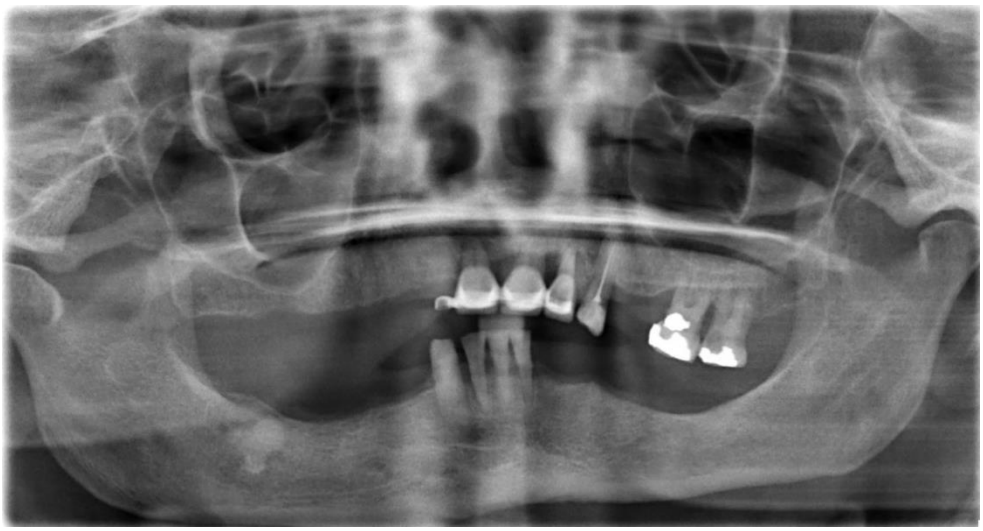


Figure 7: Panoramic radiograph of the jaws at presentation.

The treatment plan was extraction of the remaining teeth and implant placement. In the maxilla, pterygoid Implants, disk implants two-piece implants and one-piece implants were placed while disk implants and one-piece implants were paced in the mandible. The treatment was done in one session (maxilla and mandible) under local anesthesia,

An impression was done after surgery and a temporary bridge was placed.

5 days later, the try-in of the frame was done, 7 days later placement of 2 metal-ceramic bridges was cemented and screwed. The bridge was screwed on pterygoid implants and disk implants in the maxilla and mandible and cemented with temporary cement on the other implants. The control radiographs after treatment and 15years later are presented in figures 8 and 9.

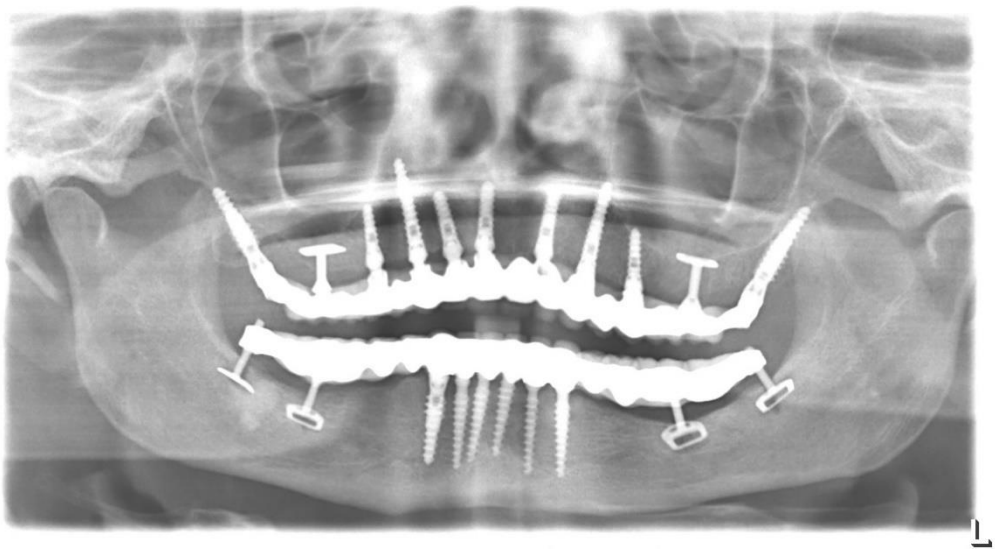
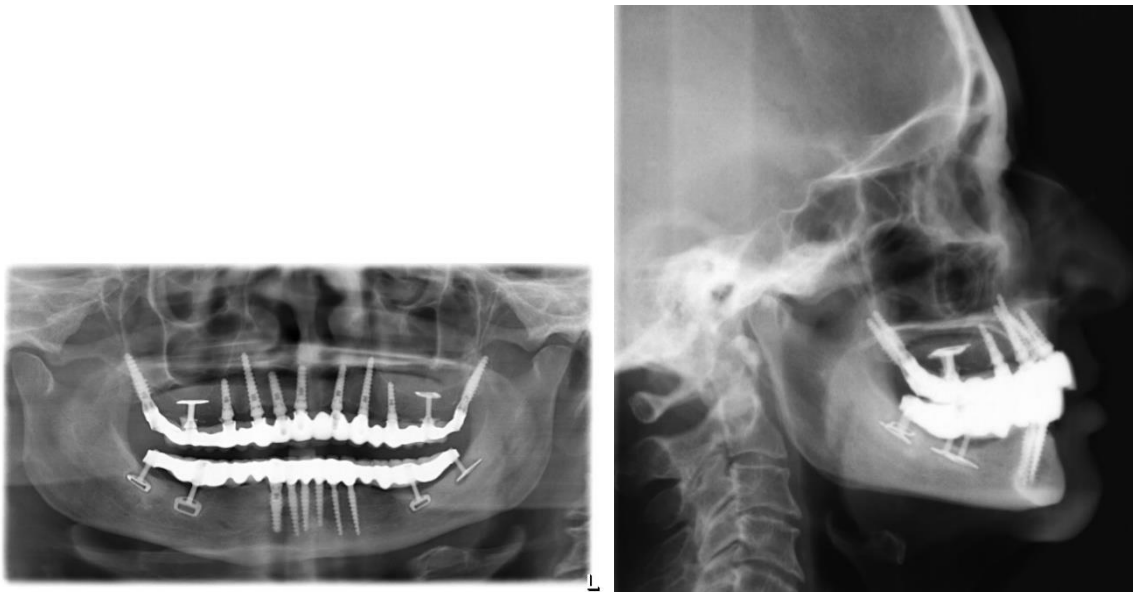


Figure 8 : Panoramic radiograph of the patient after treatment



a b

Figure 9 : a) the panoramic and b) lateral cephalometric radiograph of the patient during control 15 years later

Figure 10 : shows the clinical photo of the patient during control 15 years later

The following patient was treated in 2007 (the lady is now 75 years old).

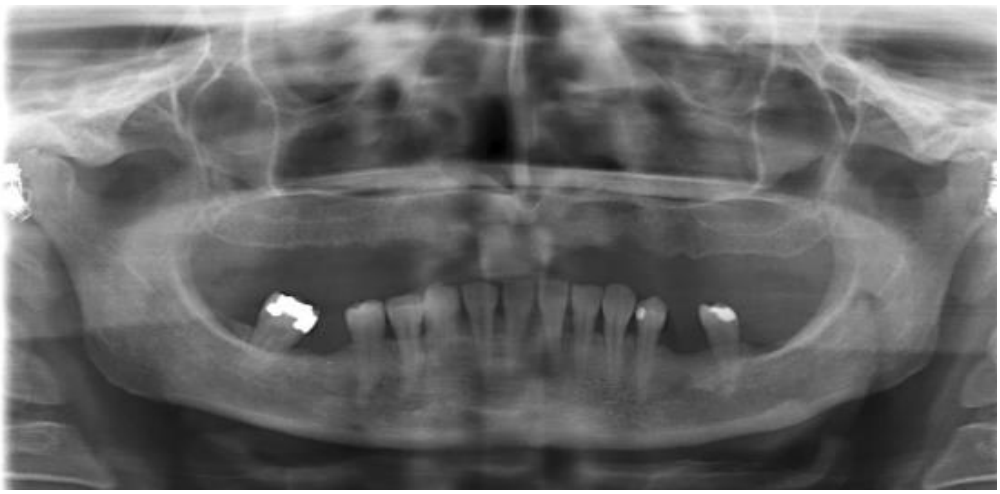


Figure 11 : shows the panoramic radiograph of the patient at presentation.

The lady had a narrow ridge, which make the insertion of two piece implants impossible without bone graft - a treatment option which was not acceptable to the patient. At the time the treatment was achieved with disk implants and pterygoid implants.

Immediate loading was done and 10 days later, a metal ceramic bridge was cemented with temporary cement on the disk implants and screwed on the pterygoid implants.

The result of the treatment after 14 years is shown below.

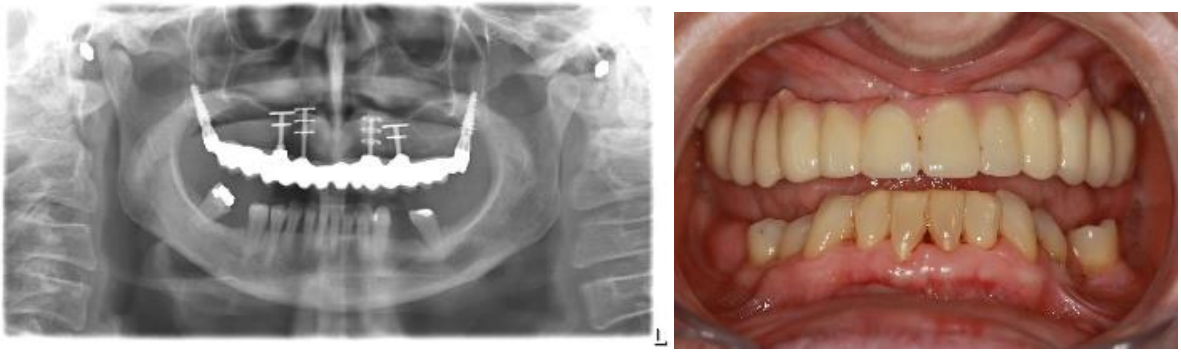


Figure 12 : shows the panoramic radiograph (control done in June 2021) with a metal- ceramic bridge and clinical photo of the patient showing soft tissue with the restoration in the mouth.

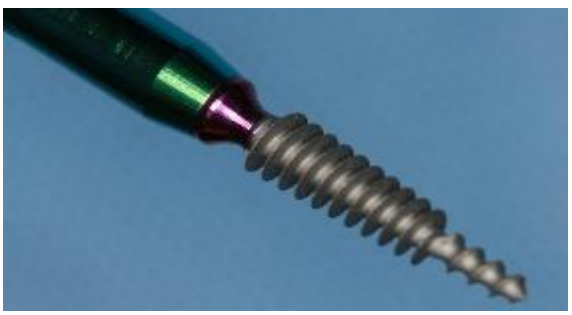
Patient had no complaints or problems with the restoration all the years.

A Lady of 66 years old lost her bridge in 2017 and wanted a fixed restorative replacement.

Treatment option in this case was extraction and insertion of One piece Compressive implants (Roott,Trate ag) for the anterior region and Pterygoid implants (Roott, Trate Ag) for the posterior anchorage. A new metal ceramic bridge was finished and Cemented on One Piece Implants and screwed on the Cortical Plates and Pterygoid Implants ten days later.

Figure 13 : shows the panoramic radiograph of the patient at presentation.

a)



b) c)

Figure 14: the clinical photo of a) the extracted teeth, b) One Piece compressive Implants, c) Pterygoid implants

Figure 15 : shows the clinical photo of a) the metal- ceramic bridge patient and b) Metal- ceramic bridge in the patient mouth

A new metal ceramic bridge (cemented (Temp bond)and screw retained) Finished placement 10 days later

Figure 16 : shows the panoramic radiograph of the patient after treatment in 2017

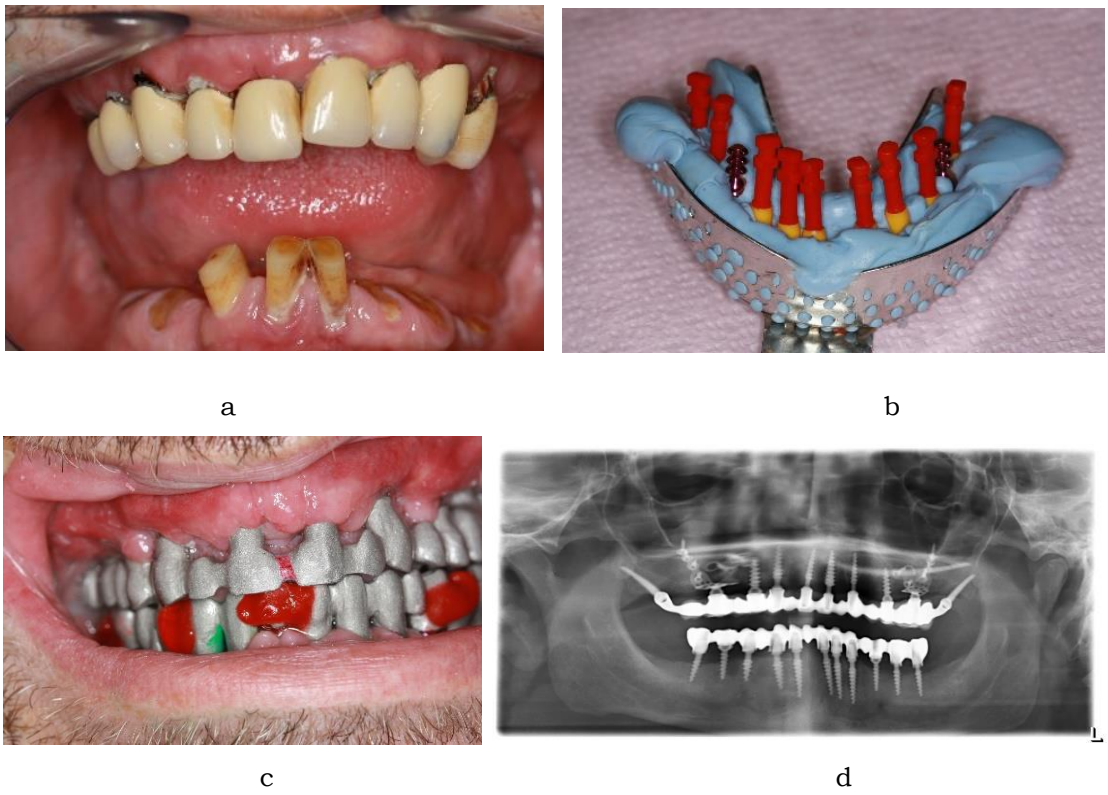
The extraoral radiograph of the patient at follow up in march 2021, 4 years after placement is shown below.

Figure 17 : shows the panoramic radiograph of the patient at follow 4 years after treatment

The next case was a patient of 41 years old who presented in our clinic in 2019 he wanted a fast and minimal invasive treatment option. All remaining teeth were extracted and implants inserted.

Try in of the frame after 6 days, the treatment was completed after 2 weeks. Metal ceramic bridges were cemented with temporary bond on One Piece Compressive Implants and screw retained on Cortical Plates , Pterygoid Implants and One piece tissue level Implants

Figure 18 : shows the panoramic radiograph of the patient at presentation.

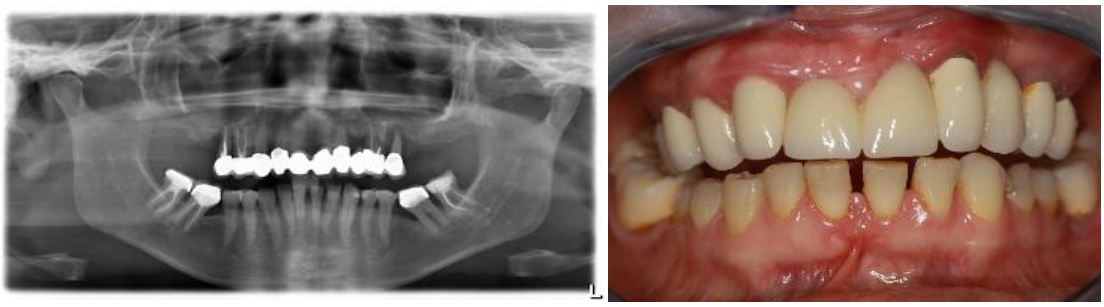


a b

c d

Figure19: shows the clinical photo a) before treatment b) impression c) trying of frame d) the panoramic radiograph of the patient after treatment

The last case was a lady of 46years old who wanted a solution to her infected bridge in the maxilla. Her preference was a minimal invasive procedure. The agreed treatment option was extraction of the remaining teeth,(infected tissues was also removed) then implantation and loading with a metal ceramic bridge after 10 days. The metal ceramic bridge was installed after 10 days, cemented with a temporary cement on the One Piece Implants and screw retained on the One Piece tissue level implants and pterygoid implants.



a b

Figure 20 shows a) the panoramic radiograph and b) clinical intra oral photo of the patient at presentation.

a b

c d

Figure 21 shows a) extracted tooth b) infected tissue c and d) photo of One Piece Implants and One Piece tissue level implants (Pterygoid Implant (ROOTT, One Piece tissue level implant)

Figure 22 shows a) Pterygoid Implants Impression after surgery b) A new metal ceramic bridge installed 10 days later

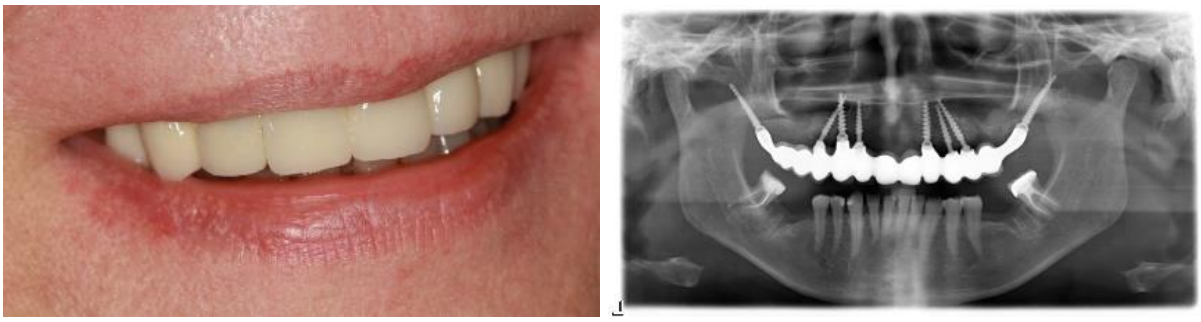


Figure 23: shows the clinical photo of the patient with the restoration in the mouth and panoramic radiograph with a metal- ceramic bridge.

In the following article, we present a review of cases of patients treated with combined, cemented and screw-retained prostheses which have been successfully followed up throughout between 2 and 15yrs.

All cases presented were done with immediate loading, patients underwent a minimally invasive treatment and all prostheses were cemented and screwed. None of these patients presented with any problem over the years.

References

1.Hebel KS and Gajjar RC. Cement-Retained Versus Screw-Retained Implant Restorations: Achieving Optimal Occlusion and Esthetics in Implant Dentistry. J Prosthet Dent 1997; 77: 28-35.

2. Chee W, Felton DA, Johnson PF, Sullivan DY. Cemented Versus Screw-Retained Implant Prostheses: Which Is Better? Int J Oral Maxillofac Implants 1999; 14: 137-141.

3.Cordaro L, Ercoli C, Rossini C, Torsello F, Feng C. Retrospective Evaluation of Complete-Arch Fixed Partial Dentures Connecting Teeth and Implant Abutments in Patients With Normal and Reduced Periodontal Support. J Prosthet Dent 2005; 94: 313-320.

4.Proussaefs P and AlHelal A. The Combination Prosthesis: A Digitally Designed Retrievable Cement- and Screw-Retained Implant-Supported Prosthesis. J Prosthet Dent 2018; 119: 535-539.

5.Rues S, Kappel S, Ruckes D, Rammelsberg P, ZenthÃ¶fer A. Resistance to Fracture in Fixed Dental Prostheses Over Cemented and Screw-Retained Implant-Supported Zirconia Cantilevers in the Anterior Region: An In Vitro Study. Int J Oral Maxillofac Implants 2020; 35: 521-529.

6.Malpartida-Carrillo V, Tinedo-LÃ³pez PL, Ortiz-Culca F, Guerrero ME, Amaya-Pajares SP, Ã–zcan M. Fracture Resistance of Cement-Retained, Screw-Retained, and Combined Cement- and Screw-Retained Metal-Ceramic Implant-Supported Molar Restorations. J Contemp Dent Pract 2020; 21: 868-873.

7. Thalji G, Bryington M, De Kok IJ, Cooper LF. Prosthodontic Management of Implant Therapy. Dent Clin North Am 2014; 58: 207-225.

8.Sarafidou K, Vasileiadi G, Louvrou MK, Moldovani E, Koidis P, Kokoti M, Bakopoulou A. Screwmentable Implant-Supported Prostheses: A Systematic Review. J Prosthet Dent 2021; 10.

9.Preiskel HW and Tsolka P. Cement- and Screw-Retained Implant-Supported Prostheses: Up to 10 Years of Follow-Up of a New Design. Int J Oral Maxillofac Implants 2004; 19: 87-91.

10.Song T, Xu PC, Li Y. [Clinical Observation of Screw and Cement-Retained Implant-Supported Restoration of Fixed Bridges]. Shanghai Kou Qiang Yi Xue 2011; 20: 296-299.

11.Hebel KS and Gajjar RC. Cement-Retained Versus Screw-Retained Implant Restorations: Achieving Optimal Occlusion and Esthetics in Implant Dentistry. J Prosthet Dent 1997; 77: 28-35.

12.Malpartida-Carrillo V, Tinedo-Lopez PL, Ortiz-Culca F, Guerrero ME, Amaya-Pajares SP. Techniques for Retrievability and for Registering Screw Access Holes in Cement-Retained Implant-Supported Prostheses: A Scoping Review of the Literature. J Prosthet Dent 2020; 123: 427-433.

13.Spazzin AO, Camargo B, Bacchi A. Ensuring Passivity and Retrievability for Immediate Complete-Arch Implant-Supported Prostheses. J Prosthet Dent 2017; 117: 214-217.

14.Chee WW, Torbati A, Albouy JP. Retrievable Cemented Implant Restorations. J Prosthodont 1998; 7: 120-125.