+ Pekkton® ivory. Clinical Cases.

CENDRES+ MÉTAUX

Dental

Screw-retained maxillary restoration on 6 implants.

Restoration of an edentulous jaw using state-of-the-art materials and conventional techniques.

Background
This patient presented after she had lost all her upper teeth due to advanced untreated periodontal disease. After the condition was treated and a good standard of oral health had been re-established, the treating clinician then had a removable prosthesis manufactured. While this approach was successful, something was missing. Most patients struggle with the transition from being dentate to becoming edentulous and our patient was no different. As well as the lack of fixation and stability of the denture, the patient also found life with a plastic palate «uncomfortable». Along side these functional issues, the patient also felt that while the shade of the teeth was «ok», everything else about the denture was «just not right».

The next stage of the patients rehabilitation was for 6 implants to be place in the maxilla. After all the usual and extremely important planning stages had been completed, it was then time for the important trial smile evaluation. The new set up gives better lip support resulting in a revitalised aesthetic appearance in both facial and profile views. The larger teeth also fit the patients face much better and the repositioning of the teeth now gives a more youthful appearance. Finally the new vertical dimension was established to give correct facial form and function. At this point, we entered a discussion with the whole team including the patient on the materials we would use to construct the final prosthesis.

Important aspects were: The feel of the restorations, the aesthetics, youthful & bright and overall symmetry (cosmetic). After looking at the options, we decided that this would be a perfect case for Pekkton® ivory.

2014
Dental technology: BDT, Beever Dental Technology, Phil Reddington, GB-Leeds.
Dentist: Dr Richard Anderson.

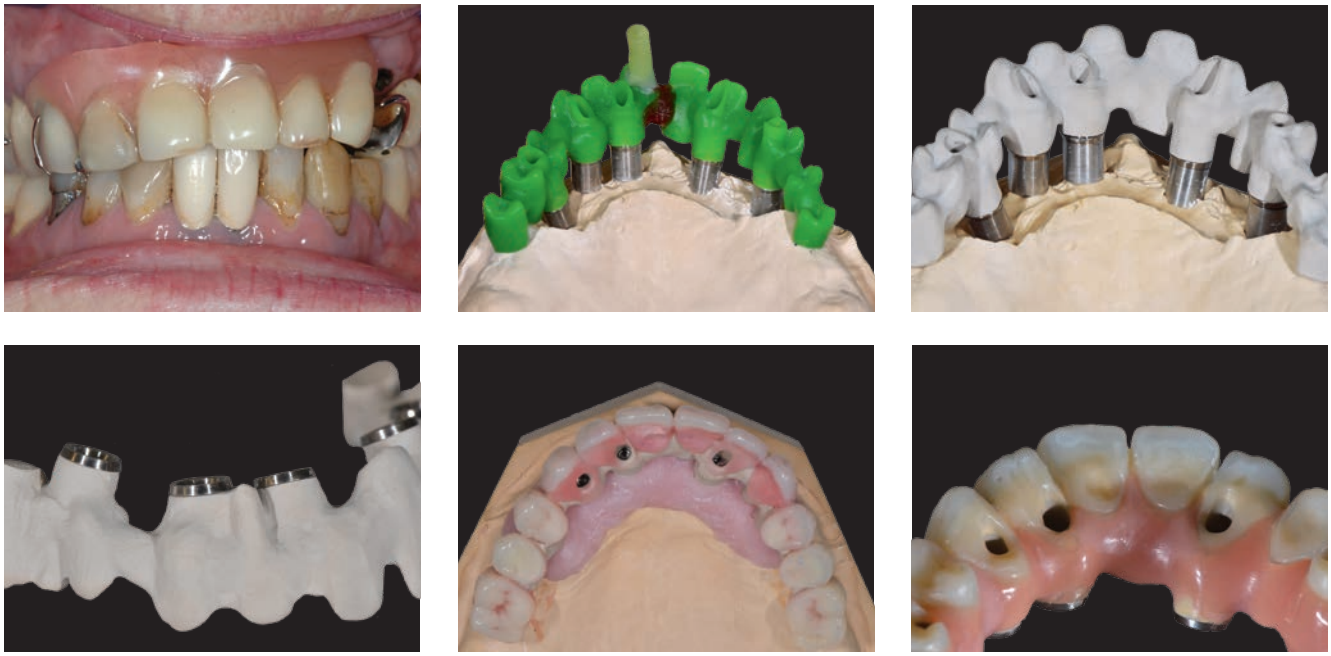
We had been working with various polymers for many years on similar cases and had perfected a technique to integrate polymers, ceramic & composites all in one prosthesis which we called the BDT bridge. We had a detailed discussion with the whole team on why we should apply this technique the main driving force was the properties of polymers Pekkton® ivory in particular is extremely well suited for this type of application.

Conclusion

Pekkton® ivory frameworks provide the patient with a lightweight aesthetic and extremely strong restoration that offers a shock absorbing property not found in traditional implant restorative materials.

Screw-retained reconstruction on 5 implants.

Screw-retained reconstruction on 5 implants, limited removability, with a bridge framework in Pekkton® ivory.



Initial situation

The 61-year old female patient was no longer satisfied with the existing partial dentures and wished for new restoration. The entire remaining teeth presented with secondary caries and was afflicted with medium chronic periodontitis. The mandible presented with a highly restored, caries-free dentition. The prognosis for the remaining teeth in the maxilla was poor.

The existing model cast denture was insufficient, both functionally and aesthetically. The treatment plan included extraction of the maxillary teeth and the direct conversion of the existing partial denture into a complete immediate denture. Implants with a permanent, limited removable restoration were planned subsequently.

2013
Dental technology: Ardenta Dental Labor, Robert Arvai, CH-Chur.
Dentist: Dr. Ivan Schmid, CH-Chur.

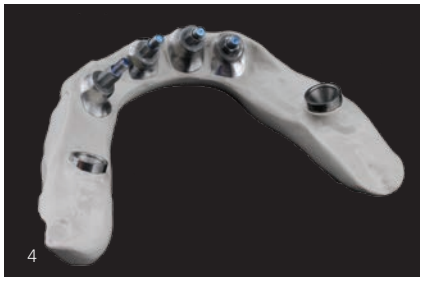
Discussion

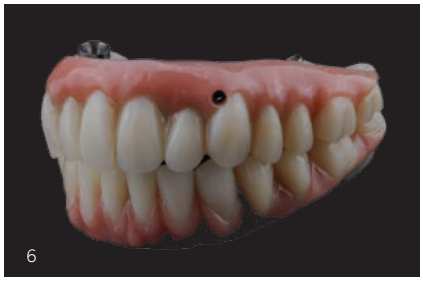
Extensive, implant-supported bridges (so-called «full-arch-implant-prostheses») are fabricated with metal frameworks (precious metal, CoCr or titanium) and ceramic (VMK-bridges), recently also with zirconium. The fabrication of such bridges with high performance polymers such as Pekkton® ivory is on the fore and being discussed increasingly. The material advantages of Pekkton® ivory include minimal flexibility (thus adaptable), good resistance and very easy polishing of the material. The aesthetic options are also excellent. The costs for a Pekkton® ivory reconstruction are considerably more favorable (approximately 35 % less expensive) when compared with veneered work on metal or zirconium oxide frameworks. And this at higher value creation in my laboratory.

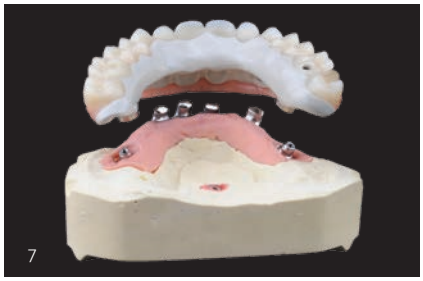
Conclusion

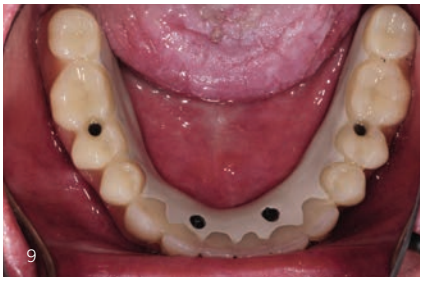
The implant-supported bridges made of Pekkton® ivory are of high aesthetic quality, with a very attractive price, and therefore promising for the future. The Pekkton® ivory restorations are checked regularly in the dental practice. The good condition after prolonged wear is remarkable. Long-term prognoses can be positive with average oral hygiene. The reason is probably given by the low elasticity of the bridge construction, the good properties of the veneering materials and the passive fit through bonding of the abutments.

Screw-retained implant reconstructions in the maxilla and mandible.





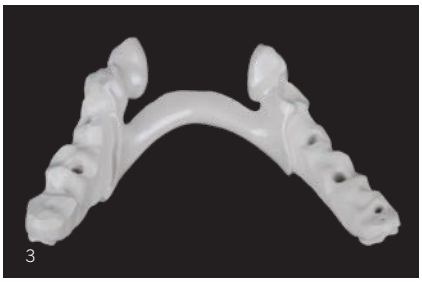


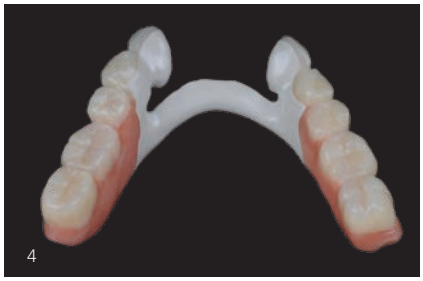


1 Initial situation: implants with individually milled implant abutments
2 Negative situation of tooth set-up
3–4 The finished milling result of the Pekkton® ivory framework for the maxillary restoration
5 Application of the prefabricated teeth to the Pekkton® ivory framework using tooth-colored resin, without opaquering of the framework
6 Completed work with pink resin (without pink opaquer)
7 Detailed view of the maxillary work
8–9 Work in situ

2014
Dental technology: Zahntechnik Wichnalek, DE-Augsburg / Norbert Wichnalek, Robert Bacalete.
Dentist: Dr. Georg Bayer, DE-Landsberg.

Mandibular telescopic prosthesis with sublingual bracket.



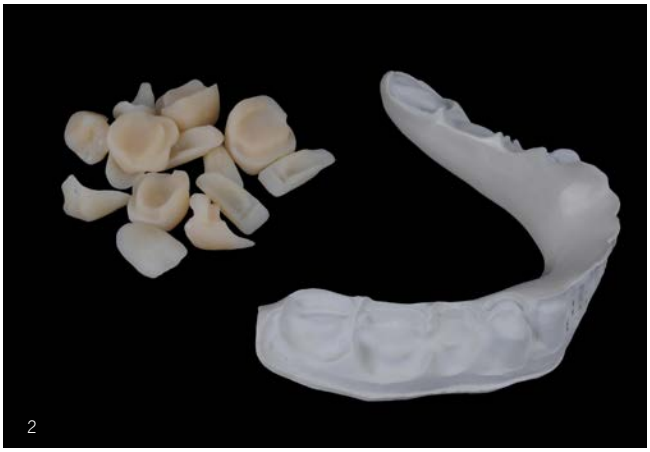


1 Initial situation with the milled zirconium inner copings
2 The Pekkton® ivory milling result. The inner copings were scanned with the tactile DS10 Renishaw scanner and overall with the Zirkonzahn S600-ARTI scanner
3 The final polished Pekkton® ivory framework
4–5 The completed work
6–9 Work in situ

2014
Dental technology: Zahntechnik Wichnalek, DE-Augsburg / Norbert Wichnalek, Robert Bacalete.
Dentist: Dr. Eva-Christina Neumann, DE-Weissenburg.

Mandibular telescopic prosthesis.


1


2


3

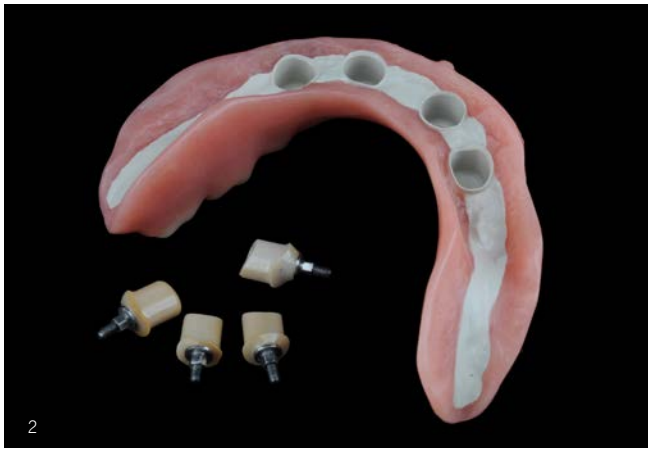

4

1 Unmilled zirconium primary components with setup on thermoplastic sheet for try-in
2 Fully milled Pekkton® ivory framework (high-gloss finish) with the prepared prefabricated teeth, ready for bonding The framework was conditioned using plasma
3 The completed telescopic prosthesis
4 Detailed view of the completed dentures prior to insertion in the patient's mouth

2014
Dental technology: Zahntechnik Wichnalek, Augsburg, Germany / Norbert Wichnalek, Robert Bacalete.
Dentist: Dr. Ovidiu Moldovan, Dr. Christoph Hutschek, Augsburg, Germany.

Mandibular telescopic prosthesis on 4 implants.


1


2


3


4

1 Try-in of the milled Pekkton® ivory framework on the parallel-milled, custom zirconium telescopic structures on titanium adhesive bases
2 The Pekkton® ivory framework was conditioned and etched using plasma, and fabricated using pink acrylic (without an underlying layer of opaquer) Pekkton® ivory has a neutral color, which is why opaquer is not required
3 The telescopic prostheses that are screw-retained on the implants and ready for insertion of the prostheses
4 Detailed images of the implant-supported prosthesis

2015
Dental technology: Zahntechnik Wichnalek, Augsburg, Germany / Norbert Wichnalek, Robert Bacalete.
Dentist: Dr. Georg Bayer, Landsberg, Germany.

Maxillary telescopic prosthesis with palatal connection.


1


2

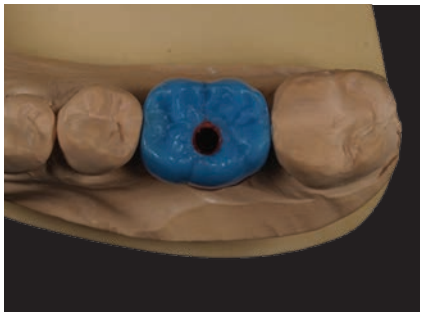
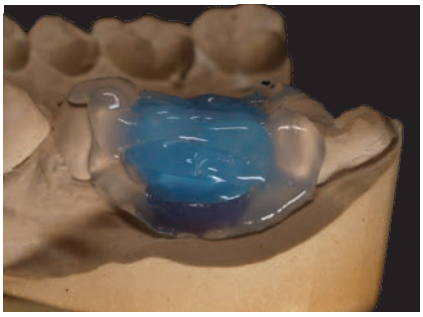
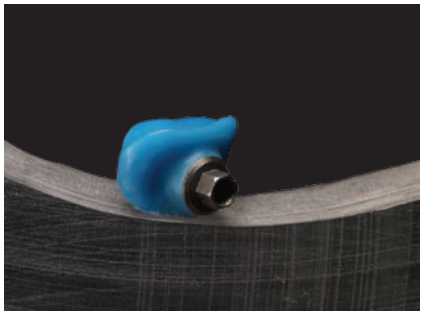
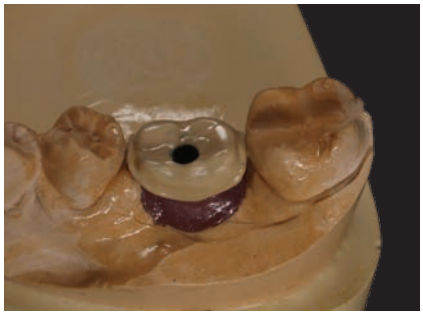

3


4

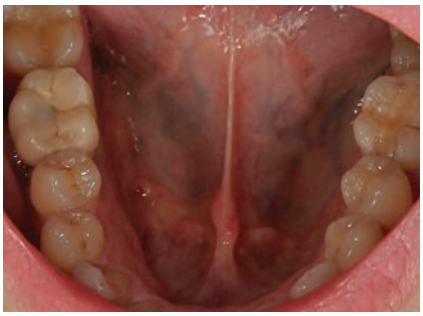
1 The milling result for the removable dentures including the 5 milled secondary telescopic crowns in Pekkton® ivory
2 The final, polished Pekkton® ivory framework
3 The completed prosthesis. The prefabricated teeth and the milled anterior veneers were bonded to the framework using tooth-colored acrylic without opaquer, and fabricated using pink acrylic
4 Prosthesis in situ

2014
Dental technology: Zahntechnik Wichnalek, Augsburg, Germany / Norbert Wichnalek, Robert Bacalete.
Dentist: Dr. Eva-Christina Neumann, Weissenburg, Germany.

Molar crown screwed on an implant.



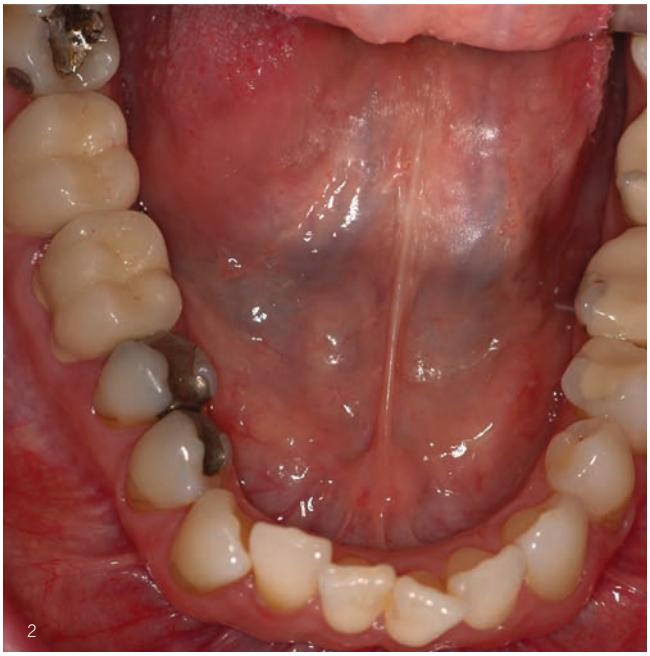


Initial situation
The practitioner decided that a patient, aged approx. 50 years, should undergo a stage of temporary treatment of several months prior to implementation of the final restoration. We therefore opted for a Pekkton® ivory restoration on an implant with a metal base.

2013
Dental technology: Laboratoire Cristou, FR-Paris.

Crown restorations on natural teeth.


1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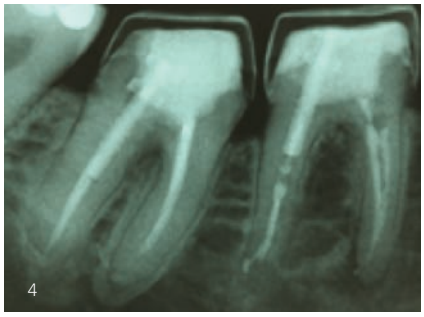
Background and objectives of treatment
The 39-year old female patient presented in our polyclinic with the wish for renewal of her prosthetic restorations on teeth 17, 16, 15 as well as 46 and 47 following expert assessment. Since integration of the crowns alio loco, discomfort was present at the teeth and surrounding gingiva. Clinically, the gingiva was slightly reddened. Functional findings were inconspicuous.

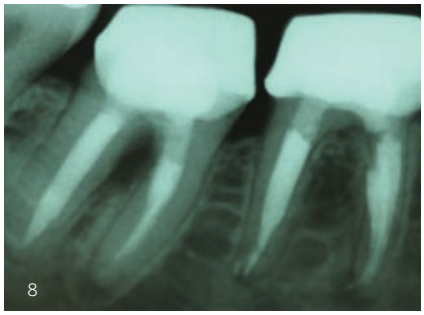
Medical history and findings
The X-ray showed apical brightening of teeth 46 and 47. The determined periodontal status resulted in a maximum probing depth of 5 mm and a furcation grade I for tooth 17, also 5 mm for the 16 and a furcation grade II, 4 mm for the 15, and 5 mm and grade I for the 46 and 4 mm and grade I for the 47.

Treatment plan
First, teeth 46 and 47 were treated endodontically. The existing crowns were removed and all 5 teeth restored with Pekkton® ivory as well as NEM as part of a clinical study with long-term temporary dentures. Endo-recall and repeated periodontal re-evaluation were conducted after 6 months. The patient was free of complaints after 6 months.

Comments and conclusion
In the above mentioned study, no significant differences were observed with regard to the subjective oral hygiene-related quality of life (OHIP-G 14) when wearing NEM or Pekkton® ivory long-term temporary restorations. For the female patient presented here, the subjective wear feeling was better for the Pekkton® ivory restoration.
In principle, it can be stated that the Pekkton® ivory restorations appear to be suited for clinical use.

2013
Dental technology: Dentaltechnik Kiel, Bonn-Lengsdorf
Dentist: Dr. Pejman Mamadi, Dr. Eva Schneider, Polyclinic for Dental Prosthetics, Propaedeutics and Material Sciences, DE-Bonn





1 Situation maxilla at initial presentation
2 Situation mandible at initial presentation
3 Situation maxilla/mandible at initial presentation
4 X-ray initial situation 46, 47
5 Pekkton® ivory framework on model
6 Finished veneered Pekkton® ivory crowns
7 integrated Pekkton® ivory long-term temporary restorations
8 X-ray endo-recall after 6 months 46, 47

Bridge restoration on implants.

1 Initial situation after implant healing
2 Master model
3 Cast suprastructure in the bridge combination

Background and treatment aims:
A 57 year old female patient presented herself in my office with acute pain in the lower left jaw. She is in my care since 2007. Has various restorations, as well as Implants. Is aware of the caries on the abutment tooth under the bridge lower left. Since about four days acute pain in the lower left jaw with mobility of the bridge. Due to the pain not able to eat on the left side.

Medical history:
Pulp necrosis and acute apical periodontitis on tooth 34. The tooth 38 is carious with apical periodontitis.

Diagnostic findings and treatment goals:
After a discussion with the patient the following has been agreed. Root canal treatment of the tooth 34. Removal of the bridge by trimming distally of tooth 34. Extraction of the tooth 38.
Augmentation of the keratinized mucosa. From a dental technician constructed moulde for a Cone Beam Computer Tomograph (CBCT) which will later be used as a surgical stencil.
Digital implant-planning with a planning software and construction of the surgical stencil.
Implant placement with the surgical stent. Implant supported suprastructure with Pekkton® ivory. Recall.

Treatment phases:
A root canal treatment on the tooth 34 was performed and finalized in a second session. The bridge was trimmed distal of the tooth 34 and the tooth 38 was removed. The keratinized mucosa lower left was augmented. Impressions were made of the lower and upper jaws and an x-ray moulde was constructed. With the stent a CBCT was made. The data was imported into the implant-planning software. The exact implant locations in the lower jaw was planned with the software and a surgical moulde was constructed with the data.

Using the Surgical moulde three Straumann Implants were placed in the Regions 35, 36 and 37. The bone grafting was performed buccal of the implants in the regions 35 & 36 and covered with a collagen membrane. The implants were allowed to heal non-submerged.

2013
Dental technology: Marco Fuhrer, Biel, Switzerland
Dentist: Dr. Busslinger, Dental surgery Central, Biel, Switzerland

4 Finished bridge in Pekkton® ivory
5 Prior to veneering, the bridge was checked in the mouth of the patient
6 X-ray image to check the fit
7 Finished bridge screwed into the mouth of the patient with sealed composite screw channels

After a healing time of four months an impression of the implants were made.
The technician constructed a one piece Pekkton® ivory screw-retained framework for the implants.

The Pekkton® ivory framework was tried-in on the implants and the occlusion was registered.
The shade matching was performed by the technician. The finished reconstruction was definitely screwed onto the three implants and the occlusal screw channel were sealed with composite.
An x-ray was taken after insertion of the suprastructure. One week after insertion at the recall appointment the patient had no complaints.

Conflicts of interest:
Dr. Busslinger declares that there are no conflicts of interest with regard to Cendres+Métaux.

Custom implant abutment.

1 Anatomical wax-up on a titanium abutment previously treated using a flange
2 Positioning of the implant inlay core for injection of Pekkton® ivory on the left and right distal profile of the Pekkton® ivory inlay core for implants after polishing
3 Making a temporary resin tooth using prefabricated facings
4 Clinical view of the Pekkton® inlay core for implants two minutes after it has been positioned. The slight whitening of the gingiva validates the use of a flange in the laboratory and the shaping work

Context and Objectives of Treatment:
The biocompatibility of Pekkton® ivory is beyond any doubt nowadays. It provides decisive advantages in the production of Pekkton® ivory inlay cores for implants. Its high biocompatibility allows fast healing of a wound and maintenance of the papillae, and also ensures a low inflammatory reaction in the surrounding gingiva.

Patient History:
The patient in this clinical case took a knock to his two central incisors that fractured the root of 21 and required the insertion of an implant after extraction and healing of the wound. The deep horizontal fracture on 11 entails fabrication of a prosthetic crown.

Results and Objectives of Treatment:
(Diagnostic/clinical evaluations, risks, prognosis, remarks)

Therapeutic Protocol:
The use of Pekkton® ivory makes an indisputable contribution to the gingival biointegration of our reconstructions. Maintenance of the papillae for esthetic purposes is essential not only for beauty but also the durability of implant-borne designs. The homothetic shape of a Pekkton® ivory inlay core for implants as well as its controlled mesiodistal compression are equally critical for supporting the surrounding soft tissue.

2011
Dental technology: Benoit Gobert, Le Lignon, Switzerland.
Dentist: Dr. med. dent. Giuseppe De Stefano, Geneva, Switzerland.

5 Insertion of the temporary teeth
6 Lateral view of the permanent all-ceramic crowns on 11 and 21
7 Gingival maturation after 3 months with temporary teeth; the thinness of the central papilla is a positive response to the protocol used
8 Two months after insertion, the tissue reaction is very positive and does not include any inflammatory reaction

Treatment Phases:

Discussion, Remarks and Conclusions:

Author's tips and tricks: to increase the esthetics of a reconstruction with a Pekkton® ivory inlay core, it is preferable to completely cover the titanium cylinder that provides access to the screw via the Pekkton® ivory. Use a little bit of cotton or white gutta-percha to fill the screw's access hole in order to prevent the titanium's gray being reflected during the various fittings and final sealing. The sealed Pekkton® ivory abutment must be cleaned, micro-sandblasted or activated with a medium-grit diamond bur, then silanized and bonded according to the directions of the bonding composite manufacturer.

Conflicts of interest:

The author(s) explain(s) that there are no conflicts of interest for Cendres+Métaux SA.

Acknowledgments:

Many thanks to Dr. De Stefano, with whom I have collaborated for more than 15 years, and also to Walter Wermuth for our shared passion for implantology.

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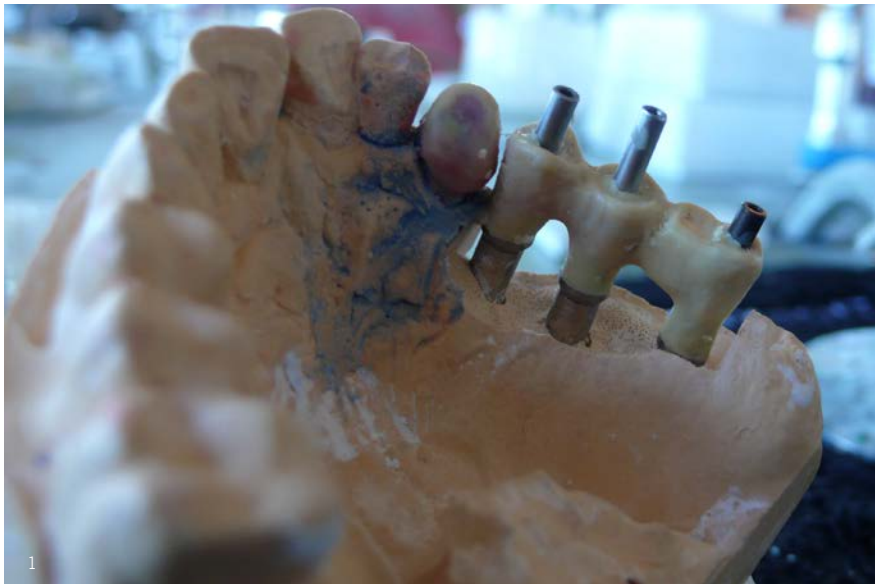
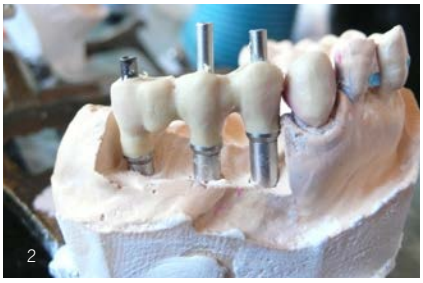
Bridge restoration on implants.





Treatment background and objectives:
Teeth loss on upper 2nd quadrant. Implants on 24–25 and 26 Nobel Biocare. Preparation on 23 for single crown.

Laboratory work procedure: First part
Temporary screwed Implant Bridge on 24–25–26 and single crown on 23. Duplication of the model, wax–up, positioning in the mould system Trixpress® (Dekema, Germany), pressing with Pekkton® ivory pellets (Cendres+Métaux SA, Switzerland).
Pressed with the furnace 654 Press-i-dent (Dekema, Germany).
Grinding, sandblasting, cleaning.
Veneering material: New Outline, double layering stratification using stains for characterization. Manual glazing (anaxdent, Germany).

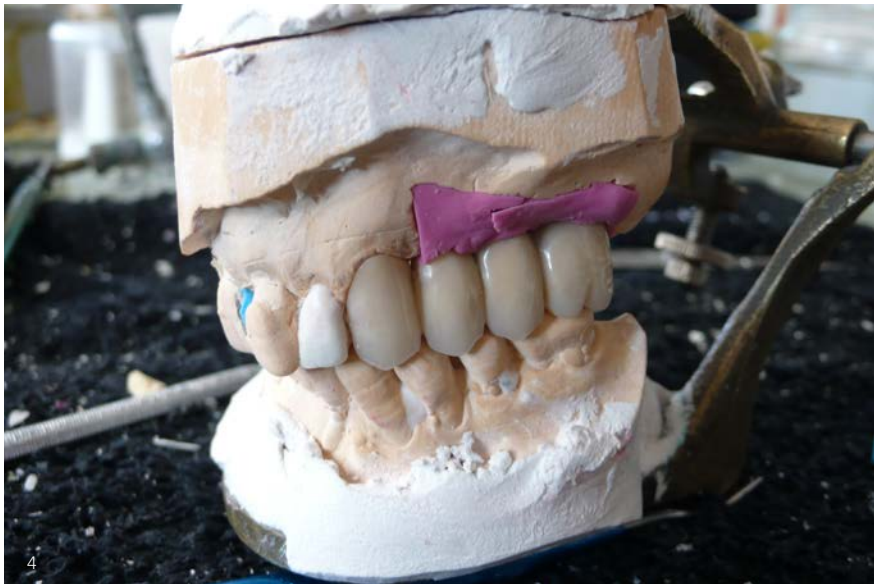
Treatment goals and results:
After the second surgery stage (previously, a sinus lift was made), a metal-ceramic crown on 23 and in the meanwhile, a temporary prosthesis was planned. This bridge was without any inconveniences during 4 month in the mouth of the patient.

Therapeutic protocol:
First, an impression «Vinilsiloxane» was taken in order to realize the framework of the bridge and the coping of the crown.
The implant supported bridge was screwed. Finally, the framework and coping were veneered with ceramic (the crown on 23 with porcelain shoulder).

1 Initial situation, Pekkton® with opaque layering
2 Wax up in a model
3 Anatomic wax up in articulator

Conclusion and comments:
The temporary bridge realized with Pekkton® ivory fulfilled all the requirements from an esthetic, mechanical and durable point of view.

2013
Dental technology: Carlos Baurier Salvans, CM Dental Laboratory BCN
Dentist: Dr. Ernest Mallat Callís, Clinica Mallat BCN



Laboratory work procedure: Second part
Place and screw the three implants on the model, wax up of 23–24–25–26, place the wax-up in Trixpress® mould system (Dekema, Germany), invest with CM-20 investment material (Cendres+Métaux SA, Switzerland).
Preheat and press with the furnace 654 press-i-dent (Dekema, Germany).
Grind and look for accurate fit of the work on the model, sandblast and clean with a steamer.
Opaque with New Outline (anaxdent, Germany) second wax up over the frame structure.
Veneering material: First layer with dentine A2 + White Dentine / Second layer High Value + Low Value + Transpa Clear
Polishing

Thanks to:
Clínica Dental Mallat, special thanks to Dr. Ernest Mallat Callís for his endless efforts to realize such clinical cases and helping us so much during all our fruitful relation of the last 5 years.

4 Finish case in articulator – laboratory
5 Real case in mouth

Bridge restoration on natural teeth.


1


4


2


3

Background and treatment objective:
After loss of tooth 16, it was decided to fill the gap using a cementable bridge as a permanent solution. The objective was a metal-free reconstruction.

Medical history:
Inconspicuous medical history.

Diagnosis:
Tooth 16 had to be extracted due to pronounced caries. Teeth 17 and 15 were periodontally sound and demonstrated positive sensitivity.
The possible alternatives for filling the gap were discussed. An implant-supported crown and restoration with a bridge were taken into consideration. As the patient wished a metal-free reconstruction, it was decided to fill the gap with a bridge. Pekkton® ivory was the material selected.

Treatment plan:
Preparation
– Epigingival
– Circular stage of 1mm

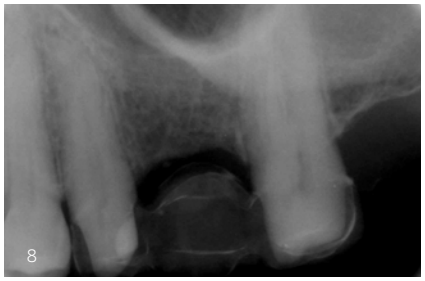
Impression taking:
– Impression with Impregum (3M Espe)

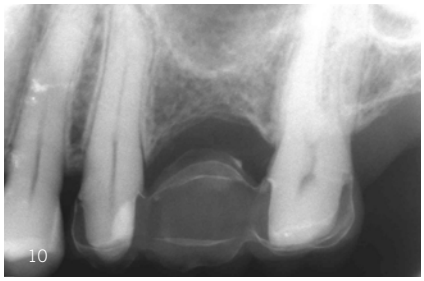
1 Initial situation on the model
2 Modeling prepared for embedding
3 Pressed bridge after deflasking, unprocessed
4 Finished bridge framework

Cementing:
– Adhesive technique with self-adhesive, dual-hardening composite cement RelyX Unicem (3M Espe)
– Conditioning of bridge with hydrofluoric acid, Monobond (Ivoclar Vivadent) and Heliobond (Ivoclar Vivadent)

Comments and conclusions:
Preparation and impression were the same as for a conventional metal ceramic bridge. Cementing had to be performed in an adhesive manner.
Checking after placement was relatively easy as the radiographic view of the abutment teeth was unobstructed. Possible excess was therefore easy to detect.
The low radio-opaqueness of the Pekkton® ivory bridge can be assessed both positively as well as negatively. One advantage is certainly that the abutment teeth can be checked better by radiographic means. The disadvantage is that the transition of the bridge to the levels of the abutment teeth is difficult to assess.

2012
Dental technology: Marco Fuhrer, Kurt Walz, Biel/Bienne, Switzerland.
Dentist: Dr. med. dent. Darko Radivojevic, Dietikon, Switzerland.





A major advantage over ceramic materials is the ease of repairs and easy fabrication. From a patient's point of view, the cost factor certainly proved to be an argument.

Conflicts of interest:
The author(s) explain(s) that there are no conflicts of interest for Cendres+Métaux SA.

Follow-up after 2 years
The situation is unremarkable clinically, the gingiva was free of inflammation, periodontal probing values were 2–3 mm. The bridge itself had no defects, there were no fractures and hairline cracks. The margins were unremarkable.
However, an X-ray showed slight brightening of the anterior abutment tooth in the mesial area of the crown margin that could not be probed clinically. The reason for this is likely the weak radiopacity of the Pekkton® ivory, which allows examination of the abutment teeth on the one hand, but on the other makes assessment of the margins difficult.
Dr. med. dent D. Radivojevic

5 Bridge veneered with composite (SR Nexco, Ivoclar Vivadent)
6 Underside view of veneered bridge
7 Bridge cemented in mouth
8 X-ray of cemented bridge and unobstructed view of tooth stump
9–10 Situation 2 years after implantation

Bridge restoration on natural teeth
(long-term temporary).

1 Initial situation in the mouth of the patient after preparation

2–3 Situation of the Pekkton® ivory bridge veneered with SR Nexco (Ivoclar Vivadent) on the master model before delivery

4 Cemented bridge in the mouth of the patient

Background and goal of treatment:
The maxilla of the 68-year-old patient has full dentition with several fillings and moderate oral hygiene. In November 2011, tooth 26 required extraction due to profound secondary caries. Teeth 25 and 27 also required rehabilitation due to caries with composite fillings.

Diagnostic findings and treatment goals:
In February 2012, the patient wanted gap closure. Due to periodontal problems and more moderate oral hygiene, which cannot be improved due to the restricted mobility of the patient, the decision was made to fabricate a long-term temporary bridge.

Treatment plan:
The bridge was first fabricated out of Unifast (GC) and delivered in March 2012.
In September 2012, the temporary bridge broke. After repair and re-fracture, a high-quality, yet affordable alternative had to be found. We decided on the core material Pekkton® ivory from Cendres+Métaux SA, a high-performance polymer, which is veneered with esthetic composites. It was cemented on December 1, 2012 with TempBond (no Eugenol) from Kerr Dental and has since functioned without problem.

Discussion, commentary and conclusions:
Master dental technician Patrick Zimmermann: The material is easy to grind, resulting in a time savings when finishing the restoration. The bond and opaque is also easy to apply. In this case, the veneer was fabricated with the new composite material SR Nexco from Ivoclar Vivadent. An advantage of a composite veneer over a porcelain veneer is the seamless addition of veneering material.

Conflicts of interest:
The author explains that there are no conflicts of interest for Cendres+Métaux SA.

2012
Dental technology: Tooth manufacturer Zimmermann & Mäder, Bern, Switzerland.
Dentist: Dr. med. dent. Martin Fuhrer (Praxis med. dent. Daniel Bhend), Bern, Switzerland.

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