



BOREA
THE SHADE COMPANY

CLINICAL CASE

Dr Edouard Lanoiselée
France



Aesthetic dentistry:
The contribution
of the
spectrophotometer
Rayplicker™

RAYPLICKER
HANDY



Introduction

How can a patient's treatment be optimised? How can both speed and efficiency be increased, without sacrificing quality?

These questions are constantly being asked in our practices. Our patients' demands are more and more advanced in terms of aesthetic and functional results, yet they have less and less

time to dedicate to treatments. We now have a lot of equipment at our disposal enabling this optimisation.

Many of these tools are digital and as such allow us to digitise our patient files in order to transfer as much information as possible to the prosthesis laboratory. This information can thus be prioritised and streamlined to be processed in the laboratory by the appropriate people in the corresponding specific field (modelling, ceramisation, etc.).

In this effort to centralise information, colour is a complex area that requires extensive resources in terms of information. It is usually assessed in the chair by means of a reading comparing the patients' teeth to one or more shade guides. This reading is influenced by many factors and results can be significantly affected by surrounding interference making it particularly subjective (brightness of the room, bright colour of a lipstick, etc.) [1], [2]



Spectrophotometers are currently the best tools to objectify a result.

Dental photography is now considered an excellent way to convey colour information. It requires the prosthetist to use a shade guide as a reference to ensure the information is as objective as

possible. Working with dental photography, however, increases working time, as the prosthetist has to perform mapping based on the information obtained from the photos. Moreover, cameras are sensitive to shade variations depending on the colour temperatures pre-determined by the camera that can skew this reading [3]. To counter this problem, spectrophotometers are

currently the best tools we have to objectify a result. They work by emitting calibrated light which, depending on the reflection registered, enables a colour reading to be taken. This reading is unaffected by environmental factors that could potentially skew its results (lipstick, colourful clothing, unsuitable lights, etc.) [4], [5]

The Rayplicker (Borea) is a device that allows the practitioner to record all the information collected and communicate it to the prosthesis laboratory. The laboratory sheet can be sent via a secure portal and reprocessed

by the prosthesis laboratory. This flow also enables the form to be marked as reviewed by the laboratory, to monitor the progress of the treatment at the practice. Most shade guides on the market are referenced, making the work easier for the laboratory.



FIG. 01 : INITIAL CONDITION



FIG. 02 : INITIAL CONDITION

1 | CASE

Ms. G comes to the practice to change her restoration on tooth 23 that she finds unsightly. (fig. 01). Clinical examination reveals the presence of a composite restoration on the vestibular surface of tooth 23 with a stained joint as well as the presence of early carious lesions on the neighbouring teeth.

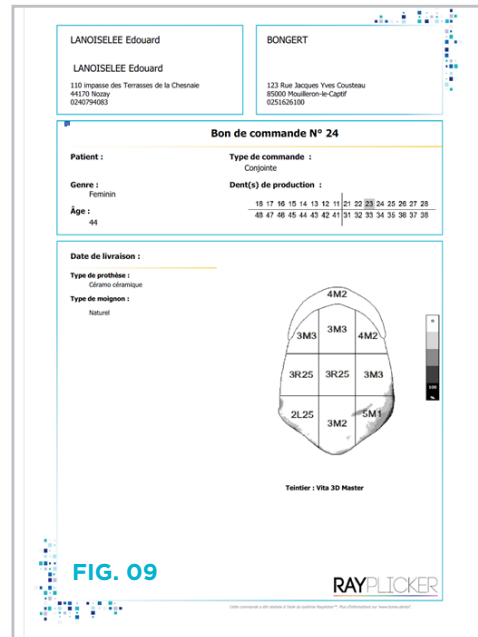
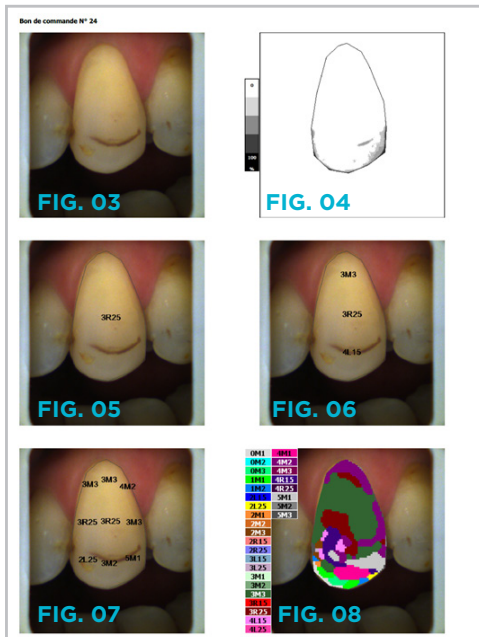
After discussing the treatment options with the patient, we decide to use composite restorations for the carious lesion and a veneer for 23 (Fig. 02). One fact will make this case more complex. Mrs. G has to go abroad for 3 months and wants the work to be done within 10 days after acceptance of the treatment. We must therefore obtain a result in a given time.

2 | SHADE TAKING

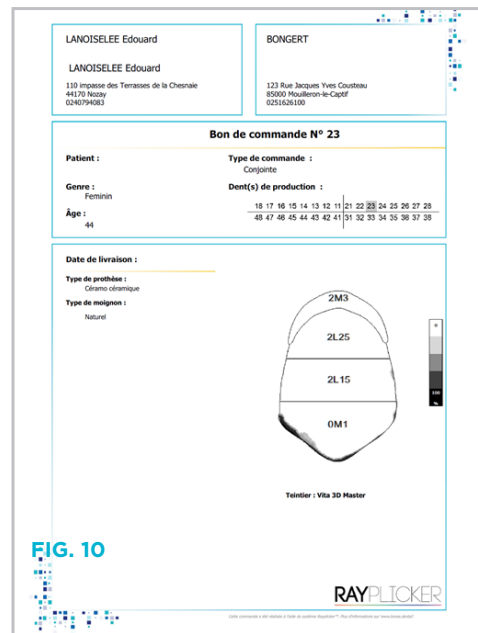
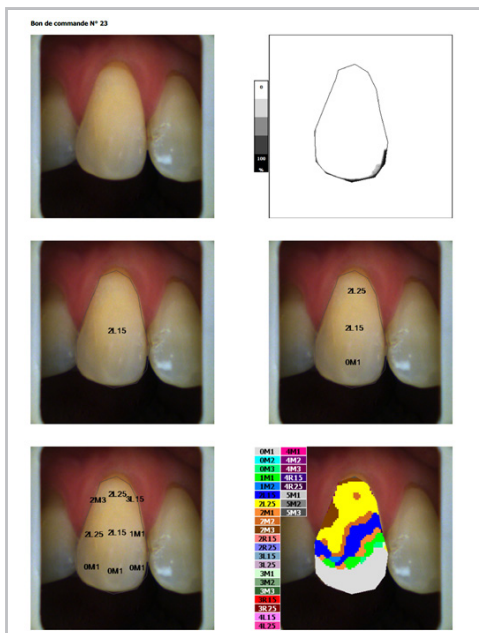
The first step of our treatment is the registration of the color. This is recorded with the Rayplicker. We take a record on the tooth to be restored as well as on the contralateral tooth. This double recording will inform the dental technician not only about the tooth to be restored but also about the overall integration of the tooth.



SHADE MATCHING WITH THE SPECTROPHOTOMETER RAYPLICKER™



Record of the tooth to be treated:
 Polarized image (Fig. 03) Translucency (Fig. 04) General shade (Fig. 05) 3 parts mapping (Fig.06) 9 parts mapping (Fig. 07) Detailed mapping (Fig. 08) Rayplicker production sheet for tooth 23 (Fig. 09)



Reading sheet on the contralateral tooth. (Fig.10) The readings are sent to the laboratory via the secure server. The important information for creating the restoration is centralised on this sheet: The shade guide values, detailed mass mapping and translucency.

3 | 3D IMPRESSION



FIG. 11 : OPTICAL IMPRESSION

As the treatment does not require any modification of shape, it is decided to use the initial situation as a reference for the laboratory and an optical impression is made, which will guide the laboratory in the design of the veneer.



FIG. 13 : OPTICAL IMPRESSION OF THE PREPARATION (TRIOS 4 3SHAPE)

The optical impression of the preparation is then performed. To do this, tooth 23 is erased on the initial impression and then the area is registered. This will enable the prints to be merged easily in the laboratory to control the modelling process. All the information is then sent to the laboratory (shade sheet and optical impression). In both cases, the files are sent via a secure portal with the option of verifying receipt by the dental surgeon.



FIG. 12 : REDUCTION CONTROL

A reduction guide is then made with silicone and the tooth is prepared. The thickness will be checked at the end of preparation with this key, which enables the ceramic thicknesses, the homogeneity and the homothety of the preparation to be checked.

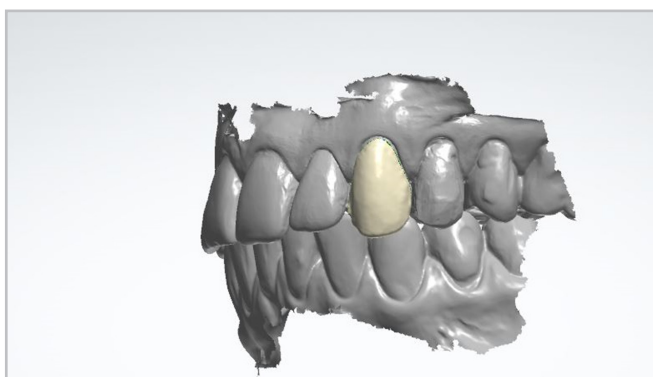


FIG. 14 : OPTICAL IMPRESSION OF THE PREPARATION (TRIOS 4 3SHAPE) MODELLING OF THE RESTORATION (3SHAPE DENTAL SYSTEM)

The veneer is then modelled on the 3Shape Dental System software and then printed in burnout resin on a 3D printer. It is then processed conventionally using the pressed ceramic technique, as the fineness of the veneer is not easily compatible with a machining technique.

4 | VEENER ASSEMBLY

After curettage and sealing of the lesion on tooth 22, the veneer is placed with a try-in. The patient confirms the result, then the veneer is glued on to the tooth. Only light-curing glue (G-cem veneer) is used - the advantage of this type of glue is the longer working time and therefore the management of excess glue, which is easier to remove.



FIG.15 : THE VEENER

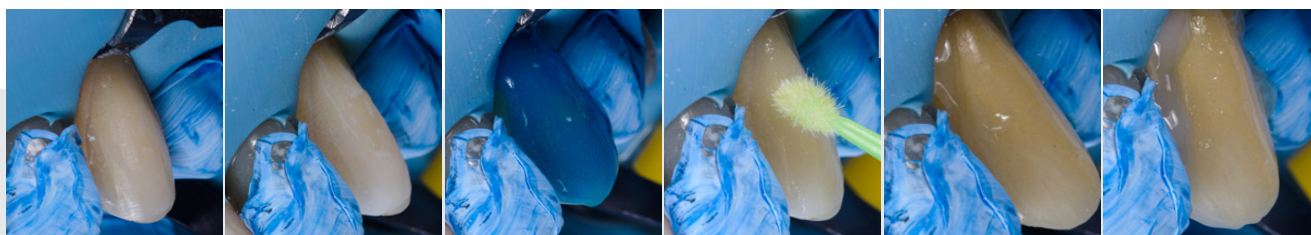


FIG.16 : ASSEMBLY WITH DENTAL DAM

After thorough polishing, the dental dam is removed and a final polish is performed Fig.13. The patient is seen again at 4 months, when she returns from abroad for a check-up Fig.18. The teeth are rehydrated and the periodontal tissues that were pushed in when the dam was put in place have returned to their original position. As such, it can be seen that the restoration has

FIG.17 : SITUATION AFTER REMOVAL OF THE DENTAL DAM



FIG.18 : CHECK-UP AT FOUR MONTHS



5 | CONCLUSION

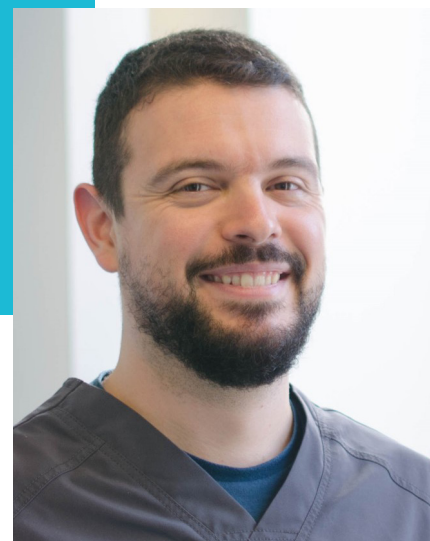
The use of digital techniques means that it is now possible to create simple and reproducible protocols. If the practitioner or prosthetist encounters difficulties, these can be analysed and resolved quickly. While shape can now easily be checked by the practitioner, colour is one of the crucial points to master during procedures.

documents and centralising information with the option of enhancing the content with photos clarifying the surface qualities and characterisations required for the integration of the prosthesis. All these elements combined deliver qualitative and rapid results in line with patients' expectations.

Spectrophotometers such as the Rayplicker now offer a simple, fast and effective solution. The secure platform facilitates interaction between the practice and the prosthesis laboratory, as well as confirming receipt of

ABOUT THE AUTHOR

Dr. Edouard Lanoiselée is the coordinator of the university diploma in esthetic restoration in Nantes and is attached to the implantology department of the Nantes University Hospital.



Dr Edouard Lanoiselée
France

Dr Edouard Lanoiselée graduated from the Faculty of Dentistry of the University of Nantes in France and later obtained a master's degree in medical sciences. He worked as a university hospital assistant at the teaching and research centre of

the Nantes university hospital in the prosthetic department.

He is the coordinator of the aesthetic dental restoration university degree at the University of Nantes and a consultant to the implantology de-

partment of Nantes university hospital. Dr Lanoiselée is a CAD/CAM specialist and a partner at a general dental practice in Nozay in France

6 | BIBLIOGRAPHY

[1]. Bauer R. Using dental photography for predictable results from your dental lab. *Today's FDA*. 2010;22(2):48-51.

[2]. Miyasaki M. Photography ensures better lab communications, better restorations. *Dent Today*. 2001;20(11):96-9.

[3]. McLaren EA. Shade analysis and communication. *Inside Dent*. 2010;6(5)58-66.

[4]. Mohammad Hassan Kalantari,¹ Seyed Ahmad Ghorraishian,¹ and Mina Mohaghgh. Evaluation of accuracy of shade selection using two spectrophotometer systems: Vita Easyshade and Degudent Shadepilot. *Eur J Dent*. 2017 Apr-Jun; 11(2): 196-200. doi: 10.4103/ejd.ejd_195_16

[5]. Tsiliagkou A, Diamantopoulou S, Papazoglou E, Kakaboura A. Evaluation of reliability and validity of three dental color-matching devices. *Int J Esthet Dent*. 2016 Spring;11(1):110-24.

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