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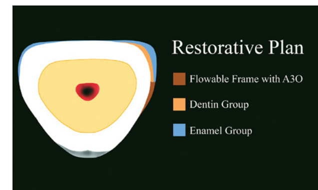

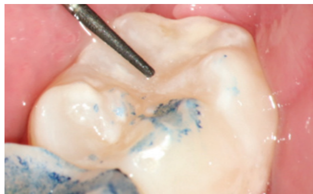

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An Official Journal of MiCD Global Academy

Minimal Invasive Dentistry and the Impact on The Modern Society

The goal of dentistry should be to develop new approaches in restorative dentistry that will reduce the amount of tooth removal during treatment. With advances in material science and restorative techniques we are able to attain these ideals and recreate nature with minimal removal of tooth structure. The continued discussions in Minimal Invasive Dentistry and Minimal Invasive Cosmetic Dentistry (MiCD) is important to meet the needs of modern society.

It is always been of high interest to correct the problems in the human dentition with minimal invasive procedures. Whether it is because of caries, infection, tooth fractures or existing failing conditions, correcting these problems with minimal tooth removal has always been of interest to clinicians and researchers.

The current philosophy of minimal invasive dentistry combines prevention, remineralization, healing and adhesion with the objective of removing carious damage in the least invasive manner. Mount/Ngo wrote, "the potential for minimal intervention operative dentistry is dependent on the following factors: 1. the demineralization-remineralization cycle 2.adhesion in restorative dentistry and 3. biomimetic restorative materials.

The concept of Minimal Invasive Dentistry (MID) is important as it relates to cosmetic dental treatment as well. Minimal Invasive Cosmetic Dentistry (MICD) provides correction of esthetic-related problems to the patient's smile and their overall facial appearance. The ability to attain this is based on blending MID with cosmetic dental principles. From non-tooth prep procedures to minimal tooth preparation treatment, there are now alternatives to traditional restorative treatment for necessary correction. In addition there are also predictable MICD surgical procedures that minimizes trauma, healing time while maximizing esthetic results.

Minimal Invasive Cosmetic Dentistry (MICD) is a trend that dentists should continue to pursue. Tooth conserving methods could replace traditional treatment as a new standard in restorative care in this century. Using a creative approach to dentistry we are able to provide our patients with a new level of excellence.

Learning from each other is important for the progress of dentistry and better patient care. I am honored to be a part of the newly formed Minimally Invasive Cosmetic Dentistry (MiCD) Global Academy. Together we can continue to develop, network and provide global awareness of MICD. Let's work together for a better future.

Minimal Invasive Cosmetic Dentistry (MICD) is a trend that dentists should continue to pursue. Tooth conserving methods could replace traditional treatment as a new standard in restorative care in this century.

Wynn Okuda, Editor
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Smart Camera for Dental Practice

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BENEFITS OF DIGITAL CAMERA

- Instant viewing
- No lab cost
- Prompt communicability
- Digital sensor Vs. film
- Higher reproducibility
- Easy archival and retrieval
- Easy image Manipulation

Introduction

Dental Photography is an essential tool for case documentation, treatment planning, marketing, communication and teaching processes. This is further used in medico legal issues and clinical audit of the treatment which is an essential part of the quality dental practice philosophy and also help to analyze the quality of the treatment rendered and one can acknowledge and learn from it in future.

In Jan 7th, 1839, the first photographic process was demonstrated to the world by Louis J. M. Daguerre at the Paris Academy of Sciences[1]. In May 8, 1840, Alexzander Walcott[2] obtained the patent for his invention of camera. He developed a system for photographic studio lighting and started the first commercial photographic studio. Alexzander Walcott was closely related to the field of dentistry as some believed he was dentist turned photographer[2] or Dental instrument manufacturer[1].

Photography in dentistry has a long history dated back to 1848 when Drs. R. Thompson and W.E. Ide of Columbus, Ohio, removed a patient's left superior maxillary bone, photographed the patient before and after surgery and published article with those photos in *American Journal of Dental Science* in 1850.[3] This was the first documented photographs taken before and after a dental treatment.

I In past, before the appearance of digital camera, film camera had been used in dentistry with the drawback of not having immediate reviewing option which could lead to detrimental effect on proper case documentation. Cost of film, longer processing time and inability to send the photo via email and internet without prior digitalizing are some of the other drawbacks of film or analog photography. Yashica Dental Eye III (Kyocera Corporation, Tokyo150, and Japan) (Fig 1) is prime example of film camera exclusively dedicated to dental photography.

Digital cameras (Fig 2) became very popular and started overriding analog film

camera and film photography technology because of the following advantages.

- **Instant viewing ability:** Images are instantly available for appraisal so that if the image is not of required standard

Fig. 1 - Yashica dental eye film based dental camera

Fig. 2 - different types of digital cameras

Fig. 1

Fig. 2

with respect to composition and quality, another photo can be taken immediately and appraised. Important documentations will not be missed because of lack of good photographic composition or poor lab processing.

- **No lab processing cost:** As lab processing is generally not required in digital photography (use of computer/ laptop for viewing and communicating via email etc.), its cost both in terms of money and time can be saved. Requirement of less or no lab processing removes the use of any environmentally detrimental lab processing reagents.
- **Prompt communication[4]:** Because of digital nature of image it has the ability to be communicated through email and internet as and when required. This facilitates effective e-learning processes and timely communication with labs, patients or any other third parties.
- **Digital sensor versus film :** Film of different ASA/Din are necessary to take photos in different ambient light therefore requiring different types of film where as in digital sensor based camera this can be adjusted from within camera settings itself.
- **Higher reproducibility:** All the technical data like shutter speed, f-stops, magnification, ISO are saved along with image as metadata so that the same data can be used to take another photograph allowing reproducibility which is important in Dentistry. Film photos on the other hand do not have these facilities and for this reason it becomes difficult to reproduce image with same technical data in future.
- **Easy archival and retrieval:** Digital photography allows keywords and image caption be added directly to the image file allowing easy archival and retrieval of the images. In Film photography all the photos need to be catalogued or put into photographic album which can be time and space consuming.
- **Image manipulation:** Digital photography allows the user to correct exposure, crop to correct the orientation and many other modes for editing the image with ease while Film photography lacks these facilities.

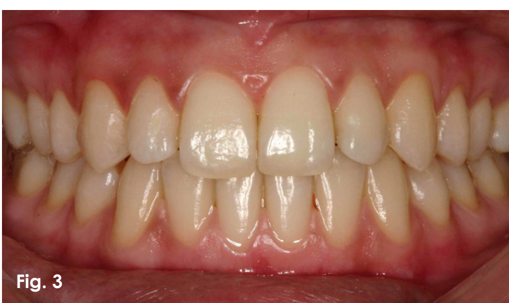
Digital Images Requirement in Dentistry

The basic requirements of an ideal digital image for the use in dentistry are outlined as follows[5]:

- **Image sharpness:** Image should be crisp, sharp and well-focused .It should have good resolution and should be properly oriented in order to be used in different circumstances like publication, case documentation, and lecture presentation. Dental Arch anatomy can cause insufficient depth of field leading to improper image. Both central incisors and second or third molar should be focused in the same composition. (Figs 3 and 4)
- **Proper exposure:** The image should be properly exposed. Under or over exposure may lead to unrecoverable loss of image date. Image should be well illuminated even in the mouth

IDEAL DIGITAL IMAGE FOR DENTAL USE

- Image sharpness
- proper exposure
- good colour rendition
- No image distortion reproducibility



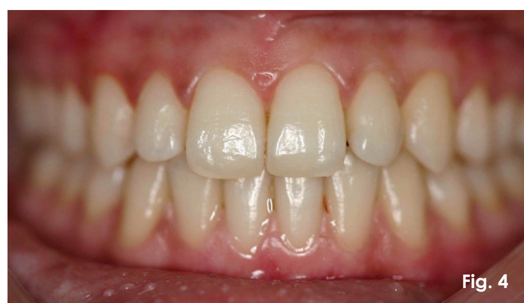
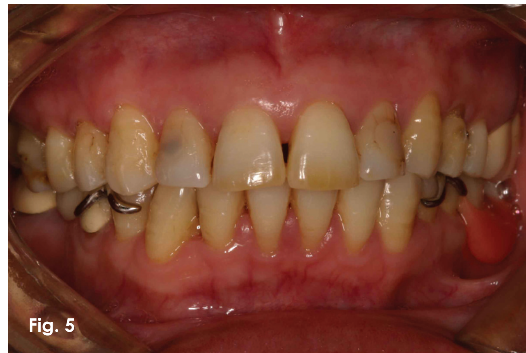


Fig. 3 - well focused with adequate depth of field intraoral photo

Fig. 4 - out of focus and with inadequate depth of field intra oral photo



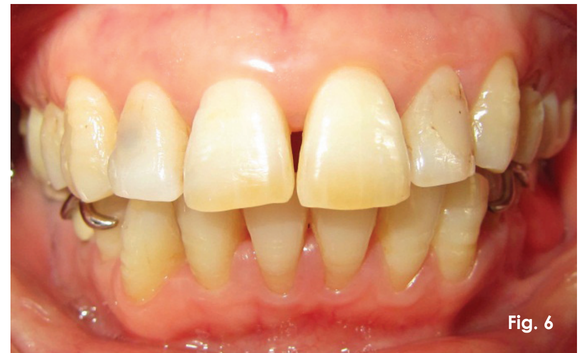


Fig. 5 - photograph taken from DSLR camera with no distortion, correct colour rendition, sharp and properly exposed

Fig. 6 - photograph taken from point and shoot compact camera with distorted central incisors, shadows, overexposed and incorrect colour rendition

IDEAL DIGITAL CAMERA FOR DENTAL USE

- Ideal digital image capturing capabilities
- Magnification ration
- White balance
- Cost
- User friendly
- Good working distance
- Proper flash system

and no shadow should be seen if not intended for. (Figs 5 and 6)

- **Colour rendition:** Colour of image is very important factor in dental photographs. Image should have correct colour rendition and devoid of any colour casting so that the tooth colour is very distinct and clear to the dental lab technicians.

- **Distortion - free image:** Dental images are used for appraisal of symmetry and any deviations. Linear and angular measurements are performed in order to establish proper diagnosis. Any perspective distortion of the image renders the image useless for diagnostic evaluation.

It is a known fact that, to have an ideal digital image one should have ideal digital camera system, and the following are the basic requirement of an ideal digital camera.

- **Ideal image capturing capability:** Most of the high end camera are capable of capturing ideal image however lower end digital camera still lack the capability to do so.

- **Magnification ratio:** The camera system should have the in-built system for varying the magnification ratio as per requirement such as 1:2; 1:10 or any other ratio can be employed for different types of digital images. Magnification ratio is an important factor in standardizing the digital dental images which helps to capture different images with same magnification and make comparison.

- **White balance:** As most of the dental clinic don't have standard day light illumination and therefore use of flash is mandatory, the camera system should have good white balancing in order to capture the crevices of oral cavity. The difference in ambient light from one operatory to another and need to use flash photography mandates that the white balancing function should be customizable accordingly.(Figs 7, 8 and 9)

- **Cost:** Higher cost of the camera system will refrain many enthusiastic dental practices to acquire such an indispensable tool.

- **User friendly:** The camera system should have as less learning curve as possible and should be easy to use by all the personnel in the dental practice so that digital imaging becomes part of the work flow.

- **Working distance:** The camera system should be able to work without encroaching patient's intimate space. For example while taking image of 1:1 magnification with 50 mm focal length lens the camera will be too close for patient's comfort. Similarly when taking portrait image with 1:10 magnification at least the distance between patient and camera should be 5 feet to avoid proportional distortion of the face.

- **Proper flash system to illuminate oral cavity:** The uniqueness of oral cavity necessitates the need for special flash system in order to have well illuminated and shadow less images. Most of the inbuilt flash is not adequate for proper illumination. (Fig 6)

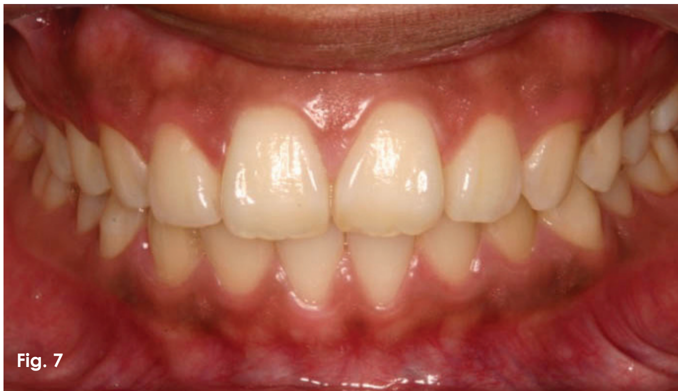
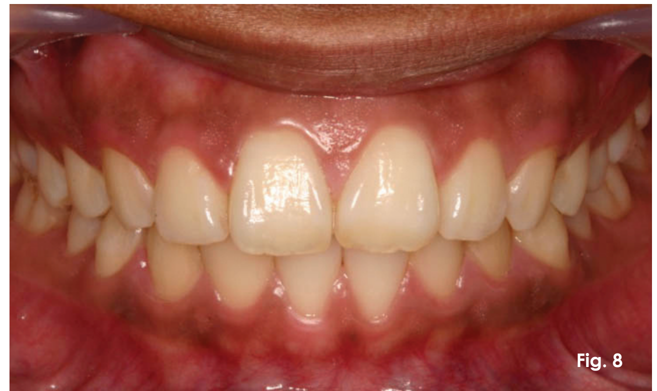


Fig. 7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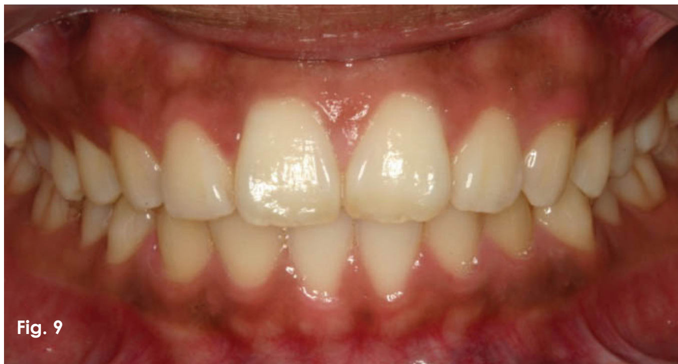


Fig. 9

Fig. 10

Fig. 7 - photograph taken with white balance set to automatic
Fig. 8 - photograph taken with white balance set to flash
Fig. 9 - photograph taken with white balance set to custom
Fig. 10 - Digital SLR with macro lens and ring flash

Smart Digital Dental camera: EyeSpecial II

Variety of digital cameras like point & shoot,prosumer and SLR (Fig 10) are available in the market and it is always tough for dental practioners to select the suitable one for dental use. Recently, an exclusive smart digital dental camera EyeSpecial CII (Fig 11) is introduced in the market by Shofu Inc. Japan with all the features that a busy clinician always dreamed for. The following section briefly summarizes the clinical and technical features of EyeSpecial -CII so that the interested clinicians can easily compare EyeSpecial-CII with other digital cameras that are being used in dentistry.

EyeSpecial-CII (Fig 11) is point and shoot digital camera with smart digital features and is exclusively designed for dental photography.

Specifications: EyeSpecial-CII comes with ½.33 inch sized CCD sensor with approximately 12 megapixel resolution and ISO sensitivity of 100 to 400. This camera is fitted with a lens of focal length of 50-175(35mm equivalent), maximum aperture of 3.4 in wide angle and 8.6 in tele photo with optical electronic zoom capabilities. Autofocus is achieved with the use of contrast auto focus system and can be center-weighted or spot and 4 white led light helps to attain autofocus (Fig 12).

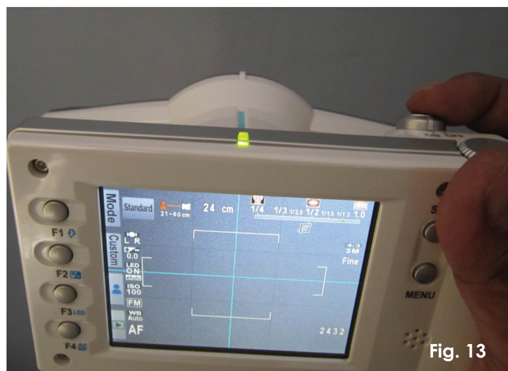
Fig. 11

Fig. 11 - EyeSpecial CII
Fig. 12 - 4 led light help in focusing

Fig. 13 - EyeSpecial CII is easy to hold with good palm grip

BENEFITS of EYESPECIAL CII

- Compact camera without any need to attach accessories to take different views of dental photography
- Single battery for camera and flash system
- Single Dedicated touch menu for all the necessary dental views- no need to adjust different parameters for different views
- No need to bring camera closure to surgical field and risk the chance of contamination
- Shade selection is facilitated with grey out background
- Nominal learning curve
- Easy disinfection of camera
- Image sharpness
- Proper exposure



Exposure is calculated using through the lens metering/flashmatic (patented) light control system. It has the shutter speed of 1/15 to 1/1000 sec which is automatically controlled. This camera can accommodate SD/SDHC card with maximum of 32 GB capacity which will record JPEG image format up to 12 megabytes.

Built and Size: Eyespecial CII is compact and ultra-light compared to currently available DSLR with attached flash system. The body is made of the plastic material strong enough to resist scratches and scuffs and it is water and chemical proof therefore easy to disinfect using ethanol in dental clinic. Camera measures 176x99x82 mm (W x D X H) and is easy to handle with one hand with good palm grip support in camera body allowing other hand free to be used for retraction of oral tissue. (Fig 13).

Power System: Camera is powered by 4 alkaline AA /4 nickel-hydride batteries and same battery power is used for flash system unlike DSLR where separate batteries are required for flash system and proprietary battery for camera. In addition, for these separate batteries, separate battery chargers are required. EyeSpecial CII requires only one type of battery (Common AA batteries) and a charger.

Other Options: Back side of the camera (Fig 14) houses the 3.5 inch VGA LCD touch screen for all the necessary manipulation of the camera. Along the left side of the screen there are 4 function keys which can change their function according to the mode you are in. These functions are visually displayed in left side of the display so that their navigation can be done either with function keys or touch screen. Along the right side of the screen there are two keys for set and menu. Just beneath the menu key is the speaker. The front side of the camera (Fig 15) has attached flash system with two outer flashes and two inner flashes, four led light for focusing and lens thread for 49mm diameter close up lens attachment. Inner flash is straight but outer flash is placed at an angle to avoid shadow during intraoral photography. Power switch is at the top of the camera (Fig 16)and shutter button is placed in comfortable position for one handed operation. Dial key is situated just behind the shutter button and placed perfectly to be used by thumb. With the help of strap in its mount, this camera can be easily held in the palm and palm grip houses batteries compartment. The pilot lamp and the straight engraved light blue line on the lens housing help to orient camera while taking photos. On the left side (Figs 17 and 18) there is SD card slot and AV out connector which is aesthetically hidden by plastic cover. In the bottom (Fig 19) there are battery cover, lock lever, tripod socket and name plate for identification.

Fig. 14 - back side of the EyeSpecial CII

Fig. 15 - Front side of the EyeSpecial CII

Fig. 14

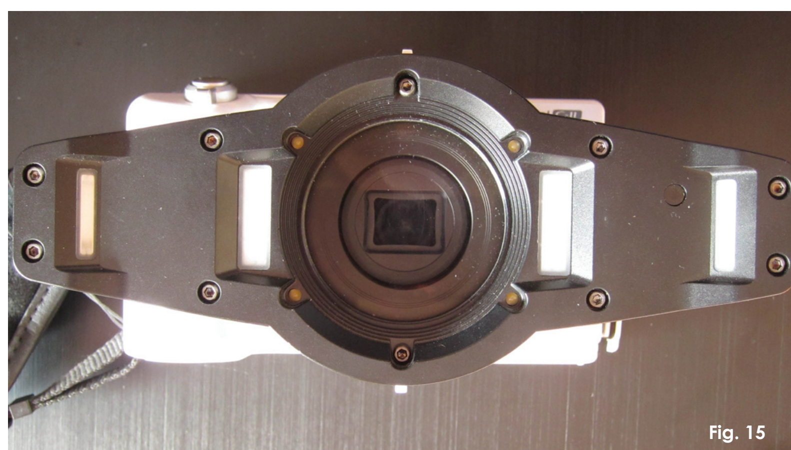


Fig. 15

Fig. 16

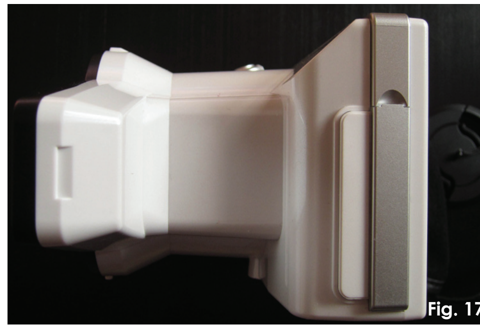


Fig. 17

Fig. 18

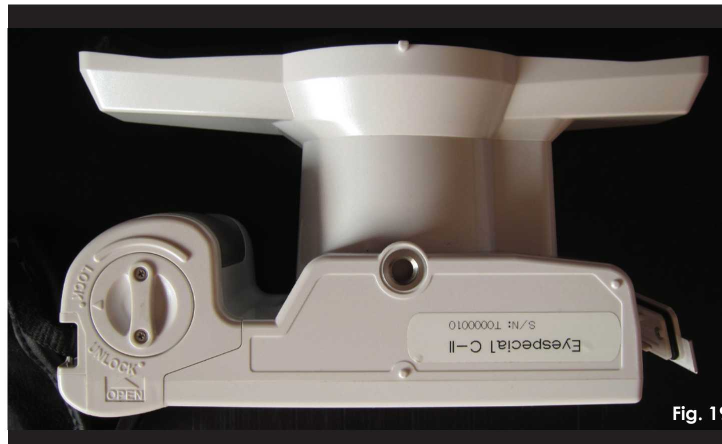


Fig. 19

Fig. 16 - Top side of theEyeSpecial CII

Fig. 17 - Left side of the EyeSpecial CII

Fig. 18 - Left side of the EyeSpecial CII with plastic cover removed showing SD card slot and AV connector

Fig. 19 - bottom side of the EyeSpecial CII

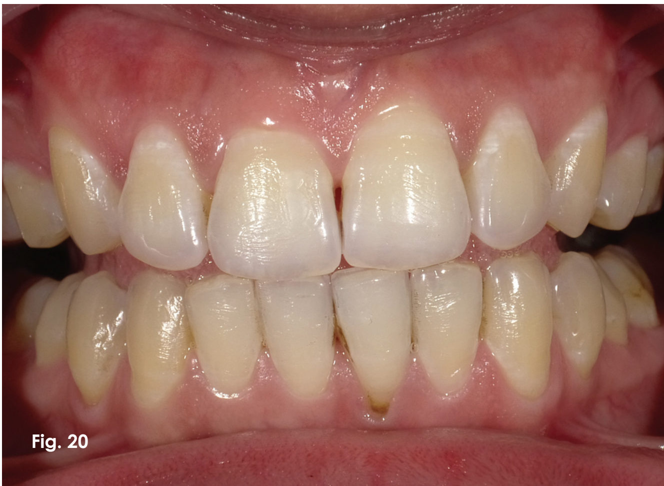
Start up and Work Flow: This camera takes about 12 seconds to take first photo from start up with powering the camera and taking photo. After initial setup with language, time format and unit to be used in camera, work flow of taking photos includes following steps:

- inputting patient ID by entering patient number or scanning QR code (taking photo of QR code) or taking photograph of patient record
- selecting shooting mode either from preprogrammed or custom mode
- selecting magnification for that particular mode in order to standardize photographs
- adjusting focus for that magnification by to and fro motion and
- Taking photographs when all parameters are green.

This work flow is simple, quick and easy to remember and very handy for busy dental practitioners.

Special Shooting Modes: Various special shooting modes available in the camera enable the dentist to take any kind of dental image necessary.

- Surgical mode allows camera to take intraoral photos farther away from the patient than in standard mode avoiding the contamination of surgical field.
- Low glare mode helps to document tooth topography and shade as outer flash which is placed at an angle eliminates the glare of the inner front on flash.
- In Mirror mode, the image taken with mirror can be correctly oriented within camera so that mirrored image need not be reoriented using software as generally required when other cameras are used.
- Isolate shade mode takes two photos one with low glare and another with only natural teeth colour and rest of the back ground in grey scale to reduce distraction enabling proper shade documentation and communication (Figs 20 and 21).
- Tele Macro mode with accessory macro lens attached allows magnified view of anterior teeth for detail surface topography.



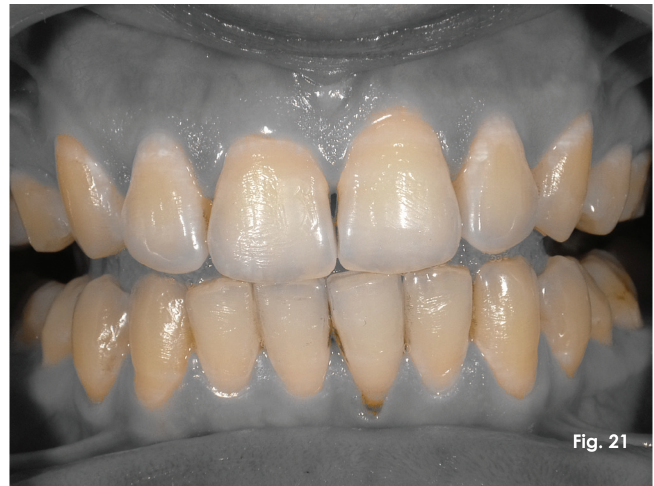


Fig. 20 - photo taken in Isolate shade mode

Fig. 21 - photo taken in Isolate shade mode with grey back ground isolating teeth

Image Capturing: Once the mode is selected, LCD screen shows all the magnifications for that particular mode. Magnification allows the image to be standardized and can be compared with similar magnified image. For each selected magnification, LCD screen displays range of focus distance and optimum focus distance. The camera is set within this focus range and auto focus is attained either by half pressing the shutter button or by touching the area on the LCD screen the focus is required (spot Auto focus). Once the desired focus is attained then shutter button is fully pressed and image is captured.

Captured images can be viewed within camera or in the external monitor with the help of AV out connection. Certain editing and inking can be done within camera for prompt case discussion with patient. Captured images can be transferred to computer by taking out SD card and connecting card reader to the computer or wirelessly using eye-fi memory card which is compatible with this camera.

Image Quality: The quality of the captured image is excellent and great depth of field allows crisp and well-focused views of dental arches. Colour rendition of the image produced by this camera is vivid and lively and can reproduce all the natural colour of oral cavity. The quality of the lens is very good and does not produce any distortion or chromatic aberration. The camera stores all the images in most popular JPEG format and not in specific proprietary format of the manufacturer requiring any proprietary software.

Other Smart Benefits: This camera which is made exclusively for dental use is first of its kind. Its pre-programmed shooting mode allows dentist to take photos in any circumstances without any fuss of adjusting too many parameters. The automatic nature of the workflow makes this camera easy to use without much learning curve. This camera is useful for all dental purposes and comes handy in all situations. In orthodontic practice where monthly progress photo documentation plays a vital role, this camera helps to take photo and store in patient's folder using eye-fi memory cards. For cosmetic dentist, it has the unique shade selection mode which helps to communicate about shade selection with patient as well as with dental lab. For surgery where sanitation of in and around surgical field is paramount, this camera helps to take photos from greater distance than normal, keeping camera away from surgical field maintaining asepsis of surgical field as well as avoiding any contamination of camera. These are few of the unique and excellent clinical advantages of the camera among many more.

Conclusion

The use of digital SLR camera in dentistry is becoming popular among dental practitioners who are keen on keeping digital case records to evaluate their clinical work quality, properly communicate with their patients, write articles in magazine and dental journals , present clinical cases in conferences and also to safeguard them from any possible medico legal situations.

However, practically speaking most of the clinicians who have DSLR do not use their camera regularly though it should be. The main reason behind the underuse of the their DSLR camera are time consuming nature of DLSR to make it ready for shooting and high learning curve. These clinical shortcomings of DSLR which are related to dental use for a busy clinician have been practically and efficiently taken care of by the manufacturer of EyeSpecial-CII. It is author's belief that since EyeSpecial–CII smart dental camera is exclusively designed for dentistry, it has helped the clinicians globally to save their precious clinical time in dental photography, thereby promoting the proper use of digital documentation in all fields of dentistry. ■

References

1. Clinical digital photography. Part 1: Equipment and basic documentation Dr. Eduardo Mahn, DDS, DMD, PhD INTERNATIONAL DENTISTRY – AUSTRAL-ASIAN EDITION VOL. 8, NO. 2
2. History and Current Use of Clinical Photography in Orthodontics donna l. galante, dmd cda journal l , vo l 3 7 , n ° 3
3. The American Dentist, A Pictorial History With a Pre-sentation of Early Dental Photography in America. Glenner RA, Davis AB, Burns SB, eds Missoula, Mont., Pictorial Histories Publishing Company, pages 11, 12, 23, 1990
4. Photographic-Assisted Diagnosis and Treatment Planning Ron Goodlin, DDS Dent Clin N Am 55 (2011) 211–227
5. Mastering digital dental photography, Wolfgang Bengel, 2006 Quintessence Publishing Co, Ltd

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Smile Makeup using Additive & Reductive Smile Contouring Technique

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Clinical history: A middle age (45 years) patient requested for smile aesthetic enhancement. Upon examination a missing lateral incisor (tooth no 12) , peg shaped lateral incisor (tooth no 22) and hypocalcified spots on the upper central incisor with broken incisal edges were noted. The shade distribution and surface texture of anterior teeth were not uniform. And moreover the incisal edges chipping and loss of tip of tooth no 13 indicates that patient has a habit of night grinding.

Treatment options: The defects in anterior teeth Alignment, Brightness and Contour (ABC) affect the beauty of a smile. To modify ABC as per patient's personality the following treatment options were given.

a. Cosmetic orthodontic treatment to gain space for missing tooth no 12 , then replacement of 12 with implant or bridge , teeth whitening to make smile bright and shape modification of tooth no 22 with direct composite or ceramic veneer

b. Reductive Smile Contouring (RSC) of tooth no 13 to give shape of lateral incisor & teeth no 12 and 21 to smoothen the broken incisal edges. Then Additive Smile Contouring (ASC) of peg lateral (tooth no 22) using direct composite or ceramic veneer.

Patient's need/desire: The patient requested for a cost effective and minimally invasive treatment with a quick result.

Selected treatment approach: Additive Smile Contouring (ASC) - with direct composite veneer and Reductive Smile Contouring (RSC) using minimal tooth reduction were chosen as the most cost effective and quick treatment, as per the patient desire.

Techniques involved: Additive Smile Contouring (ASC) - acid itching, bonding, flowable frame technique, direct composite layering , finishing , polishing and super polishing and Reductive Smile Contouring (RSC).

Restoration plan: The additive cosmetic contouring was completed with a complex bi-layered shading technique (using two groups of restorative materials and effect group in layering technique) to build the desired tooth structure.

Clinical steps

Fig. 1 - Peg shaped tooth no. 22, missing tooth no. 12 with uneven incisal edges of teeth no.11 &no.21

Fig. 2 - After Treatment

Fig. 3 - Restorative Plan

Fig. 4 - Peg shaped toot no.22 before treatment

Fig. 5 - Roughen surface of tooth# with a Diamond Point no. 102R (Shofu Inc., Japan)

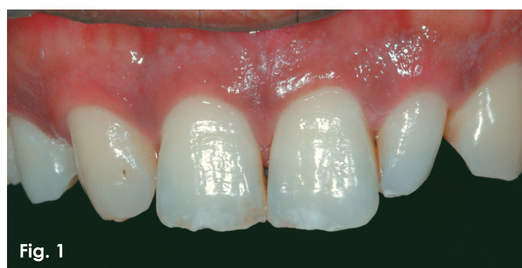
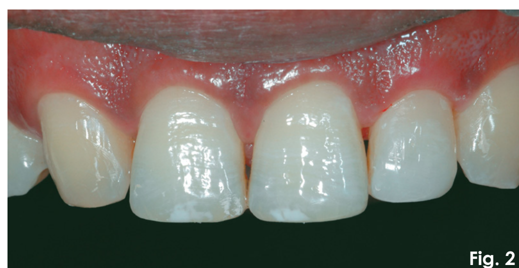


Fig. 1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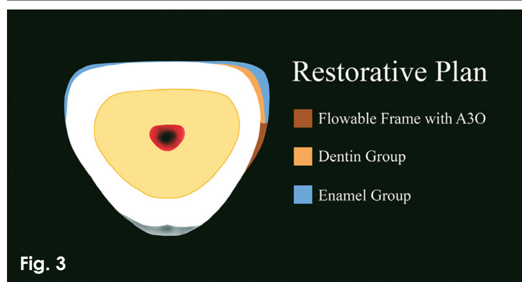

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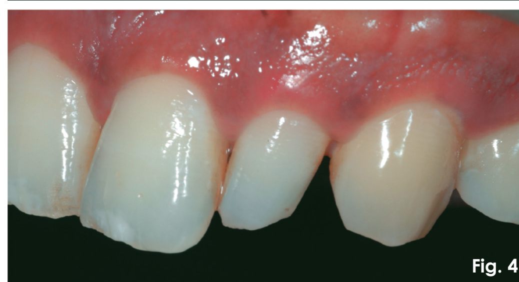
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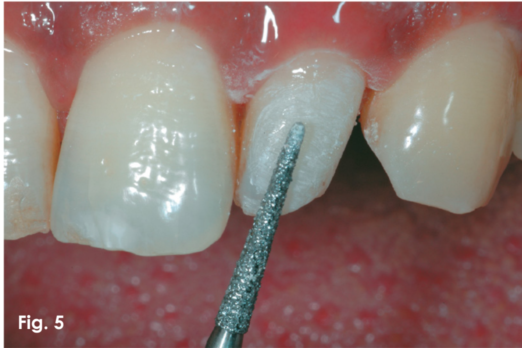
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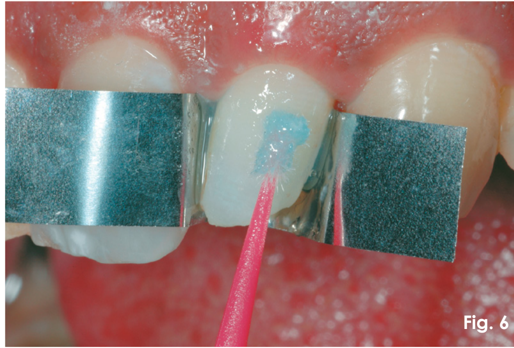
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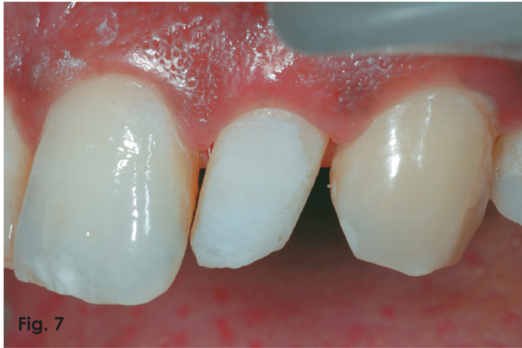
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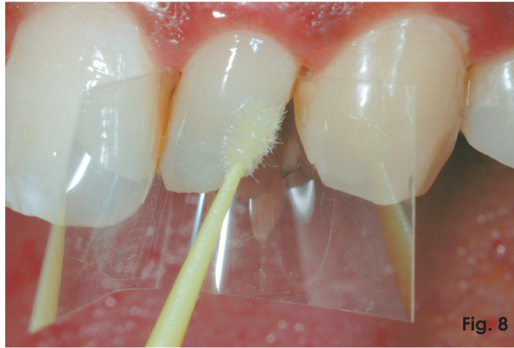
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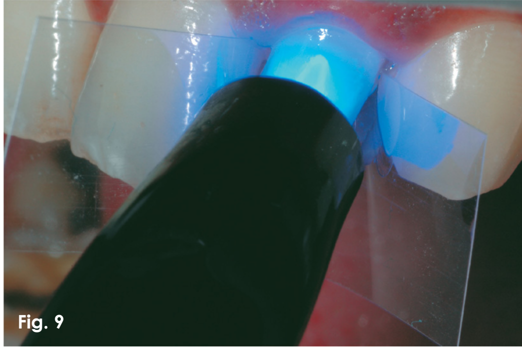
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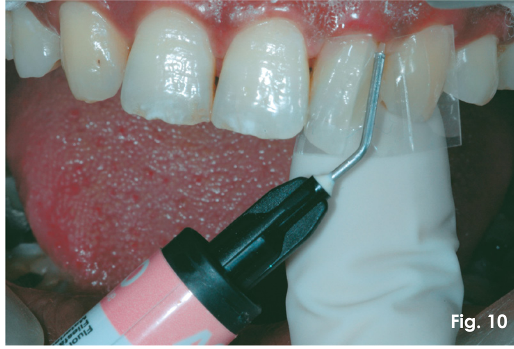
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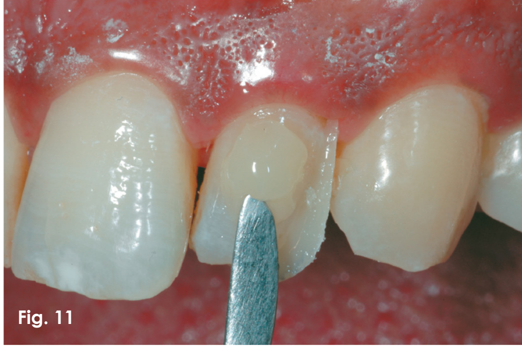
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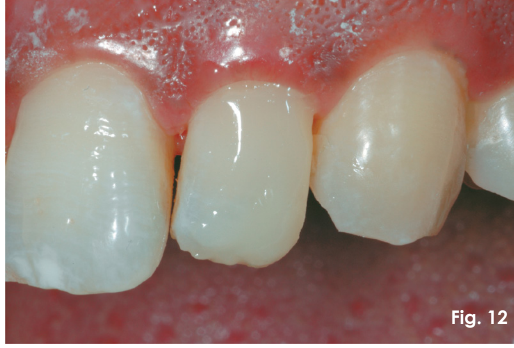
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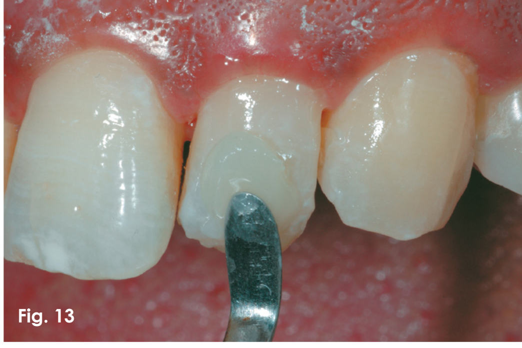
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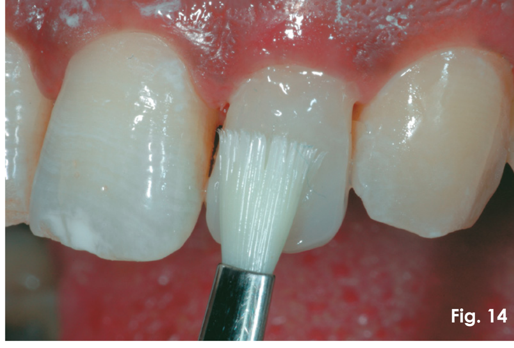


Fig. 14

Fig. 6 - Protect the adjacent teeth with a metal strip and etch with phosphoric acid

Fig. 7 - The etched enamel surface with frosted white appearance

Fig. 8 - Place a plastic strip and apply the bonding agent

Fig. 9 - Light-cure the bonding agent for 10sec.

Fig. 10 - Hold the plastic strip with index finger and inject the flowable resin (Shofu Inc., Japan) and light cure it to create the lingual frame

Fig. 11 - Additively contour the dentin with A3 shade (Shofu Inc., Japan) on the frame at distal the distal margin

Fig. 12 - Additively contour final dentin shape with A3 shade (Shofu Inc., Japan)

Fig. 13 - Additively contour the enamel layer with Universal (INC) shade (Shofu Inc., Japan) incrementally

Fig. 14 - Smoothen the enamel surface with a brush and light-cure

Fig. 15 - Finish the restore surface with Diamond Point no. F104R (Shofu Inc., Japan)

Fig. 16 - Fine finishes the labial surface with Diamond Point no. SF215 (Shofu Inc., Japan)

Fig. 17 - Shape the incisal edge of tooth no. 22 with Super Snap black disk (Shofu Inc., Japan)

Fig. 18 - Polish the restoration with Super-Snap green disk (Shofu Inc., Japan)

Fig. 19 - Finally super polish the surface with Super with Super-Snap red disk (Shofu Inc., Japan)

Fig. 20 - Polish interproximal area with Super-Snap polystrip (Shofu Inc., Japan)

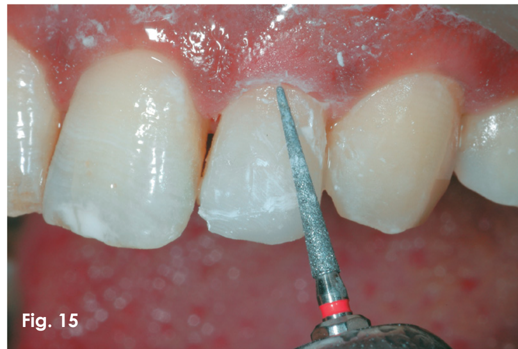
Fig. 21 - Use a diamond polishing paste with a Buff disk to achieve the final gloss (Shofu Inc., Japan)

Fig. 22 - Plan reductive contorting area; mark the area for contouring of teeth no. 13, no .11 & no. 21

Fig. 23 - Reductively contour the uneven incisal edges with Diamond Point no 102R and maintain the white spots

Fig. 24 - Finish and polish teeth with OneGloss Midi Point and super polish with Buff disk (Shofu Inc., Japan)

Fig. 25 - Tooth no 13 is reductively contoured to mimic a lateral incisor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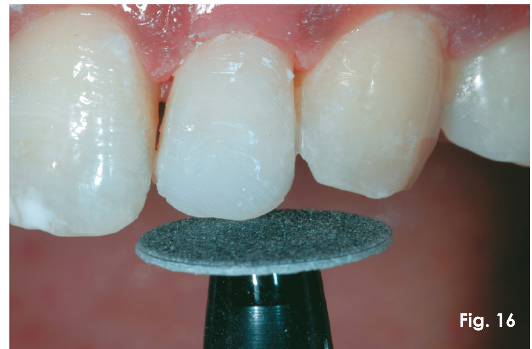
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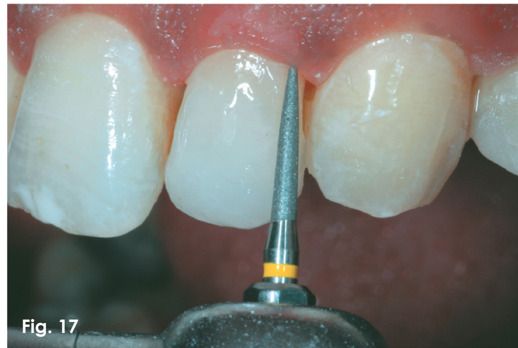
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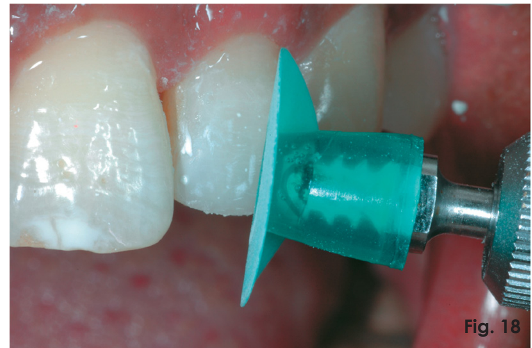
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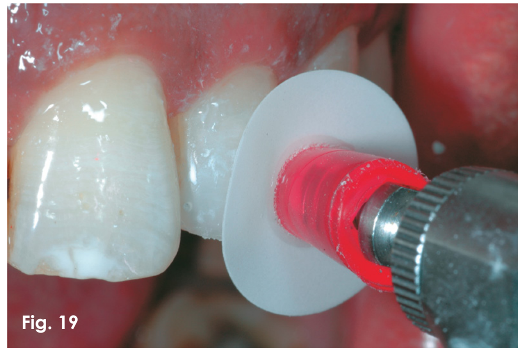
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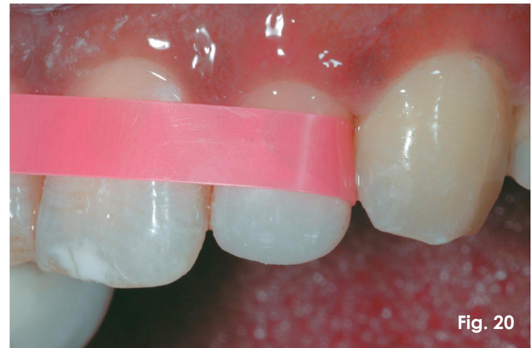
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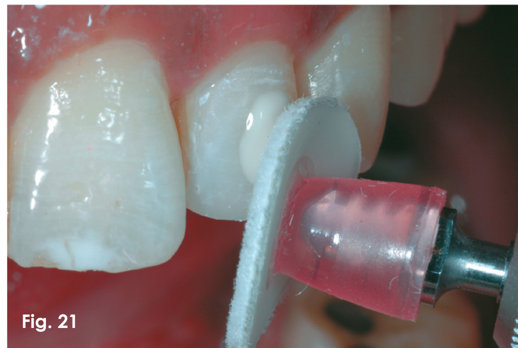
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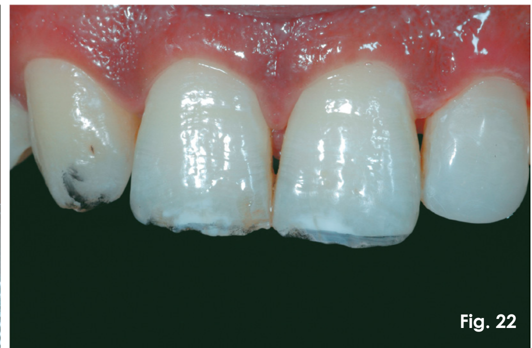
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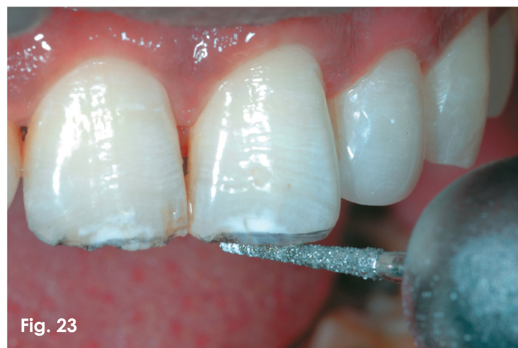
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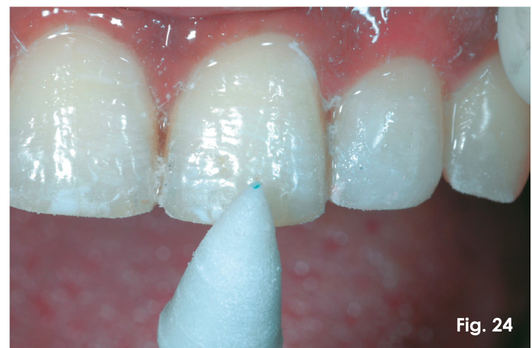
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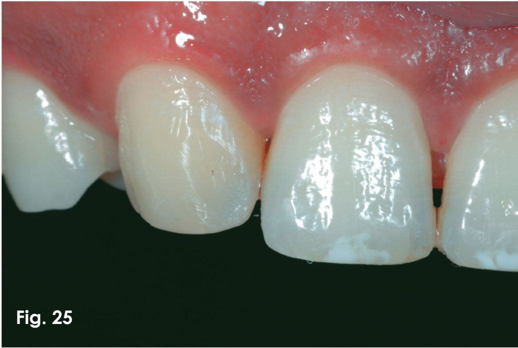

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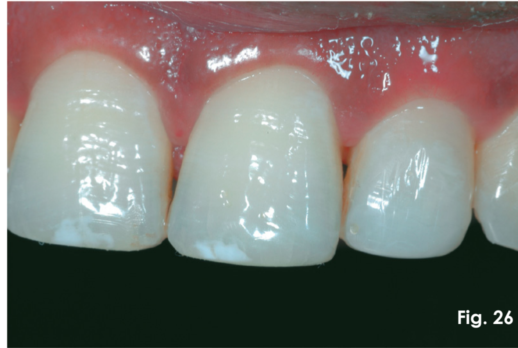

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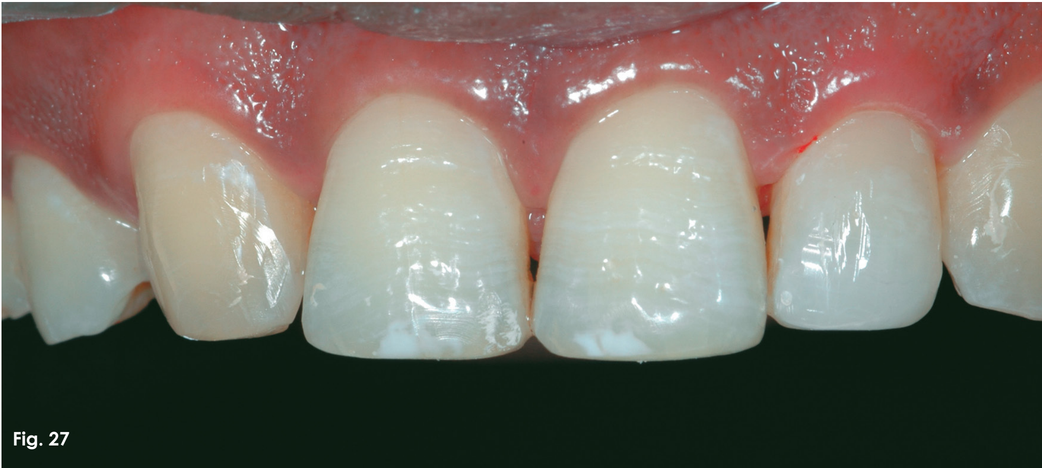

Fig. 27

Fig. 26 - Teeth no 11 & 21 after reductive cosmetic contouring (RCC) and tooth no. 22 after Additive Cosmetic Contouring (ACC)

Fig. 27 - Smile Makeup result after Additive and Reductive Cosmetic Contouring

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The Use of High Magnification in Minimally Invasive Restorative Dentistry. Part II

[1]Jose Roberto Moura Jr., [2]Patricia Buhrer de Moraes

Abstract

Minimally invasive dentistry is a concept that is gaining acceptance from clinicians all over the world as it refers to the preservation of dentitions and supporting structures. However in order to obtain success in this endeavor one must need to use more precise techniques and instruments, therefore it is reasonable to think about the need of an instrument that enhances the visual acuity during treatment. Even though loupes are the most common magnification device used nowadays by dentists, the operative microscope is superior in many ways as it will be shown throughout both parts of this article.

Key words: Minimally Invasive Dentistry, Operative Microscope

Minimally Invasive Dentistry (MID) ultimately means preservation of the dentition and tooth structure while high magnification is the potential for accuracy through an instrument. These two principles are intimately related when we discuss the basic principles of prevention and diagnosis of dental caries, less intrusive treatment for early lesions and conservation of tissue when deep lesions are restored (Figs. 1 and 2). These principles should be followed by clinicians in order to prolong tooth life and to reduce the need for uncomfortable and costly dental treatments.

The classification of cavity design advocated by Mount and Hume has changed the techniques for preparing and restoring teeth. This new approach is based on site and cavity size. The professionals only gain access to the lesion and remove infected areas, without preventive extensions - a G.V. Black concept - perceived tissue conservation during the restoration (Figs 3 to 5).

Conservative restorations make use of adhesive filling materials, rather than amalgam. The advances in material science and adhesive technology require new concepts in the restorative techniques. In other words, the diagnosis, material selection, preparation design, restorative development, placement techniques, pulp protection, restorative finishing and maintenance are the main elements to fulfill the rules of an excellent job.

Cavities can be prepared by a high speed handpiece and very small burs in a more precisely manner when we use some kind of

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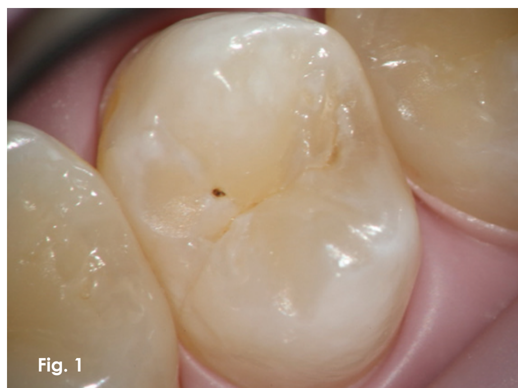


Fig. 1

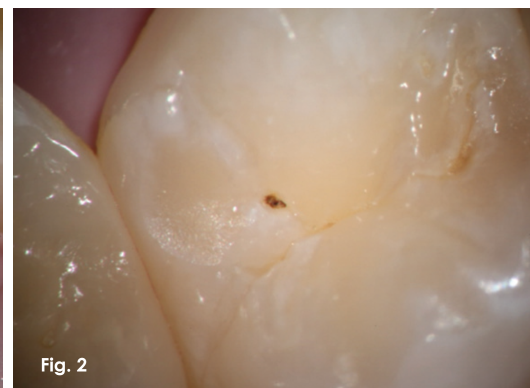


Fig. 2

Fig. 1 and 2 - Visualization of a minimal dental caries.

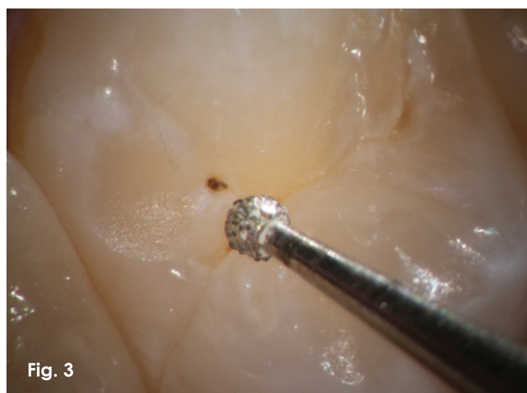


Fig. 3

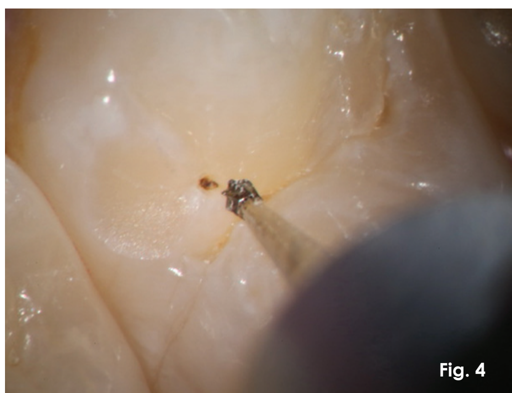


Fig. 4

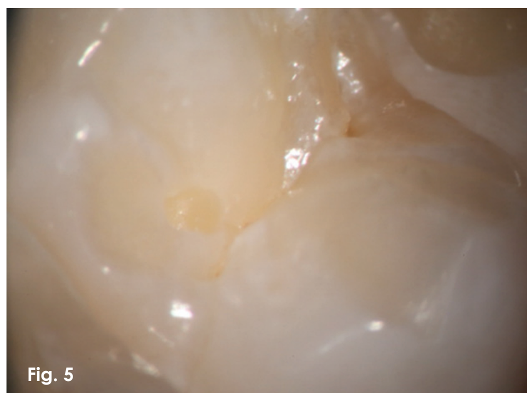


Fig. 5

Fig. 3 to 5 - Comparing the sizes of a #1 diamond and a ¼ size carbide and the final preparation. When we remove less sound dental structure, we will have a longer lasting restoration.

magnification, such as a good pair of loupes or preferably an operative microscope. The size of the cavities can be kept to a minimum and when needed, we may perform tunnel preparations to achieve access to proximal lesions without missing any decayed tissue. One of the most important aspects of keeping the cavity to its smallest size, besides preserving tooth structure, is that smaller adhesive restorations last longer.

High accuracy is another important requirement for successful bonding restorations. As seen in part 1 of this article, Operating Microscopes are an important working tool that offer the clinician a high magnification from 2.5x to 24x - better vision - the best lighting possible, a better working posture, a shadow free visual field and an increased precision in restorative dentistry.

The OM increases precision in caries diagnosis, cavity preparations, preservation of healthy dental structures, and more accuracy in restorative steps.

There are several technologies nowadays that we can use to remove altered dental tissues aided by high magnification. Air abrasion is one technique that uses kinetic energy to remove carious tooth structure. A powerful narrow stream of moving aluminum oxide particles is directed against the surface to be cut. When these particles hit the tooth surface, they abrade it, without heat, vibration or noise. Cavity preparations done with air abrasion have more rounded internal contours than those prepared with a handpiece and straight burs (Figs 4 to 6).

Ultrasonic and sonic systems consist of metallic inserts with diamond abrasive points in different types. The inserts are held in a water-cooled handpiece that emits ultrasonic vibrations. They are useful in minimally invasive procedures and could be used in combination with other techniques like air-abrasion or even electric handpieces.

New technologies for cavity preparation have recently been made available in the market including chemical vapor deposition diamond-coated tips (CVDentus, Brazil). The CVDentus diamond film has drawn considerable attention in the last few years regarding its application on cutting instruments, such as rotary instruments. As for conventional diamond rotatory instruments, CVDentus tips improve the performance and increase the life-time use of burs, and are better than conventional synthesized diamond tips (7).

It has been reported that CVDentus is a dentistry tip made of a single diamond stone, with a well-ordered and rough surface. It is used with ultrasound devices, thus enabling low impact and noise, low sensitivity and lower likelihood of damages to the gingival crest during cavity preparation. A recent study (8) reports that CVDentus tips enable the deposit of smaller quantities of smear layer onto the walls of cavity preparations than traditional methods.

We will see some cases restored with direct composites in posterior teeth as they are more challenging than anterior ones, regarding the detailed visualization of the restorative process when no magnification is used.

Fig. 6 and 7 - This left second lower molar has very small caries in the occlusal surface. The first requirement to execute a successful bonding restoration is the use of the rubber dam. Contamination of the operating field can compromise the optimal bond strengths. It can occur through saliva, moisture from intraoral humidity, blood and crevicular fluid. In figure 7 we can see the image reflected in a good quality front surface mirror.

Fig. 8 - Use of CVD tip that is done using back and forth movements with little pressure.

Fig. 9 - we still can see some very small decay through 8.5 x magnification.

Fig. 10 and 11 - a less abrasive CVDentus tip is used to finish the preparation and remove remaining caries.

Fig. 12 - Final preparation of three small cavities.

Fig. 13 - Etching the tooth: observe that there are bubbles of air blocking the phosphoric acid actiondental Adhesive (Single Bond Plus, #).

Fig. 14 to 16 - Apllying dental adhesive (Single Bond Plus, 3M, USA). The operator should use a microbrush with a specific size – small cavities, small microbrush. In Figure 14 the size is too big and adhesive probably won't penetrate the whole cavity properly. In Figure 15 we can see that an adequate size of microbrush is being used, but in case you don't have one avaliable, use a sable brush instead.

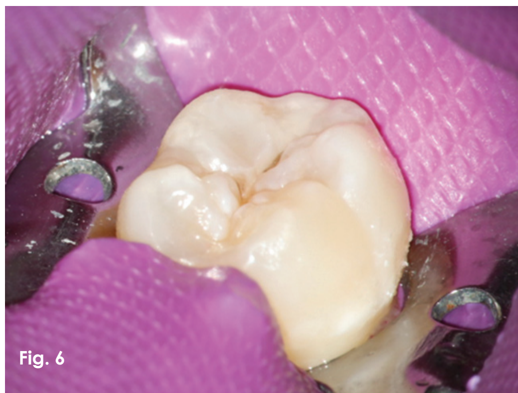


Fig. 6

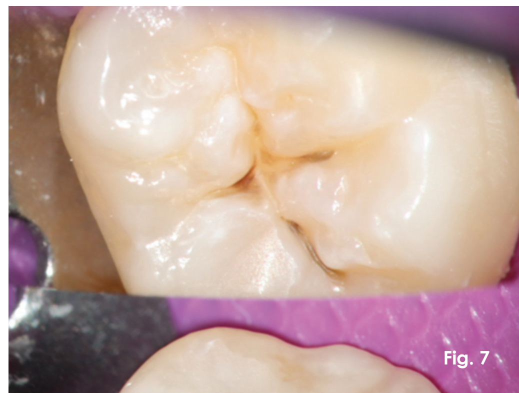


Fig. 7

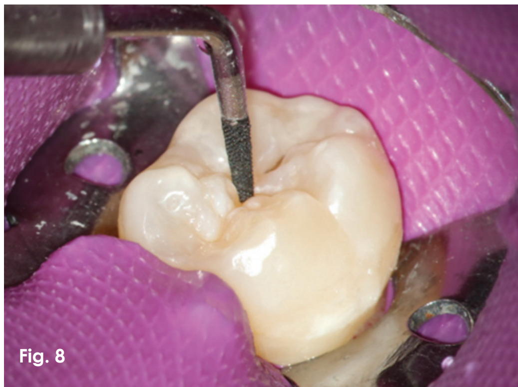


Fig. 8

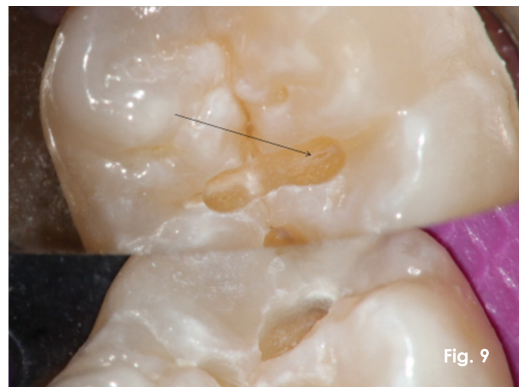


Fig. 9

Fig. 10

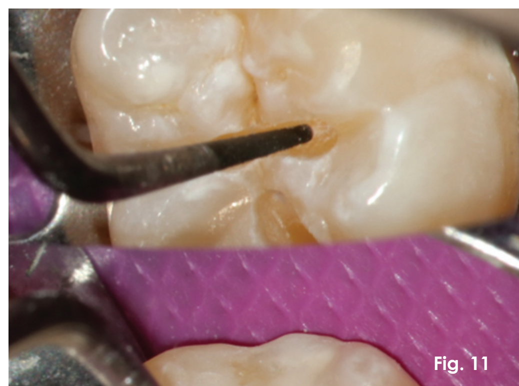


Fig. 11

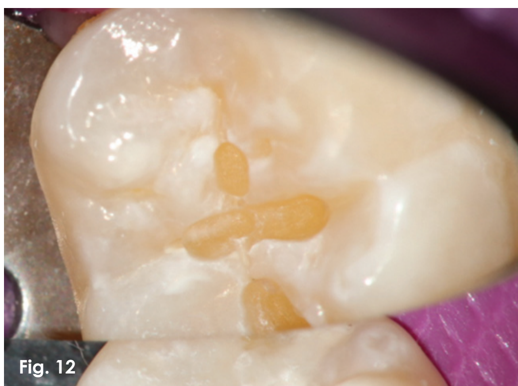


Fig. 12

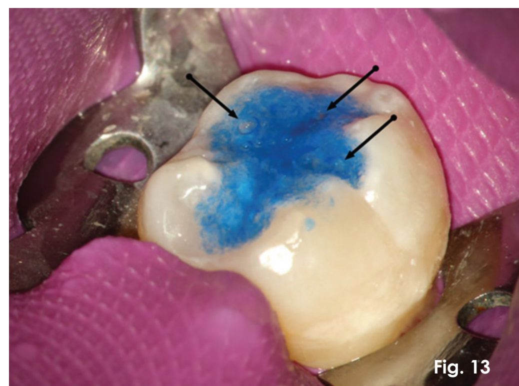


Fig. 13

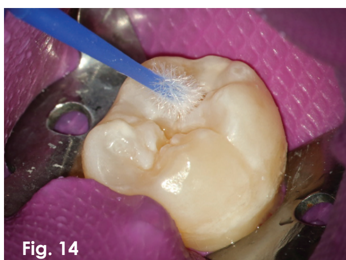


Fig. 14

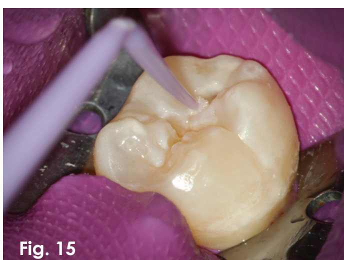


Fig. 15

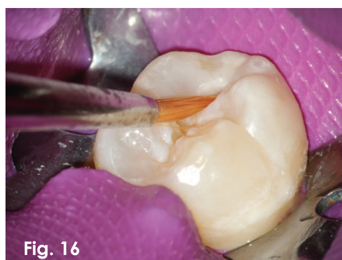
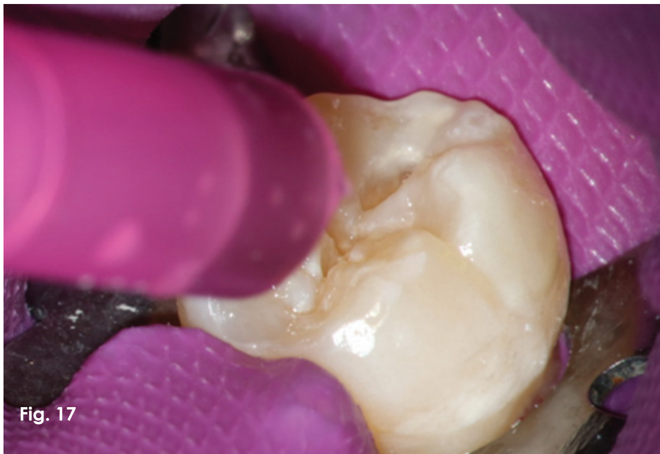


Fig. 16



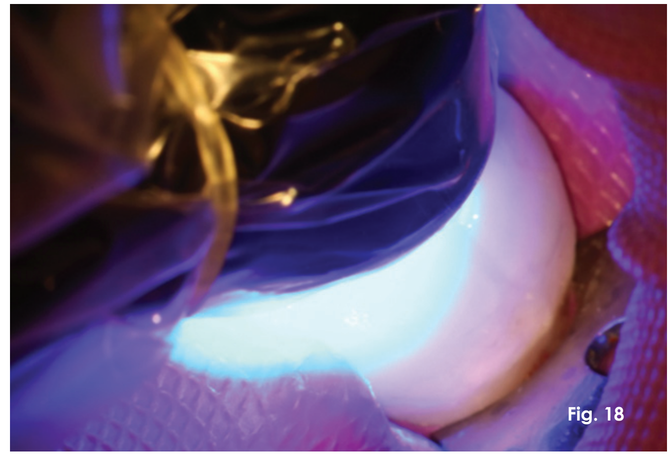
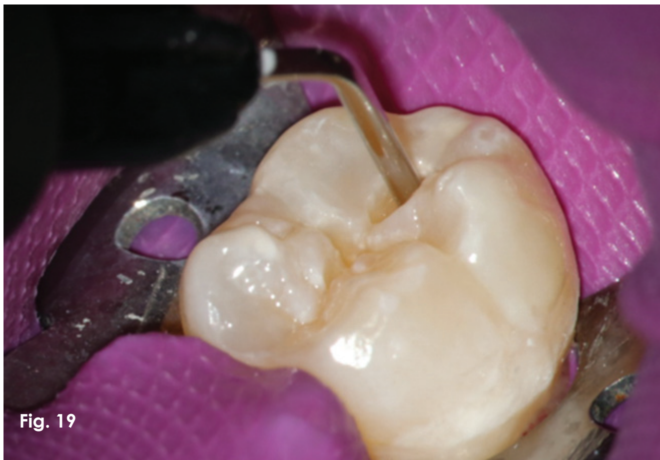


Fig. 17 - Evaporating the solvent before light curing is considered one of the most important steps in the adhesion process.

Fig. 18 - Proper light curing.



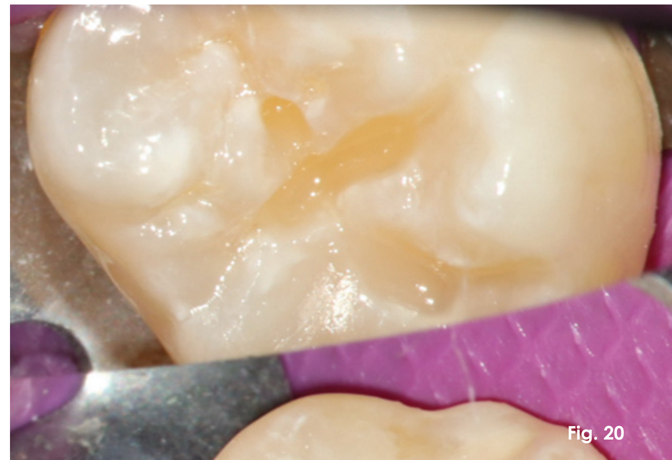
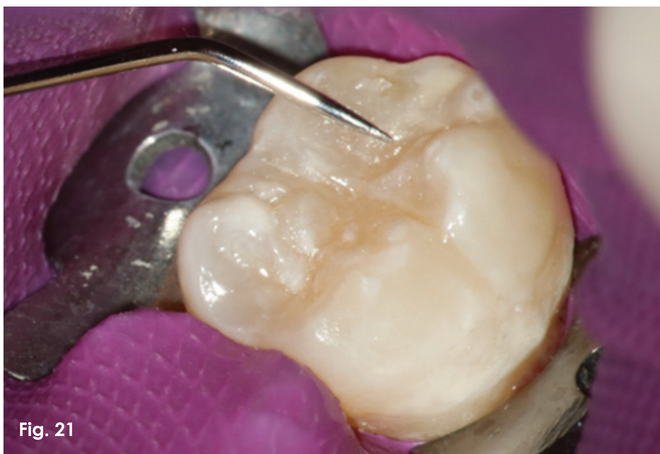


Fig. 19-20 - In direct bonding procedures, the application of the composites in small layers of 1 mm to 2 mm provides enhanced control of condensation of the individual increments of composite resin, densification, improved marginal adaptation, and seal through polymerization of the restorative material and optimal bond formation. It also reduces the effects of polymerization shrinkage. In this case we used a highly filled flowable composite (Beatifil Flow Plus, Shofu, Japan) due to the small size of the cavity. In figure 20 we see the cavities filled with a first thin increment without bubbles. After polymerization, a second increment will fill up the rest of the cavities. We must be very careful as composites when placed in such conditions tend to incorporate air bubbles and that could compromise the resistance of the restoration.



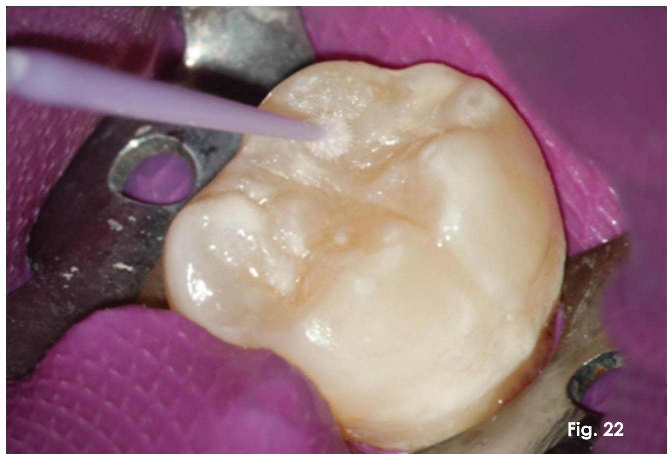
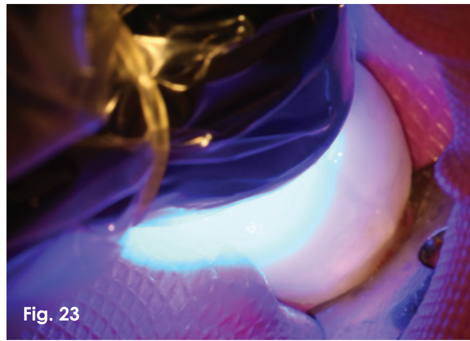


Fig. 21 - 22 - Finishing the anatomy. Most dental microscopes comes with an orange filter that prevents light-cured composites from polymerizing prematurely due to the strong microscope light. However when most of the sculpting is done we usually remove the filter and finish working the anatomy while the composite slowly starts its polymerization process.



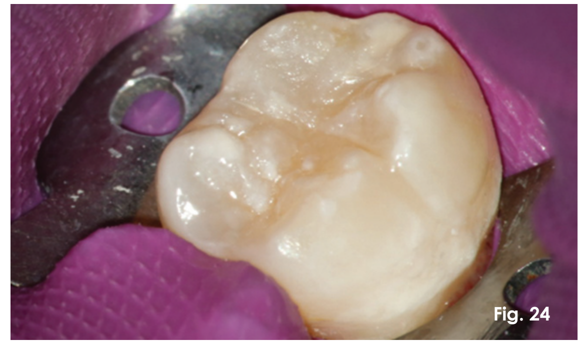


Fig. 23 - After the surface of the restoration doesn't allow us to manipulate it, due to the polymerization that is happening under the microscope light, is time to fully light cure it.

Fig. 24 - The final restoration.

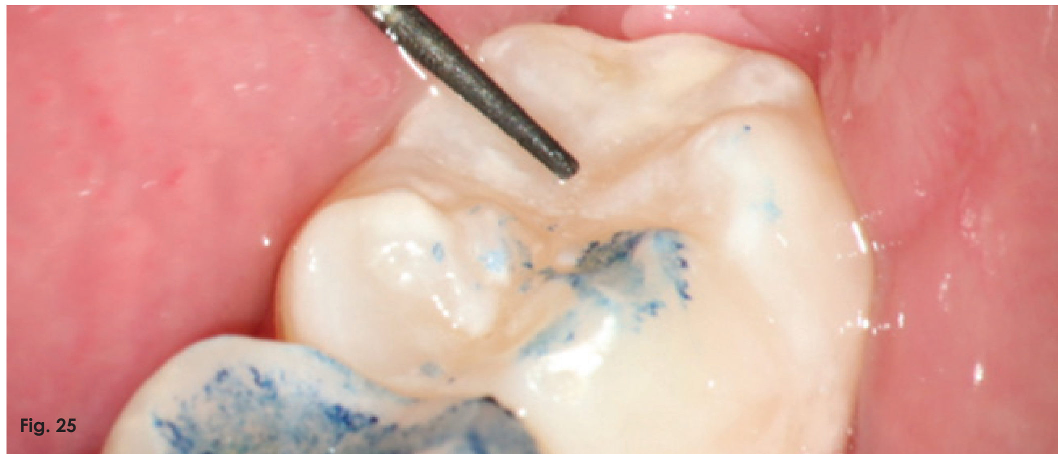


Fig. 25 - Occlusal adjustments with a fine CVDentus tip.

Minimally invasive restorations are frequently considered extremely easy to perform specially due to their small size. However, like any adhesive dental procedure, they should not be taken lightly because they frequently hide some tricky situations that if not properly assessed might lead to an early failure. With that in mind let's take a look at the resolution of the case presented in figures 1 to 5.

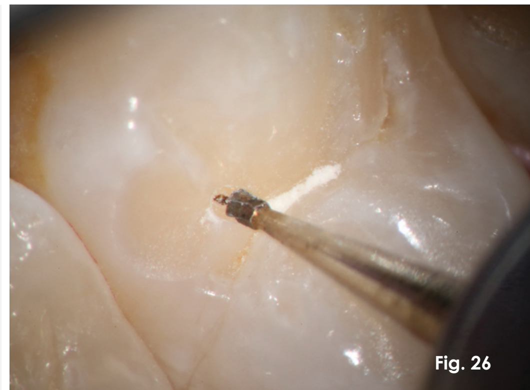
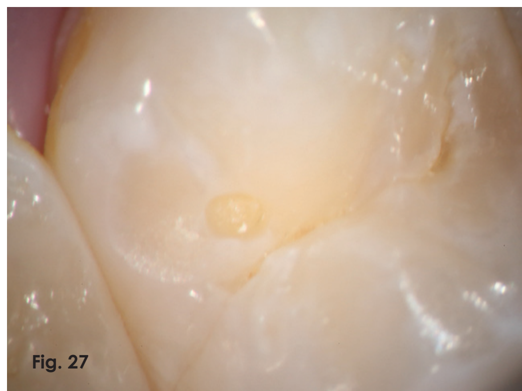
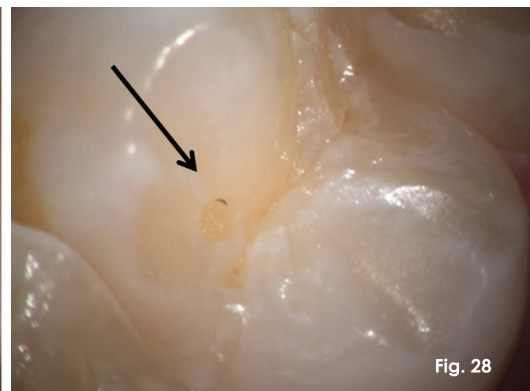
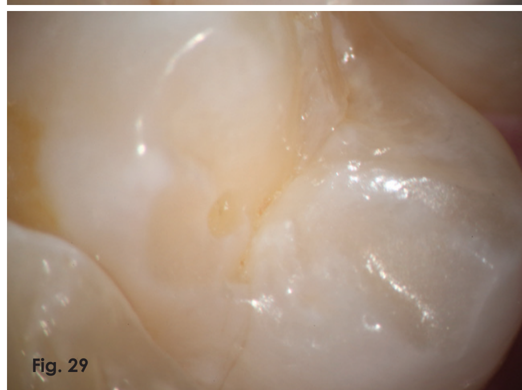


Fig. 26 - Preparation with an adequate bur.







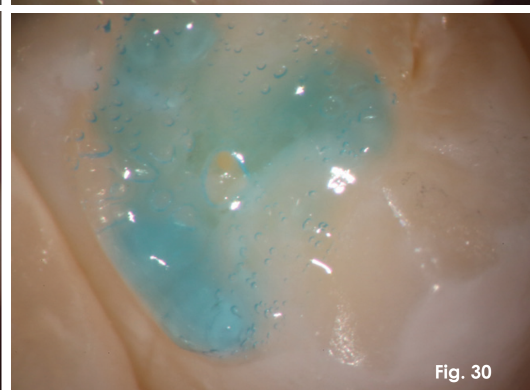


Fig. 27-29 - Preparation looks completed. However if we look closely with a higher magnification in another angle (just easily twisting the mirror) we can still see some decay that is promptly removed.

The use

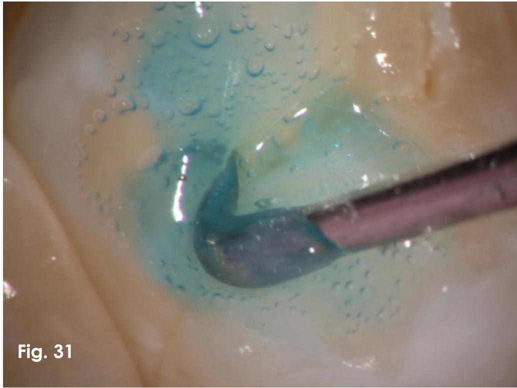


Fig. 31

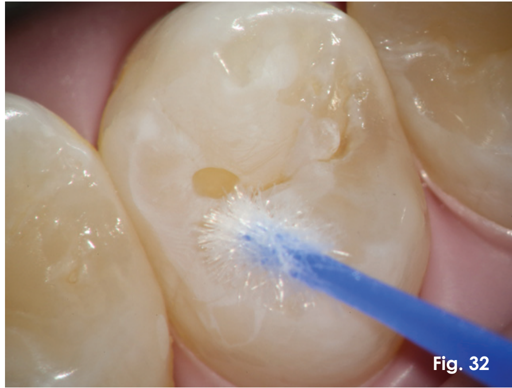


Fig. 32

Fig. 30-31 - Acid etching. Even when we aply phosforic acid with a siringe with a small tip, in a small cavity, you will always find air bubbles that may prevent the acid from working properly. It's important to agitate it with a small brush or a fine explorer.

Fig. 32-36 - In the first picture we see an inadequate microbrush that when used may produce air bubbles

Fig. 32-36 - In the first picture we see an inadequate microbrush that when used may produce air bubbles (fig 33), and even when we agitate it we might still not get ready of them (fig 34). We always need the smallest microbrush (fig 35) or a sable brush (fig 36)

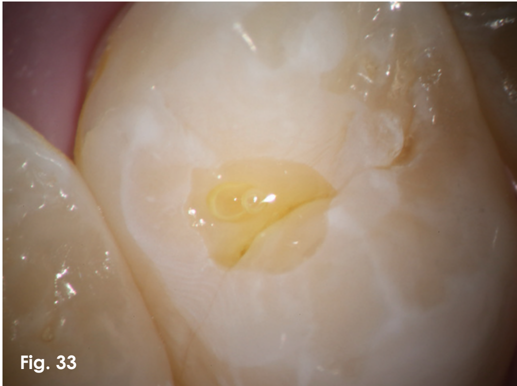


Fig. 33

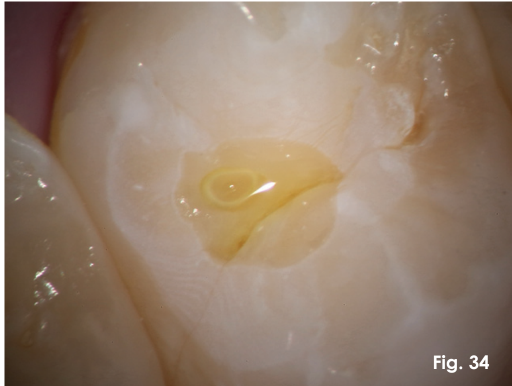


Fig. 34

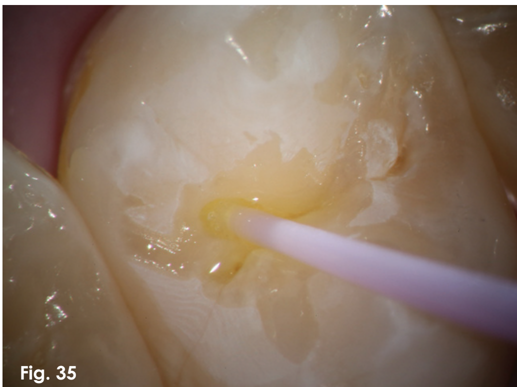


Fig. 35

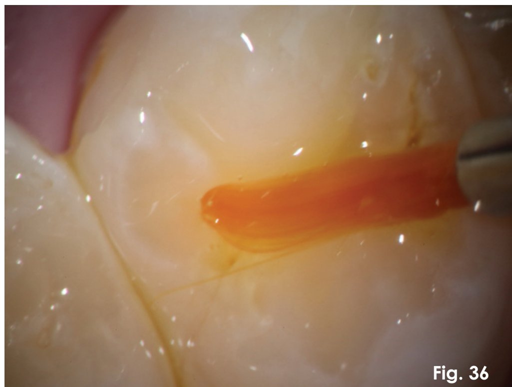


Fig. 36

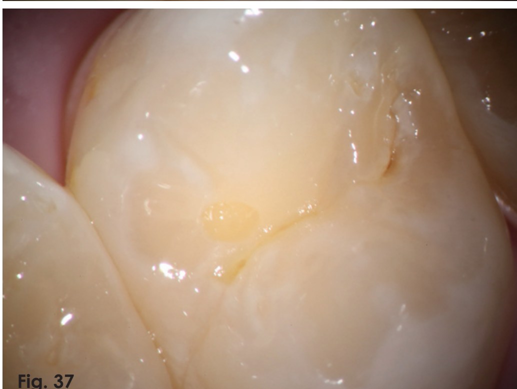


Fig. 37

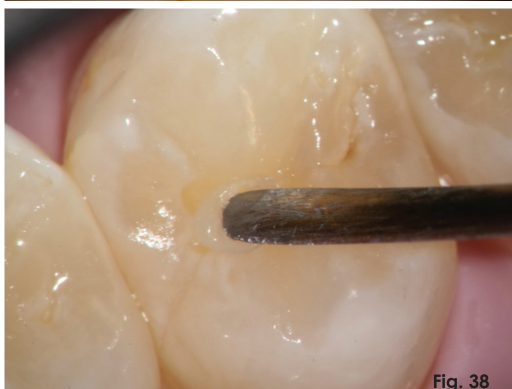


Fig. 38

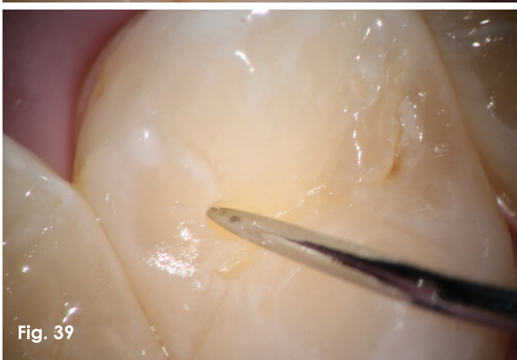


Fig. 39

Fig. 37 - Cavity after light-curing the adhesive. We must ensure that the whole mini cavity" looks shinny.

Fig. 38-39 - The first increment of dental composite (Beautifil II, Shofu, Japan) is carefully placed against the palatal wall making sure there's no air trapped between the tooth and the composite. We work with a fine instrument to accommodate the material, remove excesses and adapt tit to the cavosurface margin

Another aspect we must observe and where magnification is of upmost importance is when we need to adapt a matrix at the gingival margin of a proximal cavity.

Fig. 40-42 - After polymerizing the first increment we place the second one against the buccal the same way we did before. Now we let the light of the microscope work a little bit on the light cured composite while we finalize the anatomy and remove the final excess with the help of a micro-brush. It's interesting to see that the strong illumination provided by the microscope makes the beginning of the polymerization very slowly. Once we feel that the surface is hard enough we cover it with glycerin gel to prevent the formation of the oxygen-inhibited layer, then we fully polymerize the restoration.

Fig. 43 - Final restoration. This is still a very easy restoration to perform because once you know the concept of minimally invasive restorations with the aid of a good magnification there's no waste of time as you can do everything more precisely.

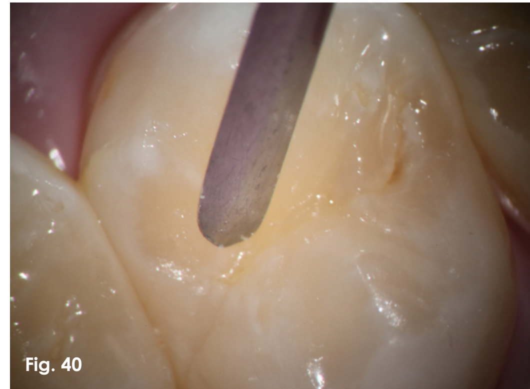


Fig. 40

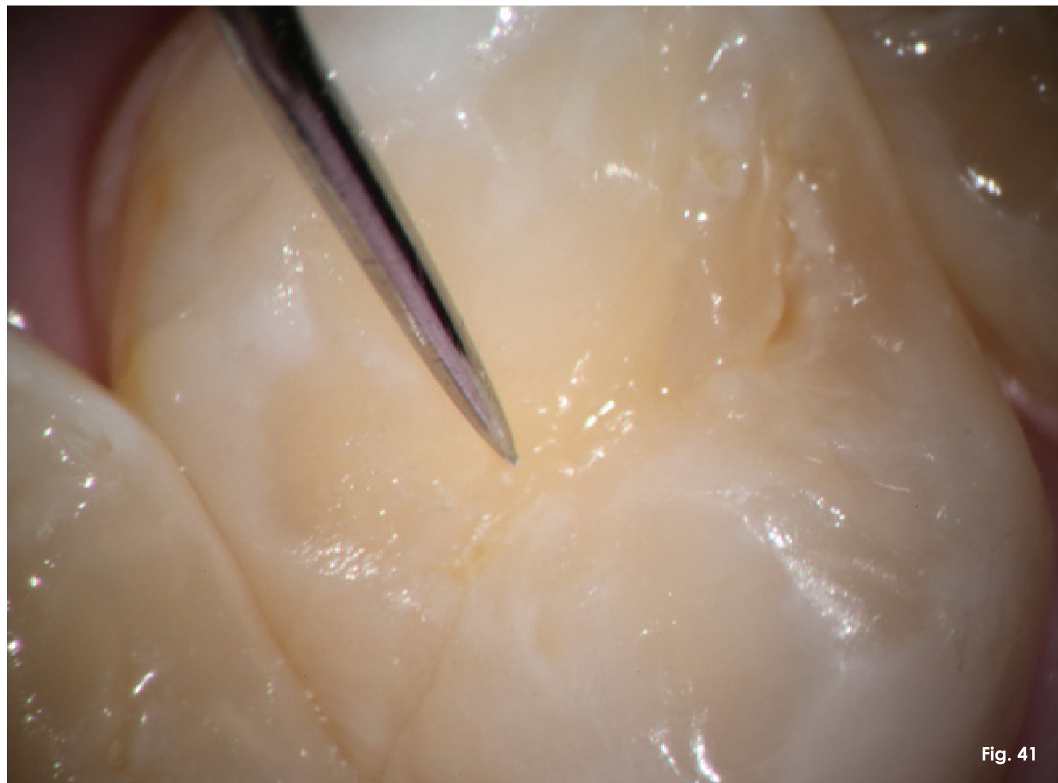


Fig. 41

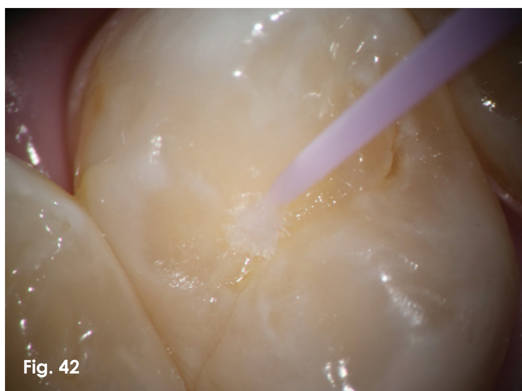


Fig. 42

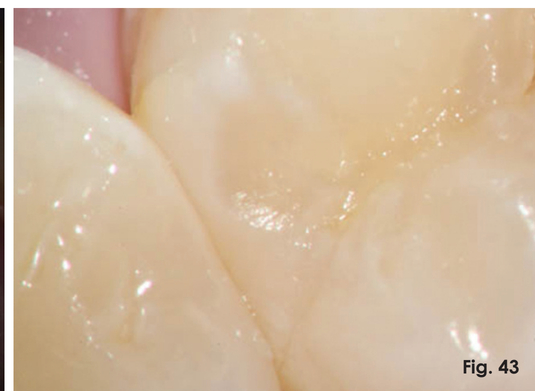
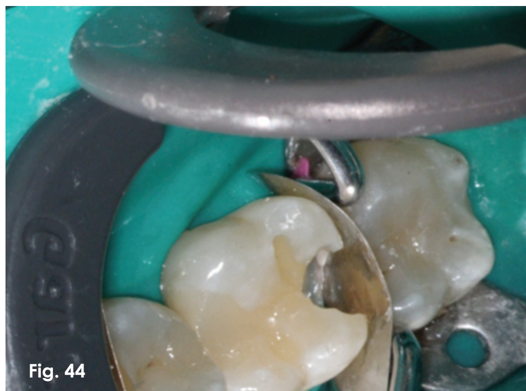
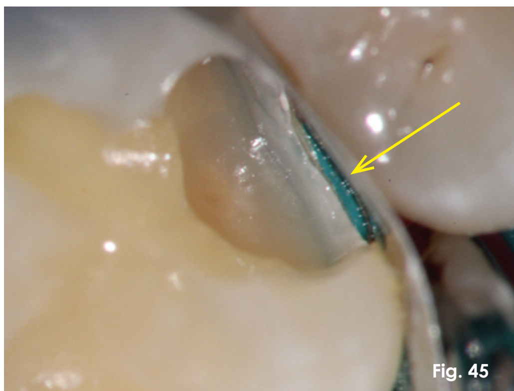


Fig. 43





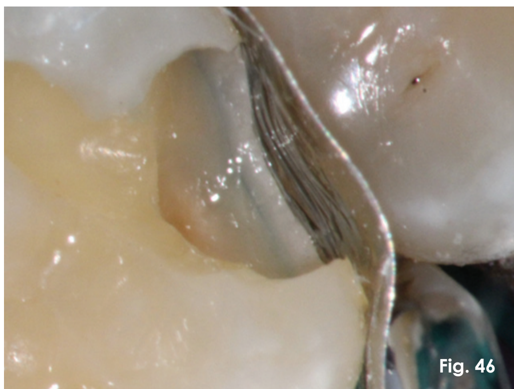


Fig. 44 - Matrix in place (Composi-Tight, Garrison, Germany) as seen without magnification.

Fig. 45 - When looking under magnification It is possible to notice a gap between the matrix and the margin of the tooth and some rubber dam is trapped in it. This situation is more frequent than we realize

Fig. 46 - After pulling down the rubber dam and changing size and shape of the wedge we can see the ideal adaptation of the matrix toward the tooth

When performing a restoration according to the minimally invasive concept there are some errors that the practitioner could inflict due to the narrow access to the cavity, and to the limited visual access. The use of an operative microscope could make this effort easier and safer in situations such as:

1. Better diagnostics
2. Better visualization of the cavity and complete removal of all caries and/or old restorative material
3. Careful removal of dental plaque, especially in those areas that are difficult to visualize (i.e. lingual surfaces and interdentally)
4. Avoiding bubbles during acid and adhesive application.
5. Correct adaptation of matrices when needed
6. Correct placement of restorative material
7. Proper anatomy during placement of restorative material

References

8. Conde A. Estudo comparativo entre preparo cavitário ultra-sônico e alta rotação (Comparative study between ultrasonic cavity preparation and high-speed handpiece preparation) , RGO 52 (2004) 169–172.
9. Vila Verde A, Ramos MMD, Stoneham AM, Benefits in Cost and Reduced Discomfort of New Techniques of Minimally Invasive Cavity Treatment . J Dent Res 88 (4): 297-299, 2009.
10. Barkmeier WW, Shaffer SE, Gwinnett AJ. Effects of 15 vs 60 enamel acid conditioning on adhesion and morphology. Oper Dent 1986; 11(3):111-116
11. Friedman MJ, Mora AF, Schmidt R. Microscope-assisted precision dentistry. Compendium 1999;20(8): 723-37
12. Hamilton JC, Dennison JB, Stoffers KW, Wdlch KB. A clinical evaluation of air-abrasion treatment of questionable carious lesions: a 12-month report. JADA 2001; 132:762-9.
13. Hicks JF, Parkins FM, Flaitz CM. Kinetc cavity preparation effects on secondary caries formation around resin restorations: a polarized light miscroscopic in vitro evaluation. ASDC J Dent Child 2001;68(2):115-21, 80, 142.
14. Sein H, Ahmed W, Jackson M, Woodwards R, Polini R. Performance and characterization of CVD diamond coated, sintered diamond and WC-Co cutting tools for dental and micromachining applications, Thin Solid Films 447–448 (2004) 455–461.
15. Mount GJ, Hume WR. A revised classification of carious lesions by site and size. Quintessence Int 1997: 28:301-3.
16. Tyas MJ, Anusavice KJ, Frenhcken JE, Mount GJ. Minimal intervention dentistry – a review. FDI Commission Project 1-97. Int Dent J 2000; 50: 1-12.
17. Worschech CC, Moura Jr JR, Fonseca DM. Micro-operative dentistry: Why do it? Quintessence Dent Technol 2007; 30:199 – 205.
18. Moura Jr JR. Operating microscope in restorative dentistry: The pursuit of excellence. Aesthetic Dentistry Today 2008; 2: 29 – 33.

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The main objective of this exclusive interview section is to highlight the clinical experiences and knowledge of the world renowned clinicians & academicians obtained in the field of cosmetic dentistry. The Editor-in-Chief Dr. Sushil Koirala therefore undertakes discussions with eminent clinicians & academicians who have contributed significantly for the promotion and development of quality cosmetic & comprehensive dentistry around the world. In this issue, we are proud and honored to present an exclusive interview of ***Dr. Claude R. Rufenacht*** *(Switzerland) .*

Use technology
but be an artist
as you are in
aesthetic dentistry

Claude R. Rufenacht

Dr. Claude R.Rufenacht , born in 1937, was raised and educated in Switzerland at the Lausanne school of medicine and the Geneva school of dentistry. He completed his postgraduate medical education in the USA.
He maintained during forty years a private practice in Geneva, counting among his patients prominent international personalities of the political, business and artistic world. His activity as a clinician was rewarded by three State Awards.
In 1989 he published "Fundamentals of Esthetics",1989, (Quintessence Publish.) and in 1999 "Principles of Esthetic Integration", 1999 , (Quintessence Publish.) A last publication " Fundamentals of Esthetic Analysis" was finished in 2009. Its first part, based on the analysis of art works and dedicated to the identification of the esthetic language was bought back by the group which sponsored this study. The second part dedicated to the dento-facial analysis found applications in the industry .
C.Rufenacht gave more than 250 presentations worldwide. He is one of the two founding members of the EAED and is honorary member of the German society of Esthetic Dentistry. He has no affiliation with dental groups or associations but is a member by invitation of a couple of private economic, artistic or diplomatic clubs or groups.
These five last years Dr. Rufenacht was invited to join the board of two international companies active in the luxury business where he was in charge of foundations sponsoring various programmes in art and medicine . At the same time he participated to the "think tank" of a cosmetic company. He retired in 2012.

Q. *Would you please give a brief history of your family and kindly tell us how you got started in dentistry?*

I come from a family of diplomats of Swiss-German origin. My father's nomination to the executive committee of a multinational food company freed us from the constraints of changing postings and established us on the shores of Lake Geneva.

At the age of seventeen I joined in parallel the school of medicine and the faculty of law. After a first year in these disciplines I opted for medicine and followed up with the studies of dentistry. Hospital internships, doctor's degrees and postgraduate studies in the United States completed my basic professional education.

I was then naive enough to believe that I could devote myself to my true passion, art. Alas the demands of life dissuaded me from getting involved in a new course of study offering highly uncertain prospects. My relationship with art was therefore going to be limited to perpetuating a family tradition: becoming a collector. I did not know that this would condemn me to a double life, albeit a perfectly legitimate one. Indeed, when I was not working I was sitting in my library or visiting galleries, museums, auction houses, art events, since being a collector involves accumulating knowledge and experience in order to train one's eye and taste with a single aim: to select the most beautiful.

Q. *Why your inclination is more towards aesthetic dentistry and writing books?*

Probably, but that came naturally. It was normal to carry inside me some points of reference and reflections, just as normal to use them in my clinical practice and even more to set them down in writing.

"Fundamentals of Esthetics" (Quintessence) is the fruit of those resources. It was published at a key moment, at a time when we began to use tooth coloured materials on a regular basis as well as a clinical protocol to ensure not only the aesthetic outcome but also the durability of our reconstructions.

Q. *Was it a prerequisite for you in mastering occlusal problems?*

Indeed. For nearly fifteen years this requirement was perfectly met by using gnathological techniques, a purely mechanical and scientific occlusal concept based on the recording and precise transfer of mandibular movements into a fully adaptable articulator. Unfortunately, the use of precious metals on occlusal surfaces and the reduced design of the posterior and anterior tooth morphology resulting from these recordings make this concept hardly compatible with aesthetics. It was therefore important to adopt a new concept and an aesthetics-friendly clinical protocol.

Observation showed us that natural unworn adult occlusions had a very pronounced anterior disclusive angle. Mechanically, this "verticalisation" of the disclusive angle allows to prevent posterior contacts during "tooth closer patterns" (Lee, Rufenacht : Fundamentals of Esthetics). This is crucial because posterior premature contacts generate avoidance movements that in turn and beyond

> Observation showed us that natural unworn adult occlusions had a very pronounced anterior disclusive angle. Mechanically, this "verticalisation" of the disclusive angle allows to prevent posterior contacts during "tooth closer patterns"

> Most of our patients wish to maintain their own physical features and morphopsychological profile, a requirement difficult to meet today for want of an analysis protocol. Therefore it is not very serious to use these same aesthetic principles and anatomical references as elements of aesthetic analysis to finally offer a unique, ideal, perfectly symmetrical dental arch design, a kind of universal "Hollywood smile".

conscious control, gradually destroy the morphology of the incisive edges of front teeth whether they are natural or artificial (Assal, Rufenacht : Principles of Esthetic Integration). These are part of the elements of knowledge which we have progressively introduced into our clinical protocol.

Ten years later a schematic approach to facial morphology in which our reconstructions had to take place and the mastery of various parameters such as occlusal, periodontal or implants led to a second book, "Principles of Esthetic Integration" (Quintessence).

ing, endodontics, a split tooth and eventual extraction. Repair of restorations is now seen to be a viable option in many cases of localised defects, and studies have shown an acceptance by patients of a repair approach.

Q. Why did you select this title?

Any act of reconstructive surgery only makes sense if it is biologically, mechanically or aesthetically integrated into its environment.

At that time we were already aware that the word "esthetic" in this title was inadequate. Never ever the application of the aesthetic principles and of the various anatomical reference points described in this book and in the earlier one did ensure an aesthetic integration of our reconstructions to the facial environment. Nothing else is ensured but … a morphological normality. In fact the type of dental arrangement resulting from the strict application of aesthetic principles, very attractive up close, appears suddenly static, soulless, artificial, uniform and repetitive when confronted with its facial environment.

In our clinical practice the only cases that seemed aesthetically integrated were reconstructions performed on diamond-covered, hyper-botoxed, multi-face-lifted patients in whom a perfectly symmetrical and ultra bright tooth alignment superbly completed the image of extra terrestrial mummies obtained by such repeated cosmetic surgical retouching.

Q. Do you call it a Hollywood smile?

You named it. The European jet-set is probably quite similar to the Hollywood jet-set but both represent a very limited group of patients which remains outside the norm. Most of our patients wish to maintain their own physical features and morphopsychological profile, a requirement difficult to meet today for want of an analysis protocol. Therefore it is not very serious to use these same aesthetic principles and anatomical references as elements of aesthetic analysis to finally offer a unique, ideal, perfectly symmetrical dental arch design, a kind of universal "Hollywood smile". Yet this is precisely what literature dedicated to aesthetic dentistry proposed a few years later.

Q. Are you therefore embarked on a new research?

Quite so, helped by circumstances in the form of a sponsorship generously provided by one of my patients and driven by intellectual curiosity, because while we had the title of this research: "Fundamentals of Esthetic Analysis", to our extreme frustration we had no content.

Q. What do you mean by aesthetic analysis?

Aesthetic analysis can be defined as "the assessment of an emotional impact as one perceives an aesthetic phenomenon". It has been said that analysing a form as a geometric element has always proved and will always prove totally useless. A geometric form only acquires aesthetic value when it perfectly expresses its internal content or meaning. This means that factors creating an aesthetic phenomenon can only be found beyond or behind the visible, at a level where they can be picked up by our sensibility and consciousness.

Q. Don't you think they all are very philosophical and difficult in day to day esthetic dentistry practice?

Not really, it was rather an essential starting point for a research that would require us to decrypt, in a composition, the ranges of resonances and meanings that trigger the aesthetic feeling. As a matter of fact, we analysed abstract paintings with the help of five art experts in order to identify what we have called the elements of aesthetic language, the comprehension of which is at the very core of aesthetic analysis.

This is how we gradually identified in a composition rhythms, weights, tensions, harmonic tracings,

> It has been said that analysing a form as a geometric element has always proved and will always prove totally useless. A geometric form only acquires aesthetic value when it perfectly expresses its internal content or meaning.

It is amazing to note that I had to wait until the end of my career for an analytical tool to provide corrections necessary for the customisation and dento-facial harmony of our reconstructions.

structural lines for example, basic elements generator of an aesthetic emotion. It then remained to identify them in the dento-facial composition, which did not go without serious difficulties. It is amazing to note that I had to wait until the end of my career for an analytical tool to provide corrections necessary for the customisation and dento-facial harmony of our reconstructions.

Q. *How do you see the role of professional academies in the promotion of such research and in the promotion of aesthetic dentistry ?*

Professional organisations assume a very important role in taking the baton from universities in the propagation of knowledge. In aesthetic dentistry, however, I note a profusion of congresses and meetings with the corollary of self-referencing and curbing of novelty. The themes treated, borrowed moreover from restorative dentistry, periodontology and implantology, have been the same for twenty five years. Relative to the topic "aesthetics" which can be defined as "a perfect balance of forms and colours" it does not seem to attract a lot of attention. It is a pity. In the absence of analytic tools current aesthetic dentistry is condemned to make beautiful dental arches and to fool human individual characteristics because the harmonious relationships between dental reconstructions and facial environment are left to the laws of hazards.

To return to "Fundamentals of Esthetic Analysis", we found very rewarding opportunities in the fields of art and industry in terms of ten years of contracts. I turned to this when I realised that my first two publications had been ignored by most of major esthetic groups may be for political reasons.

You can observe, however, that these publications have profoundly influenced a number of their members individually and had a worldwide impact.

Q. *Knowledge, skills and training in aesthetic dentistry are becoming expensive. Could you explain how one can upgrade clinical skills with minimal costs?*

Learning is expensive so don't run from one congress to another. Make a selection. Above all emphasize the knowledge of techniques you will be able to use in your daily practice. For that, approach your local colleagues or academics near you who have mastered these techniques. Get involved in a study club. I've known some that are perfectly organised, bursting with ideas and impressive for their knowledge.

Q. *How do you judge the professional success of an aesthetic dentist and how did you attain success?*

There is no miracle; it is based on an accumulation of knowledge and a personal predisposition to apply it. But it is the way you are perceived by your audience or your patients that will be decisive. In medicine one has to inspire confidence. Personally, my clinical career which was already very solid took off internationally the day it was organised around my only practice in an environment counterfeiting that of luxury business, that is to say capable of satisfying a very high-end clientele. But this type of very demanding clientele does not fall from the sky. It was the result of over twenty years of privileged social and friendly contacts. At that level trust can only be built slowly.

do not be invasive; the original is the best guide for your technician.

Q. *Lastly, would you kindly give our readers an advice that they can apply in their clinical practice?*

Personally I have worked very hard on my cases in order to customise them. Now that I have a tool for aesthetic analysis, thanks to "Fundamentals of Esthetic Analysis" I realize that my results were not always quite to-the-point. To avoid failures:

- do not be invasive; the original is the best guide for your technician.
- avoid symmetry, which does not exist in nature but which the aesthetically inept articulators impose on you due to a picture plane dictating a horizontal structural line.
- work on the design of the central incisors, then on the design and position of the laterals. They are rarely identical and never fall into the same line. This will probably free the inter-incisor spaces involved in the vertical and horizontal dento-facial rhythms . A good way to avoid a Hollywood smile. To do that work on a sitting patient, train your eyes. You will experience how much your patient appreciates your care in treating his case individually. Use technology but be an artist as you are in aesthetic dentistry. I wish you good luck. ■

avoid symmetry, which does not exist in nature but which the aesthetically inept articulators impose on you due to a picture plane dictating a horizontal structural line.

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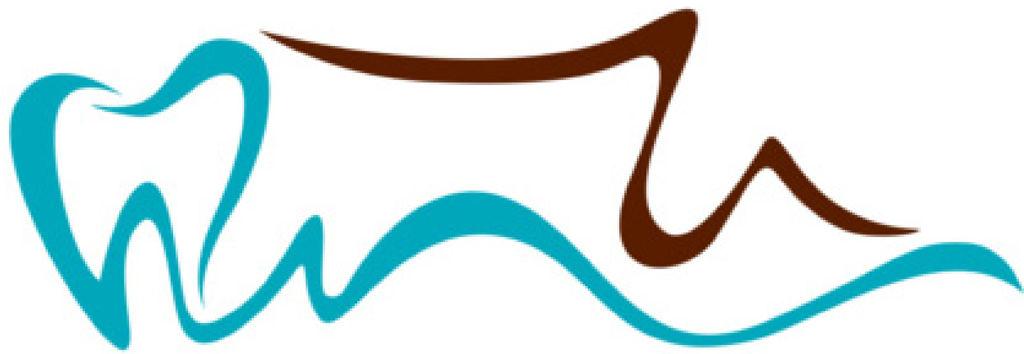

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'THE BIG 5 - A Paradigm Shift'

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14th Biennial Meeting of AAAD

Dec 16-18, 2016, Kathmandu, Nepal

TMJA Harmony International Mini Residency Program, 2014

Seventy-three clinicians and officials from over eleven countries namely Vietnam, Cambodia, Canada, China, USA, India, Philippines, Thailand, Egypt, Indonesia and Nepal were gathered at TMJA Harmony International Training Center, IACAD, Faculty of Dentistry Thammasat University, Thailand on 28 April – 2 May 2014, to be a part of the second TMJA Harmony International Mini Residency Program.

TMJA Harmony International Mini Residency is an advanced and comprehensive clinical training program focused on TMJA Disorders (Occlusion, TMD, Dental Airway and Sleep Medicine) organized jointly by Vedic Institute of Smile Aesthetics (VISA), Nepal and Faculty of Dentistry Thammasat University, Thailand. The Program was monitored and accredited by TMJA Harmony Global Academy to meet the high educational standard.

The managing Director of IACAD Dr. Lertit Sarinnaphakorn welcomed all of the international participants; Chief Program Coordinator and President of VISA, Dr. Sushil Koirala gave a brief introduction of the program and the Dean of the Faculty of Dentistry, Thammasat University, Prof. Sittichai Koontongkaew, officially inaugurated the program on 28th April, 2014.

Dr. Sushil Koirala (Nepal), Dr. Larry Hill (Canada) and Dr. Green Scott (USA) were the program instructors and Dr. Phanomporn Vanichanon (Thailand), Mr. Greg Kamyszek (USA), Dr. Lertit Sarinnaphakorn (Thailand), Dr. Vikas Aggarwal (India), Dr.Eillen Baque Manalang (Philippines), Dr. Wipasinee Phuapradit (Thailand) and team of doctors from Faculty of Medicine Thammasat University, led by Dr. Orapan Poachanuoon along with Dr. Araya Satdhabuda, Dr. Narongkorn Saiphoklang and Dr. Nida Rueangwait were the guest speakers of the program . The five day

training program was completed with dietetic lectures and live clinical demonstration sessions at the international TMJA harmony clinic.

This international comprehensive TMJA program was proved to be a milestone to connect and develop professional relationship among Occlusal and TMD experts of various countries, and also created a forum for them to exchange their knowledge and skills in the field of TMJA disorders management.

Faculty of Dentistry, Thamassat University had organized a welcome dinner with Thai cuisine and cultural programs on the same day.

The five day program was concluded on 2nd of May, 2014 by the Dean with Certificate distribution ceremony. During the closing ceremony Program coordinator Dr. Sushil Koirala announced that the next TMJA Harmony International Mini Residency Program will be held in India in 2015.

Digital Force Mapping

TU ICAD

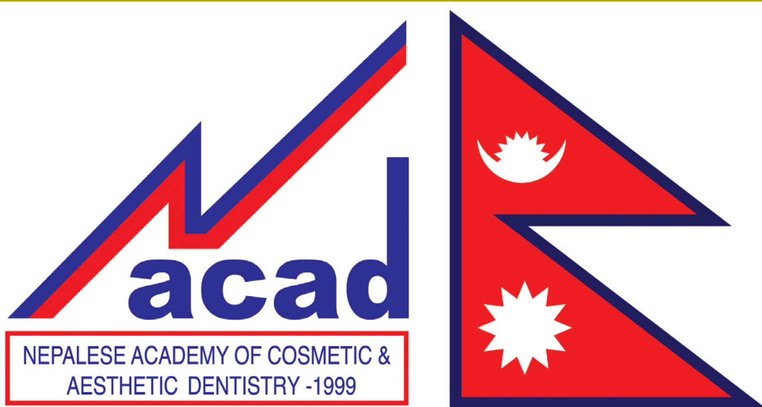
Digital Technology in Dental Practice

คณะทันตแพทยศาสตร์
Faculty of Dentistry
En Voyage

Welcome Party
May 28th, 2014

The Land of Smiles & Do No Harm Cosmetic Dentistry

Dr Sapana Piya
President, Nepalese Academy of Cosmetic & Aesthetic Dentistry



Nepal is located in the Himalayas and bordered to the north by the People's Republic of China, and to the south, east, and west by the Republic of India. With an area of 147,181 square kilometers (56,827 sq mi) and a population of approximately 30 million, Nepal is the world's 93rd largest country by land mass and the 41st most populous country. Kathmandu is capital of the nation and a treasure house of ancient art and culture.

Nepal is one of the richest countries in the world in terms of bio-diversity due to its unique geographical position and altitude variation. The elevation of the country ranges from 60 meters above sea level to the highest point on earth, Mt. Everest at 8,848 meters, all within a distance of 150 kilometers resulting in climatic conditions from sub-tropical to arctic. This small, hospitable country has since become an exceptionally popular destination for travelers, whether they are in search of climbing challenges or spiritual enlightenment.

When you visit this beautiful country, the first thing you will notice is, every face wears a smile. No matter where you go, a big city or a land, where life is challenging, every person you will come across will greet you with a smile. Here peace begins with a smile. They respect all people around the world, whoever comes to visit their country. Nepali people are famous for being friendly and many visitors leave their heart behind after a visit.

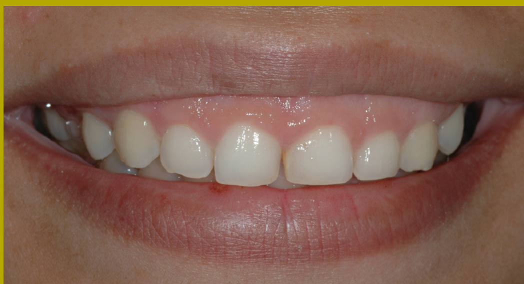
Nepalese culture and society give due priority to beautiful smiles. In Nepal, smile defects such as, mid line diastema , anterior crowding , broken front teeth and dull teeth are culturally considered unlucky and people generally desire for beautiful smiles with style.

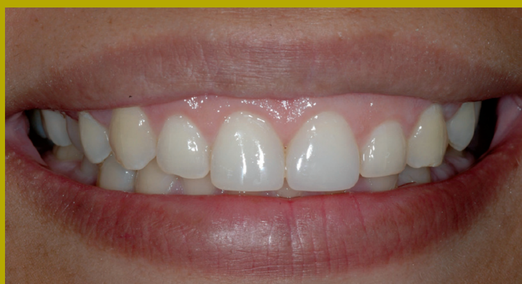
Nepalese Academy of Cosmetic & Aesthetic Dentistry (NACAD) was established in 1999 under the leadership of Dr. Sushil Koirala to promote modern cosmetic dentistry with cultural, social and emotional touch. The academy is playing a key role in promoting

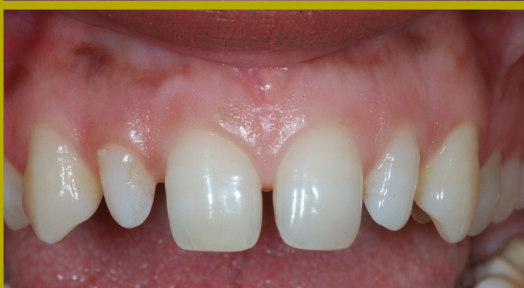
high quality cosmetic dentistry among Nepalese professionals and organizing skill training for young dentists. NACAD is also an active organization in South Asia for the development of professional harmony through the exchange of knowledge and skills among regional cosmetic dentists. Also to institutionalize the regional activities, the South Asian Academy of Aesthetic Dentistry (SAAAD) was established by NACAD with the support from Sri Lankan Academy of Cosmetic & Aesthetic Dentistry in 2005.

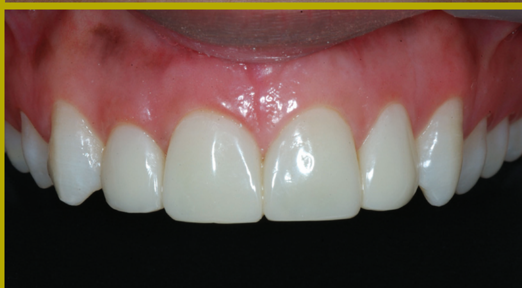
NACAD had played a vital role in promotion of Minimally Invasive Cosmetic Dentistry (MICD) concept and treatment protocol by organizing a regional conference in 2009 in Nepal. MICD protocol now is globally popular as a clinical trend in cosmetic dentistry, and it is interesting to note that, it is becoming popular among general public as "Do No Harm Cosmetic Dentistry". The Executive Board of NACAD has recently decided to adopt "Do No Harm Cosmetic Dentistry" as one of its official slogans.

Let's promote "Do No Harm Cosmetic Dentistry" for better patient care and professional harmony.









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