SEAN PARK MDC DTG

ACHIEVE MASTERY OF ALL-CERAMICS WITH NORITAKE PORCELAINS

INTRODUCTION

When it comes to anterior fabrication, in order to achieve an esthetic and natural outcome with all-ceramic restorations, there are many things that should be considered such as the amount and types of preparations, the shade of stump and different types of implant abutments to name a few. All-ceramic material has its own level of translucency, and the fabrication becomes more challenging if there is dark stump shade. Importantly, it is critical to obtain proper space when performing layering technique due to the utilization of high opaque all-ceramic material for proper masking. Furthermore, when choosing minimally invasive feldspathic material, the shade of stump must be considered because of its minimal thickness and the material's high translucency.

The purpose of this article is to share ideas to challenging situations when fabricating all-ceramic anterior cases with minimally invasive as well as zirconia cases to achieve the best possible esthetic result with Noritake porcelain system.

CASE 1

Clinician- Dr. Johan Figueira
Restored tooth- #6-#11
Material-Feldspathic veneers with Noritake EX-3 Super porcelain

DESCRIPTION

A female patient in her 30s, after divesting minimally invasive feldspathic veneers from refractory die, often times minor correction- adding porcelain is necessary. [Fig. 1] It is technically sensitive to bake thin veneers because it could become deformed. It will be ideal to use low fusing porcelain such as Noritake EX-3 Add-Mate porcelain. The range of high temperature for Add-Mate porcelain is between 660 to 700 Celsius, which makes it possible to perform minor corrections safely without deforming veneers.

[Fig. 1] Adding mesial proximal contact with Noritake EX-3 Add-Mate porcelain after divesting.

CASE 2

Clinician- Dr. Maria Paula Paranhos Silva
Restored tooth- #6 - # 11
Material- Feldspathic veneers with Noritake EX-3 Super porcelain

DESCRIPTION

A female patient in her 40s. The patient wanted to improve the esthetics of her smile. The patient requested slightly longer and brighter anterior teeth with symmetry design and it was important for her. The patient was treated with canine to canine with minimally invasive veneer preparation of 0.2-0.6 mm and the stump shade was close to final shade, which was the ideal procedure for minimally invasive treatment. [Fig. 2] Noritake Nori-Vest EX-3 refractory material and Noritake EX-3 Super porcelain were used during the fabrication. With equal or supragingival preparation, it is important to add slight translucent porcelain with dentin powder on cervical 3rd margin area for veneers to get maximum blending in with the stump. [Fig. 3]

[Fig. 2] Minimally invasive preparation. Final shade was 1M1 and the stump shade was close to 1M1. Vita 3D-Master Shade Guide was used. Shade tabs on the image are 1M1(left) and 2M1(right).

[Fig. 3] Dentin and incisal frame layering of skeleton build-up technique.

CASE 3

Clinician- Dr. Marko Tadros, Dr. Maurice A. Salama
Restored tooth- #7 & #10
Material-Titanium Abutments, Zirconia crowns with Noritake Cerabien ZR porcelain (CZR)

DESCRIPTION

A female patient in her mid-twenties. The patient had congenitally missing lateral incisors. Dr. Salama performed implant placement surgery with the surgical guide which was designed and printed by Dr. Tadros. [Fig. 4] Both implants needed to be placed lingually due to the defects and position of the bone. [Fig. 5] Titanium abutments were designed, milled and anodized with gold shade. Due to the position of the implants, bottom designs of both zirconia crowns needed to be designed as pontics to give a good support and ideal compression of the tissue. [Fig. 6]
Facially cut-back and layering technique was performed with Noritake Cerabien ZR porcelain (CZR) and fabricated as two pieces cemented as screw-retained implant crowns.

[Fig. 4] 3D printed guided surgery.

[Fig. 5] CBCT image shows the defect and position of the bone.
As part of our "minimally invasive protocols" at Team Atlanta, we approached this patient's care with a micro-incision approach at the crest and a ROLL CTG from the crest of the ridge and palatal aspects onto the buccal. This allowed us to avoid bone grafting and multiple surgical entries. Once again a singular surgical approach where the implants were FULLY GUIDED into their positions more lingually in the remaining host bone and the 3D contour of the ridge for esthetics was recreated with tissue and restorative modulation of that tissue.

[Fig. 6] Final design of screw-retained zirconia implant crowns.

CASE 4

Clinician- Dr. Sergio Arias
Restored tooth- #4-#13
Material- Feldspathic veneers with Noritake EX-3 Super porcelain, Katana STML Zirconia, Lithium disilicate inlays

DESCRIPTION

A female patient in her 60s. The patient's chief request to improve her esthetics. She wanted to close the black triangles between her anterior teeth and wanted to have slightly longer anterior teeth. Moreover, the patient wanted the procedure to be as minimally invasive as possible. The anterior teeth were prepared minimally without much difficulty but the problem was the gold inlays on #4, #12 and #13. [Fig 7] The inlays were placed was too buccally there, which made it impossible to proceed with veneer preparation without removing them. To keep the treatment as minimally invasive as possible, we decided to replace the gold inlays with lithium disilicate materials and minimally prep the facial to be able to bond feldspathic veneers on top of inlays. [Fig 8] What's more, there was an old crown on #5. It was replaced with full monolithic Katana STML Zirconia crown that utilized stain and glaze technique. [Fig 9]

[Fig. 7] Buccally positioned gold inlays.

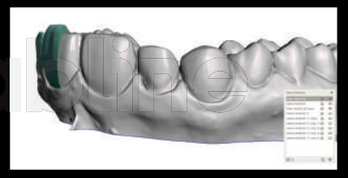
[Fig. 8] Final fabricated inlays and veneers for #4, #12 and #13

[Fig. 9] #5 Full monolithic Katana STML zirconia crown with stain and glaze finishing.

CASE 5

Clinician- Dr. Maurice A. Salama. Dr. Maria Paula Paranhos Silva
Restored tooth- #6-#11
Material- Feldspathic veneers with Noritake EX-3 Super porcelain

[Fig. 10] Digitally scanned and sectioned image of the veneer. The thickness was about 0.2-0.3 mm.



[Fig. 11] Mini-wing technique performed on cervical 3rd distal interproximal area.

DESCRIPTION

A female patient in her mid-twenties. The patient's chief complaint was her peg lateral incisors and she wanted to have ideal size and design. After analyzing the case, we recommended the patient to treat canine to canine instead of just two peg lateral incisors to achieve the best possible esthetic results. Two sets of wax-ups were prepared and a trial smile was performed. (Mock-up) The first trial smile was for two lateral incisors and the second one was for canine to canine. After the trial smile, the patient accepted to get treated from canine to canine. Before proceeding with restorative treatment, Dr. Salama performed gingivectomy surgery to improve tissue esthetics. After about a month of healing, Dr. Paranhos continued to treat the patient with minimally invasive preparation. [Fig. 10] Peg lateral incisors caused the proportions of both central incisors slightly bigger. To achieve better proportions, Mini-Wing technique was performed on both central incisors' cervical 3rd distal interproximal area and both lateral incisors were fabricated bigger within the given space. [Fig. 11]

Before

After

CASE 6

Clinician- Dr. David A. Garber, Dr. Maria Paula Paranhos Silva
Restored tooth- #8, #9
Material- Katana STML Zirconia Crowns with Noritake Cerabien ZR porcelain

DESCRIPTION

A female patient in her 40s. The patient had old PFM crowns on #8 and #9. She wanted to replace them to achieve better shades and esthetics. The patient had metal posts on #8 and #9 and both of them needed to be replaced. Dr. Parnahos performed composite build-up technique to replace metal posts. [Fig. 12] To manage the cervical dark stump, Katana STML zirconia disk was selected and Chang's white opaque liquid was applied before the sintering process. Skeleton cut-back layering technique with Noritake Cerabien ZR porcelain was used during the fabrication. [Fig. 13]

[Fig. 12] Dark stump shades on cervical 3rd.

[Fig. 13] Finished fabricated crowns on the cast.

Before

After

CASE 7

Clinician- Dr. Maria Paula Paranhos Silva, Dr. Marcelo Silva
Restored tooth- #5-#12
Material-Feldspathic veneers with Noritake EX-3 Super porcelain

[Fig. 14] Dark stump shades on canine and premolar.

DESCRIPTION

A female patient in her mid-twenties. The patient wanted to have a bright bleach shade with a beautiful esthetic smile. Furthermore, she wanted to have natural translucency and characterization on the incisal 3rd. Gingivectomy surgery was performed by Dr. Salama to achieve an ideal level of the tissue. During the fabrication, masking was required on the cervical 3rd of both canines, and premolars to achieve 0M3 bleach shade. [Fig. 14] Within the limited porcelain space (for properly masking), bleach shade of high opaque and value porcelain EW0 were applied. To achieve natural translucency of the incisal 3rd , high translucent and opal porcelain LTx luster porcelain was applied.

CASE 8

Clinician- Dr. Ronald E. Goldstein, Dr. Maria Paula Paranhos Silva
Restored tooth - #7-#10
Material- Feldspathic veneers with Noritake EX-3 Super porcelain

DESCRIPTION

A female patient in her mid-thirties. The patient's chief complaint was discolored 4-unit anterior composite veneers but she was very concerned about the prospect of getting her teeth treated. The patient specifically requested to get treated as minimally invasively as possible. Within the limited porcelain space, the most challenging was the dark stump shade of #9. [Fig. 15] It was ideal to prep the dark and opaque incisal 3rd but the challenge was that the preparation gets close to the nerve, where there is a chance of root canal treatment, and the patient did not want to take any chances. During the fabrication to achieve proper masking of the stump shade, opaque dentin porcelain mixture of 10 % of fluorescent glaze powder was applied on the incisal 3rd of #9. Moreover, to create the harmony of internal characterization, the same mixture of powder was applied on the rest of incisal 3rds. [Fig. 16]

[Fig. 15] Minimally invasive preparation with discolored stump on #9 incisal 3rd.

[Fig. 16] Masked discolored stump with a mixture of opaque dentin porcelain and fluorescent glaze powder.

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DR. MARIA PARANHOS received her DDS from the University of Ribeirão Preto, Brazil, in 2001. She is a specialist in Advanced Operative Dentistry, and has a Masters and PhD in Dental Materials. Dr. Paranhos' area of expertise is Adhesive and Minimally Invasive Dentistry. Her PhD training, and her American DDS training were completed at the Herman Ostrow School of Dentistry, at the University of Southern California, where she also spent 4 years as a Faculty member. Dr. Paranhos also worked as a Clinical Instructor at the Dental College of Georgia at Augusta University for almost 4 years. Dr. Paranhos is currently a member of Team Atlanta at Goldstein, Garber & Salama's Dental Practice, where she practices Restorative and Esthetic Dentistry.

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