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## Introduction to the case

We received a referral patient from the orthodontics department requesting closure of diastema, who has already completed orthognathic and orthodontic treatment in the last 4 years. However, due to the imbalance of Bolton index in the patient's anterior teeth and the embedded maxillary right canine, significant diastema was failed to close. Following the application of direct composite restoration, we successfully achieved closure of diastema, thus enhancing the aesthetics of her anterior area and bestowing her with a beautiful smile.



Unfavorable aesthetics in smile zone, wide diastema between 12 and 14, 14 and 15, 22 and 23, tooth discoloration.



Significantly improved anterior aesthetics, closed diastema and tight contact point, whiter tooth color

## Treatment steps



### Step 1 Tooth Bleaching

After the combined use of in-office and at-home whitening, the color shade of the teeth was upgraded from A3 to A1.



### Step 2 Palatal wall generation

Under the guidance of a silicone index manufactured based on digital diagnostic wax-up, the palatal wall was created using ceram-x® one A2 to achieve precise restoration. (Note: Step2-5 were all conducted on 12/14/15/22/23, here we used 12 as an example).



### Step 3 Emergence profile generation and Proximal surface molding

Shaping of emergence profile and proximal surfaces relied on proper matrix system using flow composite resin and ceram-x® one A2.



### Step 4 Layered filling technique

Layer-by-layer stacking to complete labial surface using ceram-x® duo D2 and E2.



### Step 5 Shaping and Polishing

Detailed morphology was texturized by Carbide tungsten to enhance visual coherence. Following shaping, the tooth surfaces were polished by Enhance® Finishing System and Enhance® PoGo® Polishing System.



### Step 6 Immediate result of 12/14/15

Closed diastema, coordinated visual proportion of teeth, and tight contact point. The contour of 14 was similar to that of maxillary canine.



### Step 7 Immediate result of 22/23

Closed diastema, coordinated visual proportion of teeth, and tight contact point.



### Step 8 Immediate aesthetic effect of smile zone

The anterior contour line coordinated with the curve of lower lip. Visible diastema was closed and the maxillary dentition was visually harmonious.

## Material and Method

Digital design was initially employed to achieve precise diastema allocation and tooth reshaping. The bonding surfaces of all restorations underwent selective etching with 37% phosphoric acid and were bonded using Prime&Bond universal™ Universal Adhesive. Dentsply Sirona ceram-x® one A2 was utilized to construct the palatal walls of teeth 12, 14, 15, 22, and 23, guided by a silicon index on the basis of digital diagnostic wax-up. Dentsply Sirona ceram-x® duo D2 and E2 were applied to refine the contours of teeth 12, 14, 15, 22, and 23, aided by suitable matrix systems. Shaping, finishing, and polishing procedures were performed using the Enhance® Finishing System and Enhance® PoGo® Polishing System.

## Discussion and Conclusion

Tooth reshaping undertaken to address diastema resulted in a notable enhancement of the overall aesthetics in the anterior smile zone, contributing to improved harmony in the width ratio of the upper anterior teeth. Throughout the procedure, strategic distribution of the diastema, guided shaping with silicone rubber guides, and adjustments to essential anatomical structures, including ridges, were pivotal in achieving the desired outcome. Given the completion of orthodontic treatment and the patient's unstable jawbone, direct composite resin restoration emerges as the optimal reshaping solution. Composite resin restorations offer the advantages of easy adjustability and minimal tooth reduction.