



Pushing Esthetic Boundaries

CASE REPORT

Initial Presentation

A 29-year-old healthy male presented with a chief complaint of small front teeth and excessive spacing (Figures 1-3). He requested an improved smile prior to his upcoming wedding. Teeth 13 and 23 were absent due to anodontia; both deciduous canines were retained and their root structure showed no signs of resorption. Mobility of teeth 53 and 63 was within normal limits. The anterior spacing

was caused by an excess of space-to-tooth ratio. Overbite and overjet were minimal, and the molars exhibited a Class I malocclusion.

Periodontal assessment revealed mild generalized gingivitis with minimal probing depths around the upper six anterior teeth. Radiographically, there was no root pathology and the root structure of the primary canines appeared within normal limits (Figure 4).

Diagnosis

Diagnostic models were mounted on an articulator, and the teeth were first waxed up to assess the feasibility of the esthetic result. Final diagnosis was excessive anterior spacing combined with anodontia of maxillary right and left canines and retained deciduous canines.



Figure 1



Figure 2



Figure 3

Figures 1 to 3 — Initial presentation.

Clinical Feature

Treatment

Orthodontic treatment was first presented as an option, but the patient refused. Veneers were not recommended due to the significant spacing and lack of predictable bonding on the deciduous canines.

Treatment involved placement of full crowns on teeth 53, 12, 11, 21, 22, 63. A minimal gingivectomy was performed on tooth 22 without infringing on the biological width, to better align the gingival margin of this tooth to the corresponding right lateral incisor.

The deciduous teeth received minimal crown preparation in order to preserve enamel. All prepared margins were made 0.5 mm below the gingival line. There was one mm of buccal preparation and minimal incisal reduction due to the pre-existing frontal attrition, assessed to be one to 1.5 mm (Figure 5).

Chairside temporaries (Integrity, Dentsply) were fabricated from the diagnostic wax-up. To protect the deciduous cuspids, a bilateral group function occlusion was established. The temporaries were worn for two weeks. Two adjustments were made

according to the patient's input and to our assessment of function, occlusion and esthetics.

The final impression was obtained using a custom tray and a hydrophilic polyether impression material (Impregum-PentaSoft medium + Perma-dyne Garant 2:1 3M ESPE). The shade was changed to A1 after consultation with the patient and the laboratory at the time of the final impression.

Six IPS e.max lithium disilicate crowns were fabricated. Minimal adjustment of the occlusion was required before the restorations were



Figure 4
Pre-treatment radiograph.



Figure 5
Labial and occlusal views
of the crown preparations.



Figure 6
Laboratory models showing six IPS e.max lithium disilicate crowns.

Clinical Feature

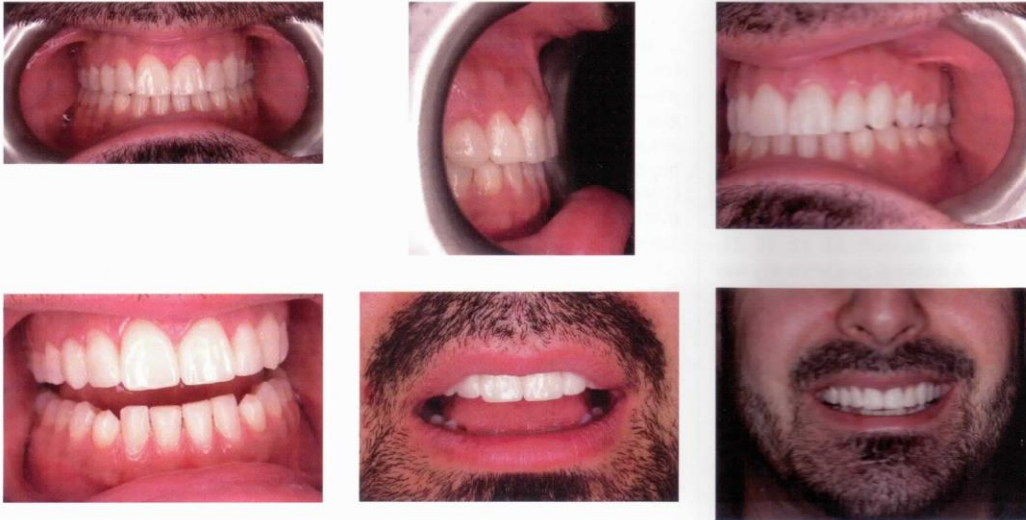


Figure 7

bonded with Multilink Automix Transparent (Ivoclar). A mouth guard was fabricated to further protect the crowns against possible nocturnal parafunction. The patient and his fiancée were satisfied with the esthetic result (Figure 7).

Discussion

Retained deciduous teeth are rarely considered to be a long-term source of stable occlusion; however, case reports have demonstrated that these teeth can provide more than 50 years of service (Stanley HR 1996). Retained deciduous teeth have even been incorporated in orthodontic therapy (Kenworthy et al 2001). In this case, the retained deciduous maxillary canines were considered to be stable and able to withstand light bilateral group function. Furthermore, the patient was strongly advised to wear a nocturnal mouth guard.

IPS e.max lithium disilicate crowns were chosen in this case because they are ideally suited for single tooth restorations. This ceramic produces highly esthetic results and demonstrates superior strength when compared with other glass-ceramics (Culp et al 2010). **Despite the challenges of anterior spacing and retained canine primaries, a highly esthetic result was achieved in this case with proper treatment planning.** ☐

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