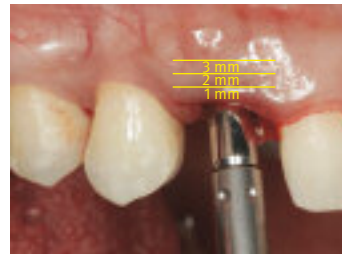




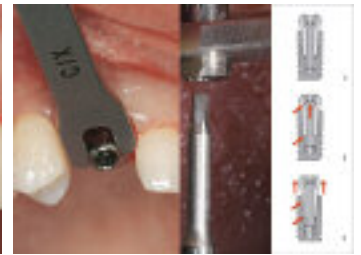
1_ Tooth 13 is not formed, tooth 53 persists. Due to appearance, elongation and tilt, the tooth has to be extracted.



2_ The persistent milk tooth shows strong palatal abrasion.



3_ For flapless insertion of the implant, the length of the placement head serves as depth orientation.



4_ The ANKYLOS® C/X open-end wrench is required to release the retaining screw on the placement head.

Replacement of a Persistent Deciduous Tooth

Single Tooth Restoration with ANKYLOS® C/X

| Dr. Orcan Yüksel

1. INTRODUCTION

The non-formation (aplasia) of permanent teeth (excluding wisdom teeth) affects three to ten percent of a population depending on the geographical region. The second premolar and the lateral upper incisors are most commonly absent. The absence of a permanent canine is very rare with fewer than 0.1 percent. Aplasia of permanent teeth can cause the corresponding milk teeth to persist. As the physiological stimuli for resorption of the milk tooth roots are absent, these primary teeth are often present for several decades and fulfill their function more or less effectively.

The dental enamel and dentin of primary teeth is not as hard as that of permanent teeth. For this reason they are subject to stronger abrasion. This has a negative effect on dimensional stability. If the teeth in the incisor region are affected, their appearance is also impaired (Figs. 1 and 2). The deciduous tooth may fail to match the demands of permanent dentition. Excessive stress may lead to resorption of the root and hence loosening of the tooth. In the case presented here of a 38-year-old female patient, the persistent primary canine also changed its position in the dental arch due to stress.



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2. THE THERAPY OF APLASIA OF INDIVIDUAL TEETH

If individual permanent teeth are not formed, the corresponding primary teeth can persist for a prolonged period. These teeth do not necessarily have to be extracted. If the prognosis is favorable, they can be shaped using composites or veneers to match their neighboring teeth. In the case of an unfavorable prognosis of caries, root resorption, bone resorption and/or loosening, these milk teeth have to be extracted. The question arises in which form they are to be replaced. A fixed solution is always the method of choice for replacement of an individual tooth. If the neighboring teeth show defects (treated or untreated) in the dental hard substances, a bridge might be an option. If the neighboring teeth are primarily healthy or only have small fillings, an implant is best restoration. Besides preserving healthy dental hard substance, the favorable prognosis speaks for implants. Looking towards future tooth losses, the individual implant can form the basis for another implant-supported restoration. Compared with permanent teeth, deciduous teeth have a smaller mesio-distal width. The space available must always be measured in the planning phase. This particularly applies for the incisor region. The separation between the neighboring teeth and the implant, as well as between the crestal ridge and the approximal contact point, plays an important role in this region for natural and therefore attractive red-white esthetics. The crestal bone around the implant forms the basis for the development of the papilla and marginal gingiva. Numerous studies have shown that the bone level should have a separation of 1.5 to 2.0 mm between the implant and the neighboring tooth. This means that the space for the planned implant diameter plus four millimeters must be available after extraction. If the gap is smaller or larger, the diameter of the implant could be varied. This is subject to very tight

restrictions, because not only the mesial-distal, but also vestibulo-oral bone availability plays a role in selection. The vestibular bone wall is often very thin, particularly in the incisal region. The gap width can be varied through orthodontic pre-treatment. The gaps can be opened or closed within a few months, as required. Fixed orthodontic appliances are generally used in this case. If necessary, a positive secondary effect can also be torque, angulation or rotation of the neighboring teeth. The implant can also be inserted at first depending on the prevailing conditions. It then serves as a skeletal anchor for the planned corrections. In this case, only a small segmental arch appliance is required. In the case presented, the patient did not want any orthodontic treatment.

3. THE CASE

The patient's tooth 13 is not formed and tooth 53 persists. It disturbed the appearance, as the milk tooth was tilted, too small and discolored (Fig. 1 and 2). The tooth had to be replaced with an implant-borne crown. The approach described as follows is not specifically for replacing a missing canine, but can also be applied analogously for other persisting milk teeth.

The milk tooth was extracted using a periosteum in order to minimize trauma to the bone. An ANKYLOS® C/X implant (size A 14) was mechanically inserted immediately after extraction. The gingiva was not lifted up to avoid resorption of the crestal bone. The implant bed was prepared in the usual way. The following distances are to be observed: 1.5 mm to each neighboring tooth and at least 1 mm of bone towards vestibular.

The insertion torque was 40 Ncm, which led to high primary stability. The soft tissue conditions were also ideal. All the

prerequisites were fulfilled to immediately load the implant with a temporary crown. The patient could attend this additional appointment due to a lack of time.

ANKYLOS® C/X allows the choice between non-indexed or indexed prosthetics with simplified positioning of the abutments. The shape of the placement head allows orientation of the insertion depth for transgingival insertion. There are markings on the implant driver that correspond with the index in the implant. If the prosthetic restoration uses an indexed abutment, it must be ensured that these markings face towards the vestibular (Fig. 3). If you work without an index, only the implant depth has to be observed.

The ANKYLOS® C/X open-ended Wrench has to be used to remove the placement head. It allows reliable detachment of the retaining screw (Fig. 4). The placement head is also indexed.

The gingiva former GH 3 mm was inserted during regeneration of the peri-implant soft tissue (Fig. 5). The control image shows the different bone heights (Fig. 6). The bone is higher at tooth 12, which is why the implant shoulder was countersunk 2 mm subcrestal here. On tooth 14 the shoulder is minimally beneath the bone level. This irregular bone profile was the main reason why ANKYLOS® C/X was used. The tissue-friendly TissueCare Connection between the implant and abutment (platform switching and bacterially sealed connection) guarantees regeneration and preservation of the peri-implant bone. Temporary closure of the gap followed sealing of the implant with the gingiva former. In order to disguise the absence of the canine, the crown on the milk tooth was separated and fixed to the neighboring teeth with composite as a temporary solution. As the wearing time was just six to eight weeks, this approach is justified. Up until integration of the final restoration, the temporary solution fixed with adhesive had not loosened.

On account of the high primary stability, preparations for the permanent prosthetic restoration started six weeks after implantation. The new ANKYLOS® Regular C/X transfer post (repositioning technique) for closed tray impression taking is screwed into the implant (Fig. 7). The shape comparable with a fir tree, as well as the milled-off side, allow very precise repositioning. An ANKYLOS® Regular /X abutment with three millimeter gingiva height serves to support the veneer metal ceramic crown (Fig. 8 and 9). The indexed abutment makes the work of the dental technician and the doctor more efficient, as no additional transfer key is required, as is used with the classical ANKYLOS®. The position of the abutment and therefore of the finished crown is uniquely defined. Following fabrication of the veneer metal ceramic, it is fixed on the ANKYLOS® Regular /X abutment with a temporary cement (Temp Bond) (Fig. 10).

The treatment is concluded eight weeks after extraction and insertion. The peri-implant soft tissue has regenerated another four weeks later (Fig. 11 and 12). The patient was very satisfied with the restoration.

4. SUMMARY

A persistent deciduous tooth should be replaced with an immediate implant. ANKYLOS® C/X is recommended as an implant. The innovative thread design ensures high primary stability. The bacterially-sealed connection and platform switching have a positive effect on regeneration and preservation of the peri-implant bone. ANKYLOS® C/X can be processed with non-indexed or indexed prosthetics depending on preferences and requirements.



5_The ANKYLOS® C/X gingiva former in-situ.



6_The control image shows the different mesial and distal bone heights.



7_The closed tray impression way made six weeks after insertion with the help of the ANKYLOS® C/X transfer post (repositioning technique)



8_The model with the ANKYLOS® C/X implant analog and the selected ANKYLOS® Regular /X abutment.



9_The Regular /X abutment with 3 mm gingiva height in the model without gingiva mask.



10_Insertion of the Regular ANKYLOS® /X abutment and the veneer metal ceramic crown.



11_Replacement of missing tooth 13 four weeks after integration and twelve weeks after insertion of the implant.



12_Replacement of missing tooth 13 from occlusal.