

The Replacement of Small Diameter Teeth in the Esthetic Zone utilizing Narrow Diameter Implants; 2 case reports

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The management of small restorative spans in the esthetic zone has posed significant problems for the implant team. Based upon the lack of bone available for the surgeon as well as the lack of restorative space available between the adjacent teeth for the restorative dentist and laboratory technician makes tooth replacement with implants challenging. Congenitally missing teeth or patients with microdontia have been treated in the past with resin bonded bridges or cantilever crowns to avoid utilization of standard diameter implants and prosthetics in this area.

Too often, surgeons attempting to place standard diameter implants have forced the restorative team to manage these small dimensions with a lack of adequate prosthetics due to the size and diameter of the fixture head. In addition, surgical complications such as, contact with the adjacent roots, dehiscences of the labial plate, or the “show through” of the titanium through thin soft tissues has posed a significant complication risk in attempting to use implants for tooth replacement in these situations.

Recently, the implant industry has offered a 3.0mm diameter implant design to address these challenges. Most of the implants available in the 3mm size have been one piece or unibody implants which necessitate conventional tooth preparation techniques by the restorative team as well as standard cord impression techniques for indexing the restorative margins. The next few cases will highlight a two-piece, 3.0mm diameter implant by *Dentsply DFC* that allows the implant team to utilize conventional implant techniques with a two-piece implant and smaller diameter prosthetics for the final restorative dentistry.

Case 1: A young patient presented to our office for replacement of her congenitally missing maxillary laterally incisors following orthodontic treatment. Based upon the lack of mesial-distal space for normal lateral incisor as well as the lack of distance between the adjacent natural tooth roots, it was apparent that only a small diameter implant would facilitate tooth replacement in this region.

Based upon pre-operative clinical diagnosis utilizing stone models, wax-up, surgical guide and CAT Scan, we were able to accurately treatment plan this case to make certain that no complications would arise from this method.

The surgical guide stent by *Materialise* was utilized to accurately place the implants and the surgery was performed and implants *Xive* (DFC) 3.0mm implants from *Dentsply* were inserted in the areas of #7 & #10 without complication. Healing abutments were placed and the flaps were sutured and soft tissue grafting was performed to increase the labial profile of the soft tissues prior to restorations.

Following 2 months of healing, standard impression copings for the 3.0mm *Xive* implants were inserted and sent off to the laboratory for indexing and fabrication of the final abutments.

The laboratory was able to proceed with standard implant prosthetics and the final cementable single unit crown was fabricated on a smaller prosthetic table. This allowed the restorative team to address the contours of the soft tissue and to develop the subtle esthetics necessary for small diameter tooth replacement.

Case 2: Replacement of a mandibular lateral incisor that was lost due to trauma. Following orthodontic tooth movement and establishment of the proper spacing, a CAT Scan and a *Materialise* surgical stent was fabricated to assist us in proper placement of the 3.0mm *Xive* implant. Once the implant was placed and following 2 months of healing, standard impression of coping was placed onto the implant and sent off to the laboratory for fabrication of the final restoration. A gold custom abutment was fabricated and an all-ceramic *Cercon* crown was placed and cemented over the abutment. The soft tissue contours were managed with a small diameter prosthetics and once again no vital structures were infringed upon by utilization of these small diameter components.

In conclusion, small incisor tooth replacement in the esthetic zone has posed a challenge for many years in implant dentistry. Today, the availability of smaller diameter implants have assisted the dental team in replacing these challenging areas with dental implants rather than conventional restorative dentistry. The 3.0mm two-piece *Xive* implant from *Dentsply DFC* has allowed us to meet this challenge safely and accurately and to do it in an esthetic fashion. These 2 cases highlight the

utilization of the smaller diameter implants and they now represent an important and vital part of the implant team's augumentarium in treating the small incisor tooth replacement dilemmas. It is important to note that these implants are not to be utilized as small diameter abutments for significant bridge work but have been designed specifically for the replacement of small diameter incisors in the esthetic zone where they are to support single teeth. The authors have had much success with this form of tooth replacement mentality and believe that it is the superior option for our patients.

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References: DAG to give references on resin bonded bridges

MAS: to give references