In February 2010, a 42-year-old non-smoker with a congenitally missing upper right lateral incisor was referred by her orthodontist for a consultation prior to orthodontic treatment (Fig. 1).

The various treatment options were presented: (i) to close the space with orthodontic treatment or to open the space to allow for prosthodontic replacement either with (ii) a fixed dental prosthesis or (iii) a single-tooth implant. Each of the approaches could potentially compromise esthetics, periodontal health and function. A thorough interdisciplinary analysis was performed, and the patient ultimately gave her informed consent for the latter treatment.

The patient, who teaches at a university, expressed the desire to maintain esthetics during treatment. For this reason, lingual orthodontics with the Incognito® technique was used, with the aim of creating adequate mesio-distal space (Fig. 2). At the end of the treatment, radiographic examination revealed sufficient mesio-distal space along the roots and normal interproximal bone level (Fig. 3). A space of almost 6 mm was measured with the caliper, which is insufficient for a standard implant diameter. A Ø 3.3 mm fixture is preferred (Figs. 4, 5). The patient’s medical history turned up nothing significant, and she was in good general health. After onset of local anesthesia, an intrasulcular incision was made one tooth mesially and one tooth distal to the gap.
A full-thickness flap was elevated to expose the bone, and sutures were used for retraction on the palatal aspect of the alveolar ridge. On the facial aspect, no vertical releasing incision was made to avoid the risk of cicatrices and/or recesions. Initial drilling was limited to a Ø 2.2 mm pilot drill at 680 RPM to facilitate the use of osteotomes at the implant sites (Fig. 6).

The final osteotomy site was prepared using Straumann osteotomes to preserve as much bone as possible. Screw taps were not used. A Straumann Standard Plus, Ø 3.3 mm NNC, SLActive® 10 mm, Roxolid® implant was placed as indicated in the manufacturer’s instructions. The Implant was manually inserted without tapping to achieve primary stability. (Fig. 7) The implant was placed with the edge of the SLActive® surface approximating the alveolar bone crest leaving the machined neck portion in the transmucosal area (Fig. 8). A healing screw was placed into the implants, and the flap was sutured. The radiographic examination confirmed the correct positioning of the implant (Fig. 9).

Three weeks after surgery, the peri-implant mucosa showed no inflammation. The patient was then instructed to brush properly for optimal plaque control with limited risk of soft tissue recession. An impression for the temporary restoration was taken (Fig. 10). Thanks to the SLActive® surface properties, which promote improved BIC at an early stage, it was
possible to place a screw-retained temporary restoration on the implant four weeks after surgery. Minimal gingival countering was performed to eliminate excessive soft tissue (Fig. 11).

Temporary restoration was kept in place for six weeks (Fig. 12) to facilitate soft tissue maturation so that impression could be taken under ideal final conditions. (Figs. 13, 14). The slightly submucosal implant shoulder position is visible on the master cast. This allows for a submucosal crown margin position. The implant shoulder region is accessible for later cement removal from the metal-ceramic crown (Figs. 15, 16).

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*Fig. 13*

*Fig. 14*

*Fig. 15*

*Fig. 16*
The clinical situation prior to cementing confirms the positioning of the implant “as shallow as possible, as deep as necessary” according to the principles of the third ITI Consensus Conference (Fig. 17).

Eleven weeks after surgery, the gold abutment was tightened with a torque of 35 Ncm (Fig. 18), the final crown cemented (Fig. 19) and the x-ray taken (Fig. 20). Probing depth is within the expected physiological limit both around the implant and the adjacent teeth. Plaque control is satisfactory, no bleeding on probing is present, all leading to pleasing esthetic results.

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