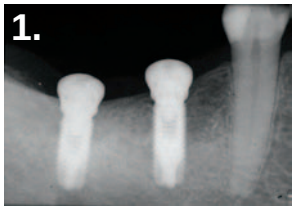
CASE REPORT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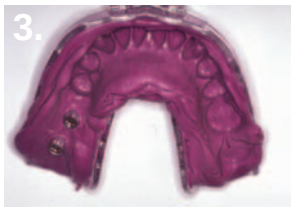
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IMPLANT SUPPORTED GLASS FIBRE-REINFORCED COMPOSITE FIXED PARTIAL DENTURE

A 57 years old woman missing her left mandibular molars was referred for the prosthodontic treatment. Odontological indication for the treatment was eliminating the possible over-eruption of the antagonist teeth. Subjective need for the treatment was improvement of the masticatory capacity.
Two Osseotite RP implants (3i Implants, USA) 3.75 mm in diameter (length: 10 and 11.5 mm) were implanted. After 3 months from the implantation (Fig. 1) the fabrication of prosthetic superstructure started from the clinical situation with the healing caps. (Fig 2). Impression was taken from the implant level with heavy putty polyvinyl siloxane impression material (President Heavy, Coltene Whaledent, Switzerland) (Fig. 3).

The titanium abutments were ground to the desired length in dental laboratory based on the occlusal space in centric relation. The framework was made of two layers of ***Stick***®NET (Stick Tech Ltd, Finland) woven fibre net and *ever**Stick***®C&B (Stick Tech Ltd, Turku, Finland) continuous unidirectional glass fibre reinforcements. First, the ***Stick***®NET fibres were further-impregnated for 30 minutes with dimethacrylate monomer resin (***Stick***®Resin, Stick Tech Ltd, Finland). The abutments were isolated with isolation liquid (3M-ESPE, Germany).

The *ever**Stick***®C&B was wrapped around the abutments and light polymerized initially to the desired form. This was followed by pressing the further-impregnated ***Stick***®NET sheets on the abutments with the *ever**Stick***®C&B framework (Fig. 4). An additional *ever**Stick***®C&B fibre bundle was added and the cross section of the connector between the molar crowns contained four *ever**Stick***®C&B fibre bundles (Fig. 5).

This quantity of fibres is considered to be enough also for three unit implant supported FPDs. The framework containing the oxygen inhibited surface was veneered with light curing Sinfony laboratory veneering composite (3M-ESPE, Germany) (Fig. 6). The final polymerization of the composite and the framework was made in Visio Beta light curing device (3M-ESPE) in vacuum for 15 minutes. The abutments were screwed on implants. The luting cement surfaces of the crowns were gently ground prior cementation to increase surface roughness and to expose IPN (interpenetrating polymer network) polymer matrix of the ***Stick***®NET FRC (fibre reinforced composite). The bonding surface was treated with adhesive resin (D/E Resin, Bisco, USA) which was allowed to activate the surface for three minutes before light polymerization (Fig. 7). The cementation was made with self-curing composite resin luting cement (C&B Cement, Bisco, USA). Occlusion was carefully adjusted to centric relation and articulation movements without interferences were ensured. The treatment outcome after luting with adequate interdental cleaning spaces is shown in Fig. 8.

CONCLUDING REMARKS

The FRC (fibre reinforced composite) technology has proved is usefulness in many fields of dentistry. Among these, the FRCs can be used in implantology as superstructure material for FPDs (Fixed pantial Dentures) and crowns when alternative materials are needed, like in the temporarization phase of the treatment.

* IPN=*Interpenetrating Polymer Network*

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