INNOVATIVE STARTUP

IOSFIX.DENTAL SRL was born as a Start-up in the medical-dental environment, with the idea of improving the production quality of custom-made medical devices (prostheses) generated by digital flows. The digital flows derive from intraoral scanning systems, these systems have accuracy limitations, especially on extensive processes and with implants. The idea of improving quality is affirmed above all following the analysis of the deformations and in the search for the resolution of these deformations given by the intraoral scans. Research and development have directed and guided the project in the search for solutions in order to obtain the most accurate solution possible in the most complex processes to be performed, customized implant and orthodontic medical devices. IOSFIX provides a service for correcting digital files of 3D models obtained from intraoral scanners, which can improve the accuracy of the scan. The innovation of this service allows the creation of highly precise implant and orthodontic prostheses even in cases of complete dental arches on a large number of implants.

In recent years digital technology has been growing in the dental sector, thanks also to the fact that digital has arrived with force in laboratories and also in clinics, through intraoral scanners. Intraoral scanners are imaging tools that allow the dentist to create a 3D model of the patient without having to use traditional impressions. The consequence of the use of these tools is the possibility of using 3D printing, the reduction of the dental chair time and of the laboratory work, and the general decrease in costs.

The scanning surface of an intraoral scanner is very small (a few millimetres) and therefore the generation of a 3D dental model is obtained by merging the scans obtained from successive partially overlapping images (overlapping). This casting operation produces accurate impressions when dealing with small models (up to 3 - 4 teeth) but produces significant distortions on larger models or full arches. No intraoral scanner manufacturer recommends the use of these tools for jobs of this type.

The IOSFIX service serves precisely to overcome this problem currently not resolved by any of the operators in the dental sector.

To achieve maximum accuracy, IOSFIX envisages inserting a rigid device (RINGFIX) inside the patient's mouth during the scanning phase, provided with a series of reference points whose positions have been measured with very high accuracy, which act as calibration positions for the correction of all scan points.

The IOSFIX service, therefore, is based on a "totally digital format", made up of a "protocol", a reference "device" and a correction "software".

The "protocol" defines the individual steps of the workflow, each of which must be performed according to a very high-quality standard.

The protocol predicts the involvement of various partners for the provision of the complete service:
- the dentist performing the intraoral scans
- the technician who, on the basis of the first scan performed with only the scan bodies on the implants, designs the RIGNFIX with CAD software which will be used in the subsequent scan
- the production centre that creates the RINGFIX and supplies the positions of the points (and possibly creates the final prosthesis)

In order to guarantee the highest quality of service, all the partners involved need specific training, which IOSFIX provides and verifies by issuing a certification. IOSFIX guarantees the final result if all partners are certified and therefore guarantee the observation of the instructions given during the training.

The dentist performing the scan must know the positioning and fixing technique of the RINGFIX in the patient's mouth and must use a correct scanning strategy.

The technician who designs the RINGFIX must know the software tools and the rules for designing the device, which is customized for each patient for better ergonomics and distribution of the reference points.

The production centre must have the equipment and expertise for the creation of the RINGFIX and the instruments for measuring the position of the points with the necessary accuracy.

The intraoral scan performed with the RINGFIX fixed on the scan bodies is then corrected by the IOSFIX software using a patented proprietary algorithm. This software uses the known position of some points of the scan, corresponding to the references of the RINGFIX, to optimize the correction parameters of the complete mesh, with the result of eliminating the distortions generated by the intraoral scanner and repositioning the scan bodies correctly.

The high technological content of the IOSFIX "digital format" therefore manages to make a technology such as intraoral scanners safer, more accurate and repeatable. The professional who uses the IOSFIX service will be able to adopt a totally digital protocol which guarantees time savings and a state-of-the-art quality standard at the same time.

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