

APPLICATION OF SOFTWARE IN PROSTHETICS ON DENTAL IMPLANTS

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ABSTRACT

Today, the demand for dental implants is actively growing and at the same time the demand for high-quality prosthetics. In this article I want to introduce you to software and new technologies in the world of dentistry.

Keywords: scanning, 3D printer, software, surgical template, format, zirconium, ceramics, scan marker, implantation, gum former, gingival groove, individual abutment.

Digital dentistry is becoming more widespread in Uzbekistan and now it can be applied in every field of dentistry. For example, surgical templates can be cited that not only facilitate the work of a dental surgeon, but also the operation is less traumatic than the classical method. In order to produce surgical templates, we will need a scan of the patient's complete dentition and we send these scans to the technician in STL format, in addition to scans, the technician will need a 3-d computed tomography of the patient in DICOM format. This is a format specifically for making templates. After that, the technician compares all the scans with the tomography and the program will issue a ready-made template with the full protocol of the operation itself. The software of each scanner model is individual, but the formats are the same. Also in orthodontics, it is possible to diagnose by scanning the patient's jaws and print aligners on 3D printers. The widest application of software is used in orthopedic dentistry.

Prosthetics of dental implants is a very important point, since it is necessary to take into account not only the aesthetics of the teeth themselves, but also the function, what kind of load the prosthesis will transfer to the bone, in what condition the soft tissue is. Scan markers are installed after the gum is formed and then the upper and lower dentition and bite are scanned. The program will give us 3 scans, which is a bite

registration scan, low scan scan of the lower jaw and Upper scan scan of the upper jaw. We can also receive all these scans in 3 formats STL, PLY, DICOM and, depending on the purpose of the scan, we choose the format and send it to the technician. When prosthetics on dental implants, we use the STL format, after the technician receives ready-made scans, he begins modeling future teeth using the EXOCAD program. Taking into account the shrinkage and strength characteristics of zirconium dioxide, it is necessary to comply with the requirements for the thickness and size of individual parts when creating a workpiece.

The modeling process should take place in a vertical direction with a slight offset towards the oral cavity. This criterion will allow not only to obtain high aesthetic indicators, but also high strength of the finished components. In case of non-compliance, the risk of breakage increases many times, which technicians must take into account when working. Milling takes place automatically. With the help of a scanner and examination, data on the structure of the patient's jaw and all the necessary parameters are collected, for this you need to buy a scanned body. Then everything is processed on the computer using the appropriate programs, an electronic model is created. The advantages of zirconium dioxide crowns make the material ideal for the restoration of incisors and canines. After milling, the final fitting and processing of the component is necessary. First of all, you need to sand the attachment points of the frame to the base. It is convenient to carry out the work before the temperature stage, when the frame is still soft and easily amenable to hand tool cutters. If our goal is to make zirconium crowns coated with ceramics, then in addition to everything that we have listed before, the technician must also print a model of the patient's dentition on a 3d printer, since ceramics are made by applying and zirconium by milling. There is another material that is milled, this is PMMA. Crowns made of PMMA can serve as a temporary structure after implantation only without load. It also helps us to shape the gum into the shape of a teething profile and achieve high aesthetics.

CONCLUSION

In conclusion, I would like to say that we are trying to introduce digital dentistry in Uzbekistan as widely as possible, because this allows us to create convenient conditions and high-quality treatment of patients, as well as keep up with the development in this industry.

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