

CASE REPORT



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OPTISLEEP and SICAT Air workflow

Digital integrated solutions every year bring more opportunities in dentistry. Benefits of CBCT or digital impression are becoming parts of dentists' everyday work. Thanks to this better diagnosis and more efficient treatment can be provided. The following workflow shows digital way of airway obturation diagnosis as well as treatment of this indisposition. OPTISLEEP is an oral appliance worn during the night to treat snoring or mild to moderate obstructive sleep apnea.

A 45-year-old patient was afflicted with general symptoms of tiredness and lack of sleep. Initial examination based on 'Obstructive Sleep Apnea Test' was conducted in order to recognize if patient is at risk of sleep apnea (tab. 1). Due to positive result of the test it was necessary to use additional diagnostic tools. A preliminary airway check was performed on CBCT image, which has been already in patient's documentation due to implant treatment in the past. The image was captured with Orthophos SL volume 11x10 that allows to see whole upper and lower jaw, as well as airways area. Segmentation done in SICAT Air software indicated narrowing of the airways (pic. 1), what confirmed initial assumptions. The minimal cross section was measured automatically and was only 38 mm². Possibility of showing anatomical structures in 3 dimensions and colorful visualization of obturation (pic. 2) helped patient to understand the problem and make decision to start treatment immediately.

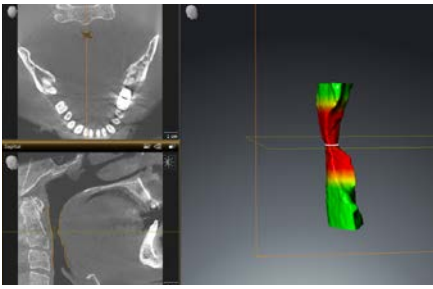
Another CBCT in low dose mode has been done in treatment position. Treatment position is determined using a George Gauge bite fork that regulates degree of protrusion. Another segmentation was performed in SICAT Air (pic. 3). The software allows to display and compare situation before and during treatment (pic. 4). The narrowest cross section in treatment position is 132 mm², which means a 77% increase in the volume of the examined respiratory tract.



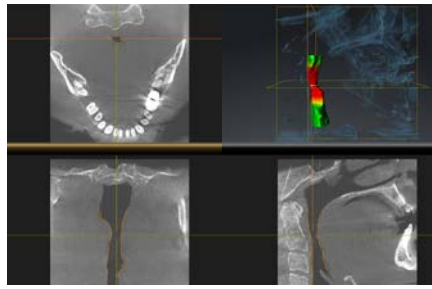
In order to complete diagnostic information, digital impression of upper and lower jaw was done with CEREC Omnicam (pic. 5). Gathered prosthetic information can be integrated with anatomical situation visible on CBCT image in SICAT Air environment just in few steps. After choosing correct data set, corresponding markers need to be indicated carefully in both views (4 markers in this case) (pic. 6). It is very important to verify precision of alignment between optical impression and x-ray (pic. 7 and pic. 8). Acquisition of these information allowed to order OPTISLEEP using SICAT Portal (pic. 9).

On the next visit accuracy of appliance has been checked (pic. 10). OPTISLEEP splint adhered very precisely to patients' teeth. Patient has been instructed how to use and clean the appliance. During next control visit patient provided his feedback on OPTISLEEP treatment: quality of sleep has been significantly improved, which also had a huge impact on his daily life. Treatment was also highly appreciated by his wife, who visited practice with him.

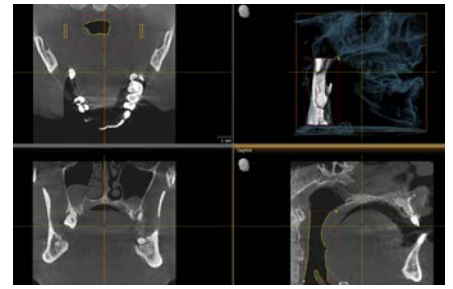
Therapy with OPTISLEEP is really helpful solution when it comes to fight with snoring and mild cases of sleep apnea. More severe cases should be checked in sleep laboratories and treated with CPAP. However for the group of patient who find CPAP not comfortable, OPTISLEEP still can improve their sleep quality.



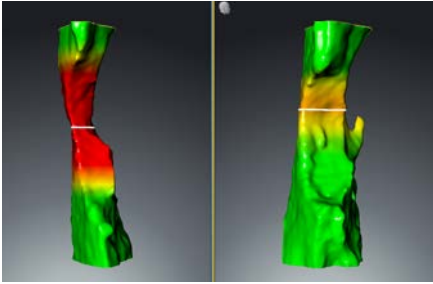
1. Diagnostic CBCT - partially blocked airways.



2. Diagnostic CBCT - 3 dimensions of obturation.



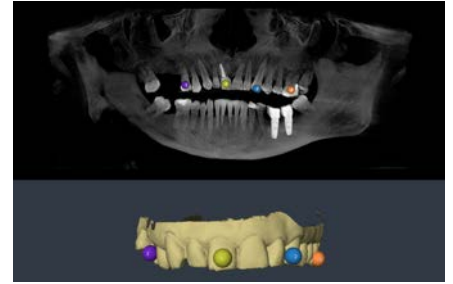
3. Therapeutic position in CBCT low dose.



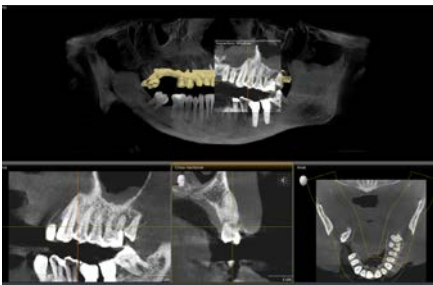
4. Comparing both positions.



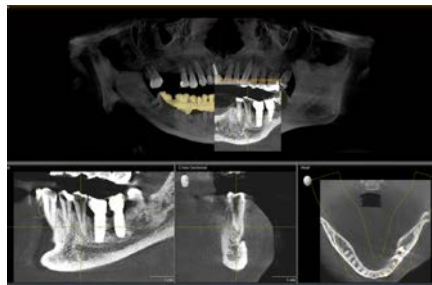
5. Intraoral impression with Omnicam.



6. Corresponding markers on both views.



7. Optical impression aligned with X-data - upper jaw.



8. Optical impression aligned with X-data - lower jaw.



9. OPTISLEEP individually designed for patient.



10. Final accuracy check.

OBSTRUCTIVE SLEEP APNEA TEST	
Do you snore loudly?	Definitely YES
Do you often feel tired, fatigued or sleepy during the day?	YES
Has anyone observed you stop breathing during your sleep?	YES but not so often
Do you have or are you being treated for high blood pressure?	YES
Are you obese/very overweight - BMI more than 35?	NO
Age over 50 year old?	NO
Neck circumference more than 16 inches (women) or 17 inches (man)?	NO
Are you male?	YES