

AUGMENTED REALITY FOR THE CONTROL OF CUTTING PRECISION IN JAW SKELETAL SURGERY

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Aim: in the following study we wanted to experiment augmented reality in the field of maxillofacial surgery during the execution of a surgical task concerning dento-alveolar bone surgery with inter-radicular segmentations.

Methods: in this study we wanted to perform inter-radicular surgery on resin mannequins after having programmed an augmented reality application that allowed us to see the roots of the teeth through the HoloLens 2 viewer (Microsoft, Redmond, WA, USA). Operators managed to visualize the roots of the teeth inside the mannequin's maxilla through the HoloLens 2 and then performed the inter-radicular cuts using a piezoelectric instrument (Piezosurgery Plus, Mectron spa, Carasco, Italy). A dedicated set-up was prepared, including a skull base on which two upper jaws belonging to two patients with different degrees of dental crowding could be attached with resin. The position of the maxillae in relation to the skull base was

made unequivocal through the construction of three positioning pins with a concave structure in the skull and a convex one in the maxilla.

Results: the preliminary results suggest that the application created in collaboration with the Bioengineering Department of the Sant'Orsola Polyclinic and distributed on HoloLens 2 can represent an aid for inter-radicular surgeries in the context of the diagnosis and evaluation of the patient's dental crowding and its relative root anatomy. The study carried out on phantoms suggested that this cannot yet be used as a direct aid in surgical practice, due to the high tracking inaccuracy and imprecision.

Conclusions: augmented reality in this and every kind of context can never cause harm to the user, but instead can only bring him benefit. This system, therefore, can only enrich the user's perception, allowing him to view reality in a way that enriches its contents.

GERD PATIENTS: ASSOCIATION WITH OSA AND ANTHROPOMETRIC CHARACTERISTICS

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Aim: Obstructive Sleep Apnea (OSA) is a common disorder characterized by recurrent episodes of a complete or partial collapse of the upper airway during sleep. Several studies have demonstrated that craniofacial and soft tissue abnormalities, older age and obesity contribute to loss of airway patency in patients with OSA. Correlations between OSA and GERD have been detected in previous observational studies and demonstrated an increased risk of OSA in these patients.

Methods: a group of consecutive patients who performed EGDS with evidence of reflux esophagitis were selected. The severity of esophagitis was assessed by the Los Angeles classification of Grade A, B, C and D. All patients were given the Berlin questionnaire for risk assessment of OSA. The anthropometric characteristics of the patients (total or partial edentu-

lism, soft tissue evaluation and facial skeleton) were evaluated to highlight any independent risk factors for OSA in the patients setting with GERD.

Results: in the setting of patients with GERD, some anthropometric features can predict the risk of OSA. Obesity, age, edentulism, craniofacial and soft tissue anomalies are related to an increased risk of OSA.

Conclusions: prevalence of OSA in patients with GERD is significantly higher than in the general population. Recently it has been shown that OSA is linked to a higher incidence of GERD, and vice versa. Different anthropometric factors appear to increase the risk of OSA in patients with GERD. Dentistry knowledge tools must guarantee its "sentinel" role so that OSA can be early diagnosed and treated.