

# 3<sup>rd</sup> World Congress on Dentistry and Maxillofacial Surgery

July 12, 2022 | Webinar

## Keynote Forum



# DENTISTRY AND MAXILLOFACIAL SURGERY

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## Patients with squamous cell carcinoma of the head and neck (SCCHN)

**Introduction:** Patients with squamous cell carcinoma of the head and neck (SCCHN) have a high risk of recurrence. We aimed to develop machine learning methods to identify transcriptomic and proteomic features that provide accurate classification models for predicting the risk of early recurrence in SCCHN patients.

**Objectives:** The objective was to build an artificial intelligence model by implementing a comprehensive analysis of SCCHN early recurrence risk using clinical data, high-throughput genomic, transcriptomic and reverse phase protein array (RPPA) proteomic data derived from TCGA datasets.

**Methods:** Clinical, genomic, transcriptomic and proteomic features distinguishing recurrence risk in SCCHN patients from The Cancer Genome Atlas (TCGA) were examined. Recurrence within one year after the treatment was regarded as high-risk and no recurrence as low-risk.

**Results:** Using conventional statistical analysis no significant differences in individual clinical characteristics, mutation profiles or mRNA expression patterns were seen between the groups. Using the machine learning algorithm extreme gradient boosting (XGBoost) ten proteins (RAD50, 4E-BP1, MYH11, MAP2K1, BECN1, NF2, RAB25, ERFF1, KDR, SERPINE1) and five mRNAs (PLAUR, DKK1, AXIN2, ANG and VEGFA) made the greatest contribution to classification. These features were used to build improved models to predict recurrence based on XGBoost, achieving the best discrimination performance when combining transcriptomic and proteomic data.

**Conclusion:** This study highlights machine learning to identify transcriptomic and proteomic factors that play important roles in predicting risk of recurrence in patients with SCCHN and develop such models by iterative cycles to enhance their accuracy, thereby aiding the introduction of personalized treatment regimens.

### Recent Publications:

1. Reiterative Modelling of Combined Transcriptomic and Proteomic Features Refines and Improves the Prediction of Early Recurrence in Squamous Cell Carcinoma of Head and Neck
2. Comparison of Quality of Life among Patients with Oro-Hypopharyngeal Cancer after Tonsillectomy and Panscopy Using Transoral Robotic Surgery: A Pilot Study - FullText - Case Reports in Oncology 2020, Vol. 13, No. 3 - Karger Publishers (umu.se)
3. Comparison of Preoperative Positron Emission Tomography/Computed Tomography with Panscopy and Ultrasound in Patients with Head and Neck Cancer - FullText - Oncology 2020, Vol. 98, No. 12 - Karger Publishers (umu.se).

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## Biography

Amir M Salehi is a fully accredited General ENT consultant and Dentist with an Oral & Maxillofacial Master of Science degree from UCLH, Eastman Institute London, UK. His practice is based out from a private clinic in Stockholm county. He qualified from Karolinska Institute as a dentist in 1995, Oral & Maxillofacial Master degree from UCLH, Eastman Institute London, UK in 1998, M.D license in 2006, Sweden. He has worked as Orthopedic resident (2007), GP resident (2008). To broaden his experience he has worked in head and neck centers in UCLH (1998,2018), Munich (2012) and Nurnberg (2013) - Germany. During his ENT residency at Umea University Hospital, Sweden, he became the first Console surgeon (while resident) for Trans Oral Robotic Surgery (TORS) in 2017. He was awarded his certificate of completion of specialist training in general ENT in March 2020, Sweden . Salehi 's main research interest is within Head and Neck surgery/ Oncology and his dissertation is planned for 2022.

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### Fully digital workflow using a dual scan impression technique for immediate loading full mouth implant rehabilitation: A case series

**Statement of the Problem:** The immediate loading protocol has become increasingly popular due to the progressive growth in demand for a reduction in treatment times. The possibility of applying this protocol would be depending on certain important factors. Application of the digital workflow in the mentioned protocol guarantees the rapidity, precision, and aesthetics. This case series aims to describe a fully digital workflow using a dual scan impression technique to fabricate immediate fixed complete dentures for zygomatic and standard implants.

**Methodology:** All patients were looking for fixed full mouth rehabilitation. Clinical and radio-graphical analyses were undertaken. The treatment planning was discussed with every patient and informed consents were sought and obtained. The treatment commenced by digital impressions of the upper and the lower prostheses. The scan information constituted the first stereolithography (STL) file. Both prostheses were removed, and another digital impression of soft tissues was undertaken to create a second STL file. During the surgery, transmucosal abutments were placed on all implants, after suturing the positions of implants were recorded using the stereophotogrammetric technique and creating a third STL file, the soft tissues after suturing were rescanned creating a fourth STL file, all STL files were aligned to have the virtual final models. The pre-design after virtual modifications was aligned with the definitive models, the provisional prostheses were milled and placed after six hours from the surgery.

**Conclusion & Significance:** The dual-scan technique presented in this report might be effective with immediate and definitive screw-retained fixed complete dentures (FCDs), with this technique the time is reduced, the cumulative errors of conventional impression technique and the stitching discrepancy of IOs can be avoided, the clinician and patients are highly satisfied.

#### Recent Publications:

1. Aleksandrowicz P, Kusa-Podkańska M, Grabowska K, Kotuła L, Szkatuła-Lupina A, Wysokińska-Miszczuk J. Extra-Sinus Zygomatic Implants to Avoid Chronic Sinusitis and Prosthetic Arch Malposition: 12 Years of Experience. *J Oral Implantol*. 2019 Feb;45(1):73–8.
2. Agliardi EL, Romeo D, Panigatti S, de Araújo Nobre M, Maló P. Immediate full-arch rehabilitation of the severely atrophic maxilla supported by zygomatic implants: a prospective clinical study with minimum follow-up of 6 years. *Int J Oral Maxillofac Surg*. 2017 Dec 1;46(12):1592–9.
3. Suarez MJ, Paisal I, Rodriguez-Alonso V, Lopez-Suarez C. Combined Stereophotogrammetry and Laser-Sintered, Computer-Aided Milling Framework for an Implant-Supported Mandibular Prosthesis: A Case History Report. *Int J Prosthodont*. 2018 Feb;31(1):60–2.
4. Peñarrocha-Diago M, Balaguer-Martí JC, Peñarrocha-Oltra D, Balaguer-Martínez JF, Peñarrocha-Diago M, Agustín-Panadero R. A combined digital and stereophotogrammetric technique for rehabilitation with immediate loading of complete-arch, implant-supported prostheses: A randomized controlled pilot clinical trial. *J Prosthet Dent*. 2017 Nov;118(5):596–603.

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5. Revilla-León M, Rubenstein J, Methani MM, Piedra-Cascón W, Özcan M, Att W. Trueness and precision of complete-arch photogrammetry implant scanning assessed with a coordinate-measuring machine. J Prosthet Dent. 2021 Jun 18;S0022-3913(21)00280-8.

## Biography

Gseibat graduated from the Faculty of Dentistry of the University of Benghazi in Libya 2009. He received his specialty degree in Prosthodontics from the University of Madrid Complutense in 2018, he received her specialty degree in Dental Implantology from University of Seville in 2020 and he received her MSC degree from University of Madrid Complutense in 2020. He lectured nationally and internationally on many Prosthodontic topics primarily. He has published scientific articles. He is currently in the Clinical Master of Prosthodontics and Occlusion of the University Of Madrid Complutense as a collaborator and in a private practice limited to surgical reconstruction implant surgery and Prosthodontics in Benghazi, Libya 3 times per year.

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