Facial prosthetics applications

Tim Southee*

Southee T. Facial prosthetics applications. J Biomed Eng Curr Res 2023;5(1):6-7.

DESCRIPTION

Using face epitheses for reconstruction is still a crucial talent for the maxillofacial surgeon, even though current surgical techniques predominate in reconstructive facial surgeries. To elucidate the methods utilized to fixate facial prosthetics, we provide an international multicenter investigation. Even though modern surgical procedures predominate in reconstructive facial surgeries, using face epitheses for reconstruction remains an essential skill for the maxillofacial surgeon. We provide an international multicenter analysis to clarify the techniques used to fixate facial prostheses. Maxillofacial prosthetics must investigate whether computer-assisted approaches can boost efficiency because of the rising patient population and financial restrictions. A four year study project that examined the quality, financial, technological, and clinical consequences of the use of digital technologies in maxillofacial prosthetics addressed this requirement. This essay's goal is to discuss the parts of the research that have to do with using rapid prototyping [1].

In the medical literature since the 17th century, facial prostheses have been discussed. For a reconstructive facial plastic surgeon, the main difficulty continues to be the reconstruction of significant facial deformities. Significant trauma, ablative tumor surgery, or congenital diseases can result in large facial abnormalities with partial or entire loss of organs like the eye, nose, or ear. It is crucial for our patients' social or patients' social integration and quality of life must national reconstruction in the head and neck region. Over the decades, various materials have been utilized to create various types of facial prostheses [2].

The repair of the head and neck now includes prostheses as a necessary component. Postsurgical rehabilitation and quality of life measurements have assumed a central position as a result of major developments over the previous ten years. For ablative, congenital, or traumatic abnormalities of the head and neck, head and neck prostheses offer a synthetic substitute and make an effort to restore both cosmetic appeal and functionality. Form and function, the two objectives of craniofacial reconstruction, can frequently be harmoniously accomplished. Even the most skilled surgeon may find the complex anatomy and physiology of the head and neck to be tough and time consuming. Due to these demands, researchers are examining whether maxillofacial prostheses might benefit from the time and money savings associated with cutting-edge design and product development technologies. Applications for maxillofacial prosthetics have been studied using technologies including 3D surface capture (3D scanning), 3-Dimensional Computer Aided Design (3D CAD), and layer additive manufacturing methods. However, the majority of the literature consists of summaries of specific case studies that outline a particular technology or application [3].

Careful evaluation of the patient's demographics, functional state, and current medical issues is essential for successful reconstruction. Throughout the reconstructive process, the patient's psychological health should also be taken into account to effectively convey their expectations and aspirations. Patients who have microvascular free flap surgery have a longer postoperative hospital stay and may need revision operations or other treatments, which puts them at risk for a wide range of potential problems. Accordingly, a cost-benefit analysis of each patient's preferences, surgical requirements, and anticipated results must be taken into account. Clinically, a prosthesis may offer a better functional and aesthetic result in the face of reduced survival. Therefore, prosthetic rehabilitation may be advantageous for elderly patients or those with serious comorbidities. Incorporating the benefits of RP into the current workflow was made possible by this, allowing for a more integrated strategy. The technical prowess and applicability of the RP technologies employed for creating an integrated and effective digital prosthesis procedure, however, were not critically evaluated in this research. Consequently, a more thorough examination was needed to examine the potential combinations of these technologies for a range of applications. A bigger investigational study included the research that was conducted here [4]. For the prosthesis to be accepted by and satisfy patients, it must be properly colored. Color, form, and texture are both intrinsically and extrinsically characterized in cosmetic realism. The intricacy of color matching a silicone substance with diverse pigments to the skin's spectral value is exacerbated by metamerism, which is the matching of color with numerous light sources, as well as by seasonal and environmental variations. The gold standard for measuring color in manufacturing and the biological sciences has always been a combination of colorimetry and spectrophotometry. By using its tristimulus values, colorimetry describes color in three-dimensional color space. On the other hand, spectrophotometry determines color using either tristimulus values or spectral information about the hue, value, and chroma of reflected light [5].

The use of spectrophotometry rather than a colorimeter to measure color is well acknowledged in the literature. The retention system of a prosthesis is crucial to its effectiveness and overall patient compliance. Anatomic, mechanical, chemical, and surgical concerns are only a few of the patient-specific elements that go into the anchorage. Early in the 20th century, facial prostheses were frequently mechanically attached to eyeglasses or fastened with anatomical undercuts. To achieve the best possible aesthetic and functional results, the clinical usage of fixed face prostheses is based on close collaboration between the surgeon and anaplastologist/technician. Multiple forms of facial prostheses can be securely anchored over the long term using specially adapted dental implants designed for extraoral use. For facial prostheses, a bone anchored fixation system (implants or plates) and typically a magnetic retention system appear to be the current norm [6].

REFERENCES

1. Brom J, Stover T, Wagenblast J, et al. Epithesial craniofacial reconstructions after mutilating surgery in head and neck cancer patients. Laryngo-Rhino-Otologie. 2012;92(1):51-9.
2. van Doorne JM. Extra-oral prosthetics: Past and present. J Invest Surg. 1994;7(4):267-74.
3. Evans P, Eggbeer D, Bibb R, et al. Orbital prosthesis wax pattern production using computer-aided design and rapid prototyping techniques. J Prosthet Dent. 2004;7:11-5.
4. Ciocca L, Fantini M, Marchetti C, et al. Immediate facial rehabilitation in cancer patients using CAD–CAM and rapid

Department of Biomedical Engineering, University of Aalto, Aalto, Finland

Correspondence: *Tim Southee, Department of Engineering, University of Aalto, Aalto, Finland, scottj975@gmail.com*

Received: *18-Jul-2022, Manuscript No. PULBECR-22-5172;* ***Editor assigned:*** *20-Jul-2022, PreQC No. PULBECR-22-5172 (PQ);* ***Reviewed:*** *03-Aug-2022, QC No PULBECR-22-5172;* ***Revised:*** *27-Dec-2022, Manuscript No. PULBECR-22-5172 (R);* ***Published:*** *06-Jan-2023, DOI: 10.37532/PULBECR.2023.5(1).6-7.*

prototyping technology: A pilot study. Supportive Care in Cancer. 2010;18(6):723-8.

5. Wiens JP, Wiens RL. Psychological management of the maxillofacial prosthetic patient. Clinical Maxillofacial Prosthetics, Illinois: Quintessence, 2000, pp. 1-14.
6. Guttal SS, Patil NP, Shetye AD, et al. Prosthetic rehabilitation of a midfacial defect resulting from lethal midline granuloma–a clinical report. J Oral Rehabil. 2006;33(11):863-7.