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Plastic & Aesthetic Surgery 2016: 3-dimensional surface modeling (3DSM)

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Abstract

Three D surface technology is used to demonstrate to the patients the expected changes possible with a particular procedure. This technology has allowed the patient and surgeon to both see the expected result at the same time on the same screen. This will help the surgeon identify the patient's expectations and be cautious about patients who have unrealistic expectations. The Surgeon can also define the steps of surgery and plan it more accurately. The goal is to improve the patient's satisfaction with this technology and minimize the revision.The aim of this paper is to describe the author's experience with 3DSI and 3DSM. Method: The 3D images are normally taken with digital camera with adequate lightning and then stored in a computer and images then manipulated using Software. The image can be captured with a camera or the surface can be scanned with a scanner but the latter would require the subject to be motionless for a longer time. The author used the Vectra H1 camera for the face and the Vectra XT for the body with the mirror image software for manipulation. A single camera is usually adequate (H1) but the 3D camera system (Vectra XT) is more precise and will acquire better and larger images. Once the images are taken, they are transferred to a computer where software stitches the images together. The problems of this system are the cost, limited availability and resolving the shiny of transparent areas and imaging hair. With the expansion of 3D printing, the cost has substantially decreased and becoming more readily available for personal or central use. This is going to be helpful for patients' education and archiving of pre-operative and post-operative results. The main limitation of the process is the cost associated with the products and with the images capturing. Results & Discussions: Currently, 2D photography is used to document, analyze and plan surgical procedures in Plastic Surgery. This tool does not represent 3 dimensional figures accurately. It lacks shaped and topographic depth. 3 D imaging measures XY and its coordinates and uses a triangulation concept. It is better than MRI and CT Scans which do not reflect the surfaces and surface topography and also it is less expensive and less invasive to the patient. It overlays multiple images from different planes, over the same object to create a 3D image. The use of Magnetic Resonance Imaging (MRI) is more accurate and more scientifically helpful in exact measurements however it uses screening tool that is not practical especially in cosmetic practice as MRI scans are costly and are not readily accepted by the patients. Therefore, its uses are still not foreseen in the near future. Conclusion: Three-Dimensional Surface Modeling (3DSM) is a useful tool in: 1. For the surgeon to understand the exact concerns of the patients and to have more precise planning of the procedure. 2. For the patients to see the expected changes. 3. It is important to emphasize that this is only digital morphing which may not reflect the actual outcome.

Biography

Jamal Jomah, MD graduated with Honors from King Faisal University, Saudi Arabia. He pursued specialty training in Canada where he completed his residency training in plastic surgery and sub-specialized in cosmetic surgery, craniofacial rehabilitation and medical education. He is certified by the Royal College of Surgeons of Canada and the Canadian Medical Council. He also obtained an honorary fellowship from the Royal College of Surgeons of Edinburgh. In addition, he is a diplomat of the American Board in Hair Restoration Surgery and a Board Examiner. He is also a fellow of the American College of Surgeons. He holds the title of Consultant Plastic Surgeon in Dubai and also has been newly elected as the General Secretary of the Emirates Plastic Surgery Society

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