

DO WE REALLY NEED A NEW INNOVATIVE NAVIGATION-NONINVASIVE “SURGERY OF THE FUTURE” WHERE WE CAN MODIFY STANDARD SURGICAL PARAMETERS PER VIAM ON THE FLY GESTURE-CONTROLLED INCISIONLESS SURGICAL INTERVENTIONS?

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Purpose: We tried to modify standard surgical parameters per viam on the fly gesture-controlled incisionless surgical interventions using DICOM viewer and hardware sensor device that supports hand and finger motions as input that requires no hand contact or touching and offered very true and precisely preoperative planning and has become a very important segment of each individual intervention in medicine of this kind.

Methods: Marked anatomical regions of interest were sorted in a way that makes sense for different operation stages: accuracy analysis of computer generated models were done according to Galeta et al. (Advances in Production Engineering and Management/2017), our original special plug-in application (OsiriX-platform/LeapMotion-sensor) provided different types of gestures for 3DVR enable navigation; Leap Motion-sensor served as an interface for camera positioning in 3DVE-views; impression of panoramic 3DVR-viewing was given by pivoting of the camera in a way around a focus fixed on the object.

Results: This novel technique enables the surgeon get complete and aware orientation in the operative field; this new 'spatial experience' must be comprehensively and correctly recognized in each segment of the operative procedure; our human mind and understanding of this new surgery works by creating completely new models of human behavior and understanding spatial relationships, along with devising assessment that will provide an insight into our human nature; any model and/or virtual model of surgical field is defined as it actually exists in its natural surroundings of the surgical field.

Conclusion: Comparing previous doctrine in head and neck surgery, as well as in other surgical branches of human medicine clearly indicates that preoperative as well intraoperative manipulation with 3D-volume rendering slices of MSCT/MRI-reconstruction of the human anatomy per viam touchless surgical navigation system (OsiriX-LM) with simulation of virtual activities has become reality in the OR/VR-field.

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