

Technology Opportunity, Ref. No. UA-18/157

Device to conveniently and accurately control the orientation of an oral implantation drill

A simple and cost efficient navigation system for oral implantation is provided. It is based on economic, industrial factory-calibrated IMU attached to the drill bit

Keywords	Oral implantation, drill bit, navigation system
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Background	Navigation systems for oral implantation surgery are costly and require substantial effort with regards to pre-operative preparation. This is due to the fact that they provide information on both the position and the orientation of the drill. However, an experienced oral surgeon can easily recognize the required start position of the hole to be drilled from anatomical landmarks, and control the depth to be drilled with help of the markings on the drill bit. Therefore, the complexity of a navigation system could be substantially reduced by focusing on the essential information required by the oral surgeon: the orientation of the drill bit axis with respect to the anatomy.
Invention	A system and a method is provided that sufficiently precisely characterizes the drill axis orientation by attaching inertial sensors (IMU) to the dentists drill. The initial alignment between the drill and the anatomy is accomplished by drill sleeves that are attached to the teeth. In a proof of principle study, it has been shown that the required orientation accuracy is achieved with economic, industrial factory-calibrated IMUs.
Fields of Use	Based on this technology, a simple and cost efficient navigation system for oral implantation can be provided.
Patent Status	PCT Patent application WO 2018/104284
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