Electromagnetic navigation

Electromagnetic navigation refers to a surgical technique that utilizes electromagnetic fields to assist in guiding surgical instruments and tracking their location within the patient's body. It involves the use of electromagnetic sensors or markers that are attached to the surgical instruments and tracked by a computerized navigation system.

During the procedure, the patient's anatomy is preoperatively imaged using computed tomography (CT) or magnetic resonance imaging (MRI). These imaging data are then combined with real-time electromagnetic tracking of the instruments to provide precise and dynamic navigation information to the surgeon.

The electromagnetic navigation system uses the electromagnetic field generated by a base unit to detect the position and orientation of the surgical instruments in relation to the patient's anatomy. The system tracks the movements of the instruments and provides visual feedback to the surgeon, displaying their positions on a computer screen or surgical navigation monitor.

Electromagnetic navigation can be used in various surgical procedures, including neurosurgery, orthopedic surgery, and minimally invasive procedures. It helps improve the accuracy and precision of instrument placement, reduces the need for extensive tissue dissection, and enhances surgical outcomes by allowing surgeons to navigate complex anatomical structures more safely and efficiently.

Overall, electromagnetic navigation is a valuable tool that enhances surgical precision and facilitates the performance of minimally invasive procedures. It aids surgeons in navigating challenging anatomical regions, improves surgical outcomes, and contributes to the overall safety and effectiveness of the surgical intervention.