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## The value of the use of the O-Arm and Neuronavigation in the minimally invasive Spine Surgery cases

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**Purpose:** The type and extent of image guided-surgery for spine disorders still lacks evidence-based medicine proof. It is up to the health care providers sound judgement and expertise to do what is needed for the patient. This is very true when it comes to MIS. Surgical challenges include yet not limited to; limited exposure, decompression near vital or neural structures, decompression at a blind angle, and difficult trajectories for instrumentation. The use of intraoperative CT-quality O-arm, and neuronavigation are still tested as aiding tools in such operative modalities.

**Methods:** We selected our preliminary group of 15 cases of MIS that were operated upon during the years 2012-2014 in our institute by the first two authors to be included in this retrospective study. Cases include traumatic spinal fractures, infective, virgin and recurrent disc-osteophyte compressive lesions, affecting different parts of the spinal column. All of them had technical challenges regards adequacy of decompression or safety of instrumentation. All had undergone a combination of decompression and instrumentation of different modalities and/or bone grafting. In all cases the Medtronic O-arm and Medtronic StealthStation were used as intraoperative mapping tools.

**Results:** Intraoperative navigation tools were so useful in securing adequate neural decompression, neural and vascular tissue safety together with tough bony purchases of the hardware from the first and only trial of application when needed. Intraoperative CT taken by the o-arm was a useful confirmatory intraoperative test of proper hardware placement. A group of technical problems have been faced. All are studied in some details. A learning curve existed though it was smooth and easy to catch up with.

**Conclusion:** The intraoperative use of the O-arm and stealthStation is very useful in different modalities of MIS spine surgeries.

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