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True MIS cervical pedicle screw placement – first clinical impressions of a market-ready platform using iCT navigation.

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Background: Intraoperative navigation facilitated the use of cervical pedicle screw (CPS) in dorsal instrumented fusion-surgery on a regular basis. We have experienced a paradigm shift; away from the use of lateral mass screws (LMS) towards CPS implantation. Although, minimally invasive surgical (MIS) procedures have also become standard throughout the thoracolumbar spine, MIS CPS placement is not enjoying nearly as much popularity.

Research question: Our study reports on workflow and initial outcomes using a new exclusively minimally invasive surgery (MIS) approach for cervical pedicle screw (CPS) insertion.

Study design: Ten patients were treated with MIS dorsal instrumented fusion of the c-spine between January and July 2023 and retrospectively assessed.

Methods: In total, 40 CPS were percutaneously implanted, making use of intra-operative CT guided navigation. A modified Gertzbein&Robbins classification was used to assess accuracy. We also report on adverse events and other patient-related data.

Results: An accuracy of 90% acceptable screw placement was observed. Eighty percent of CPS were on perfect trajectory. Ten percent caused minor pedicle perforation. No screw was intra/postoperatively revised since they were not associated with inferior biomechanics or neurological deterioration. We found two pedicle screws breaching the transverse foramen without contact to the vertebral arteries.

Discussion: In a small series of patients MIS CPS placement yielded results comparable to open surgical screw placement using intraoperative navigation. For selected cases, MIS approach for CPS placement appears feasible and safe.