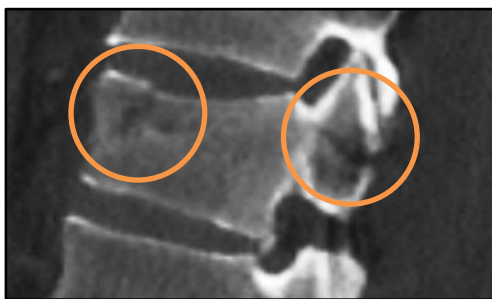


# Safe and Accurate Navigation When Trauma Presents the Need for Precise Screw Placement

## Patient Background and Diagnosis



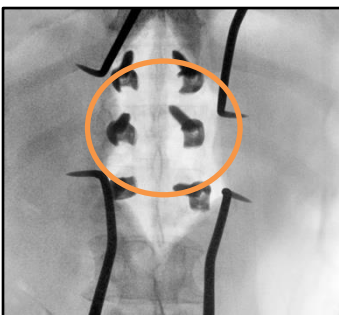
*Sagittal MRI image of T12 displaying vertebral fracture to the body, pars and facets.*



*Sagittal MRI image showing acute fracture through the T12 vertebral body.*

This patient was a 60-year-old male who was working on an oil rig when a 400-pound cylindrical pipe fell and struck him on the back. He was immediately transported to the hospital via helicopter. Upon assessment, the patient presented with a T12 fracture and associated neurological deficit. The fracture involved the vertebral body, facets, and pars interarticularis.

## Surgical Treatment



*A/P Fluoro Image showing final pedicle screw placement. Note caudal and diverging screw placement at T12 to navigate fx fragments.*

The patient underwent a T11-L1 stabilization to restore neurologic function and offer the opportunity to return to daily activities. The placement of the screws at T12 needed to achieve specific diverging medial and sagittal trajectories to avoid the fractured elements. The pedicle screw placement was planned and executed utilizing the Bolt Navigation System.



*Guiding the pedicle probe down the corridor of the planned trajectory using the Bolt Navigation System.*



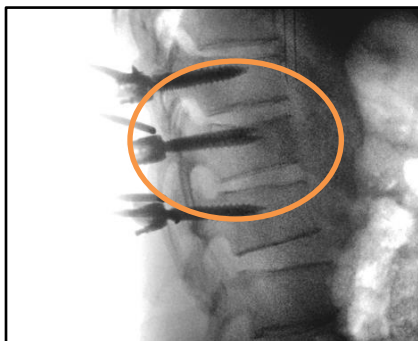
*John Dorman is a board-certified neurological surgeon with over 4,500 cases in his 18 years of practice, specializing in neurosurgery, spine surgery, brain disorders, and brain tumors. Dr. Dorman attended The University of Texas Medical Branch and The University of New Mexico School of Medicine for his Neurosurgery Residency. He provides quality care for patients in West Texas and southeastern New Mexico.*

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## Experience



*The Bolt Navigation System is attached to the pedicle probe, providing visual feedback while advancing the instrument.*



*Intraoperative Lateral Fluoro x-ray image with pedicle screws safely in place. Noting required diverging screw placement at T12.*



*3-month post-op axial CT image. The use of Bolt enabled precise screw placement while carefully avoiding the fractured anatomy.*

The Bolt Navigation System allowed the surgeon the ability to precisely place the screws in an emergency setting, utilizing a standard C-arm and the patient's diagnostic imaging. The system enabled the planning and accurate placement of the screws, in an atypical trajectory, with the staff and available equipment.

The Bolt Navigation System provided a practical, easy to use, accurate, and low-radiation alternative to legacy navigation systems for this challenging case.

## Outcome

**The patient was discharged 4 days after surgery with full neurologic function and returned to full activity less than 3 months following surgery.**



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