



O-arm® System Case Study

O-arm® Complete Multidimensional Imaging System

Thoracolumbar Revision

Hospital

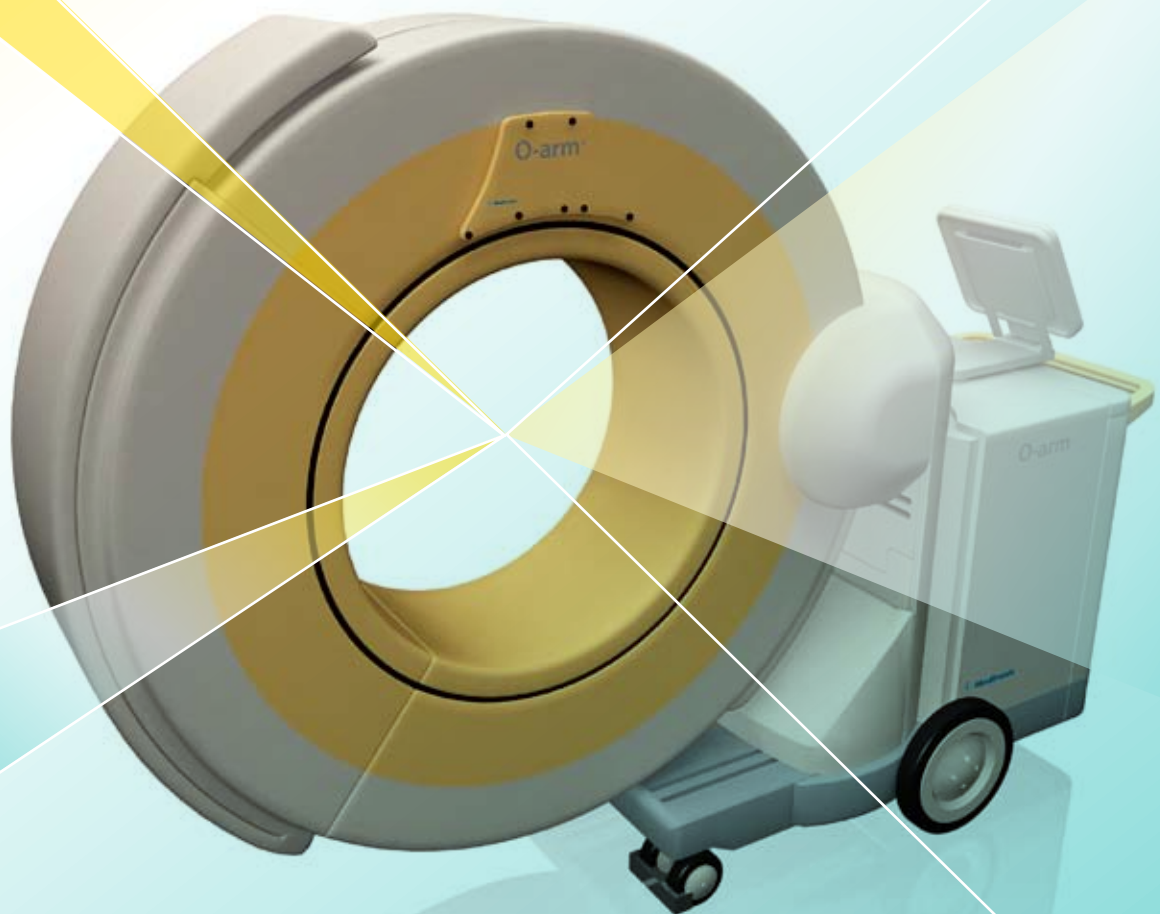
HCA/Menorah Medical Center
Kansas City, MO

Surgeon

William S. Rosenberg, M.D.
Midwest Neurosurgery Associates

Admitting Diagnosis

Progressive Kyphotic Deformity



O-arm® System Case Study

Thoracolumbar Revision

Presentation:

The patient is a 56 year-old woman with a history of breast cancer and cord compression, prior thoracic laminectomy with progressive kyphotic deformity requiring anterior and posterior reconstructions, radiation and wound infection. Corpectomy at T11-12 has kyphosed but is fused T-11 to L1. She has virtually no soft tissue coverage over laminectomy defect.

Procedure:

In order to stabilize the patient, it is required to bridge the fusion mass with rods and screws, 3 levels above and 3 levels below the fusion mass. This is a long construct which needs to be placed through a thick layer (~1 to 2 inches) of scar tissue, following multiple surgeries and radiation therapy. OR setup was standard for a posterior approach, utilizing a Jackson table. The O-arm® System was draped, brought into the field and kept at the foot of the bed for easy access to repeat dataset acquisition.

After sterile preparation, a small incision was made and the reference arc was clamped to T5, with the navigation camera at the head of the patient. An O-arm® System dataset was obtained and navigation enabled. A navigated pointer was used to efficiently expose the thoracic spine through the scar tissue, expeditiously exposing the bony surfaces while confidently avoiding injury to the dura or spinal cord, as well as to plan the screw trajectory through the thoracic pedicles.

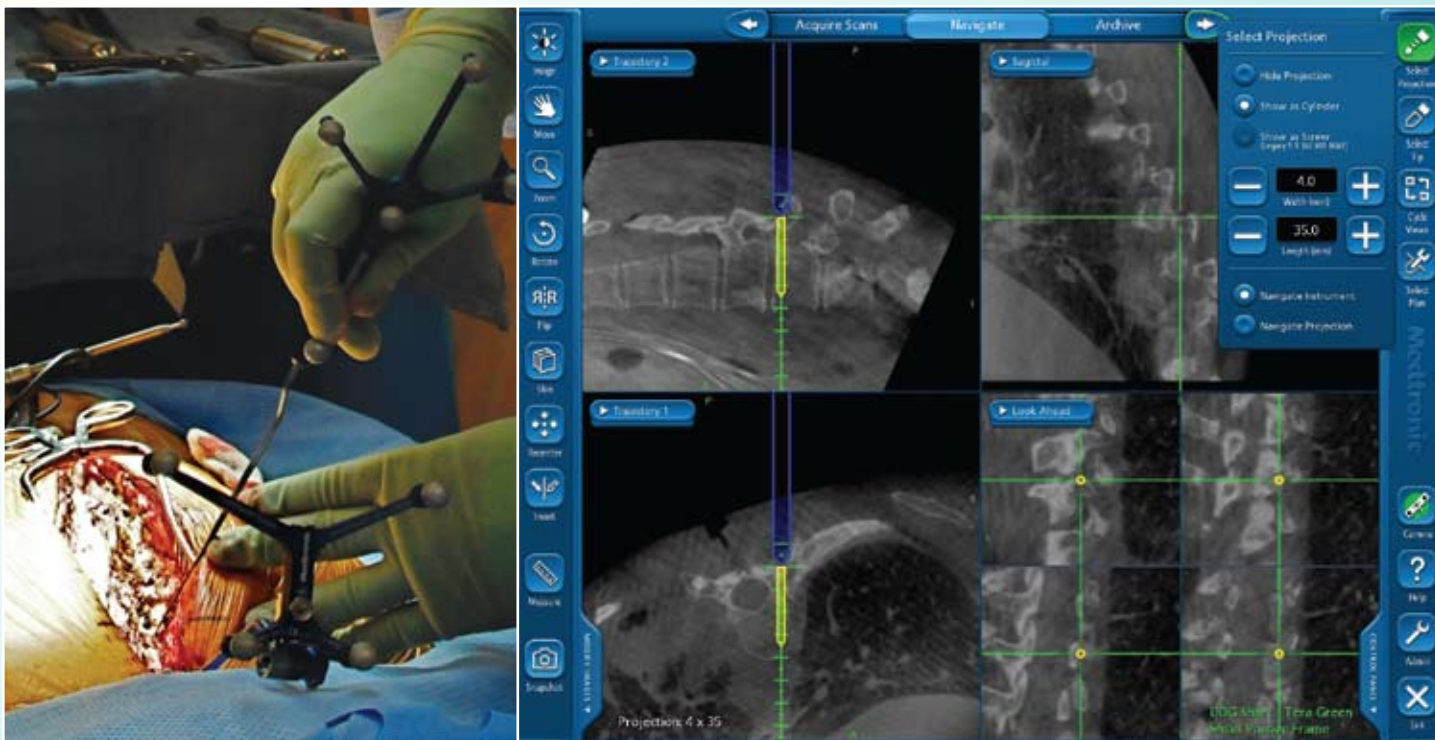
A twist drill was set-up for navigation with the SureTrack tracking array, and the pedicles were prepared with the twist drill. Screws were placed with navigated taps and screwdriver. After the thoracic screws were implanted, an O-arm® System dataset (non-navigated) was obtained to ensure quality screw placement.

The reference arc was then moved to L5 and the navigation camera to the foot of the patient. An O-arm® System dataset was obtained and navigation enabled for the lumbar portion of the procedure, repeating the steps described in the thoracic portion above. After the lumbar screws were implanted, an O-arm® System dataset (non-navigated) was obtained to ensure quality screw placement. The surgeon was able to place screws safely and efficiently in both ipsilateral and contralateral pedicles. With the use of the O-arm® System images and navigation, it is possible to perform the entire procedure efficiently from one side.

Results:

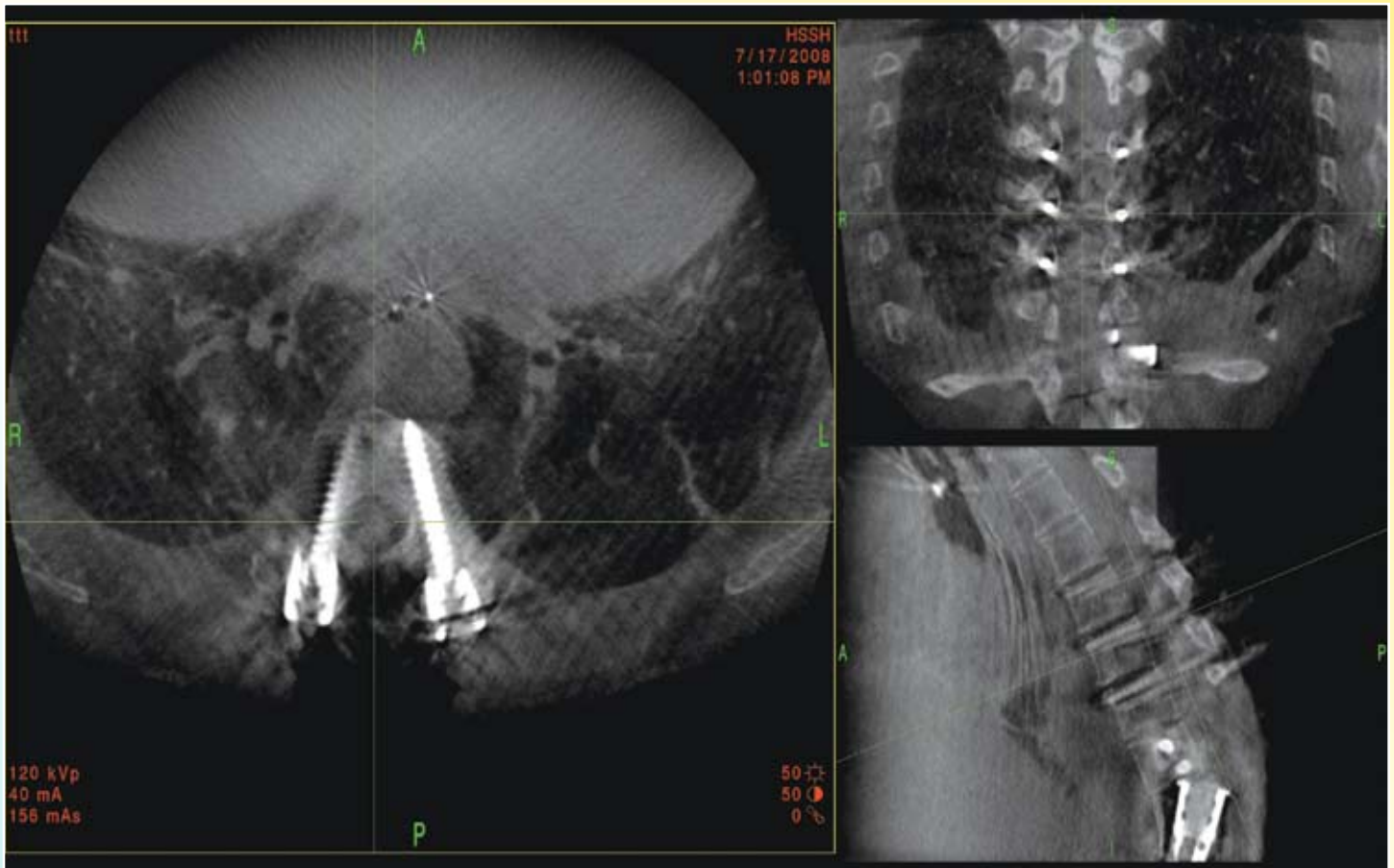
While the case was planned for 14 hours, it lasted approximately 8 hours, including plastic surgical reconstruction. Six months following surgery, the patient has minimal pain and is doing well with a stable construct, despite a motor vehicle accident at 5 months post-op.

Figure 1 & 2: Exposing bony surfaces quickly with probe; navigating thoracic screw placement

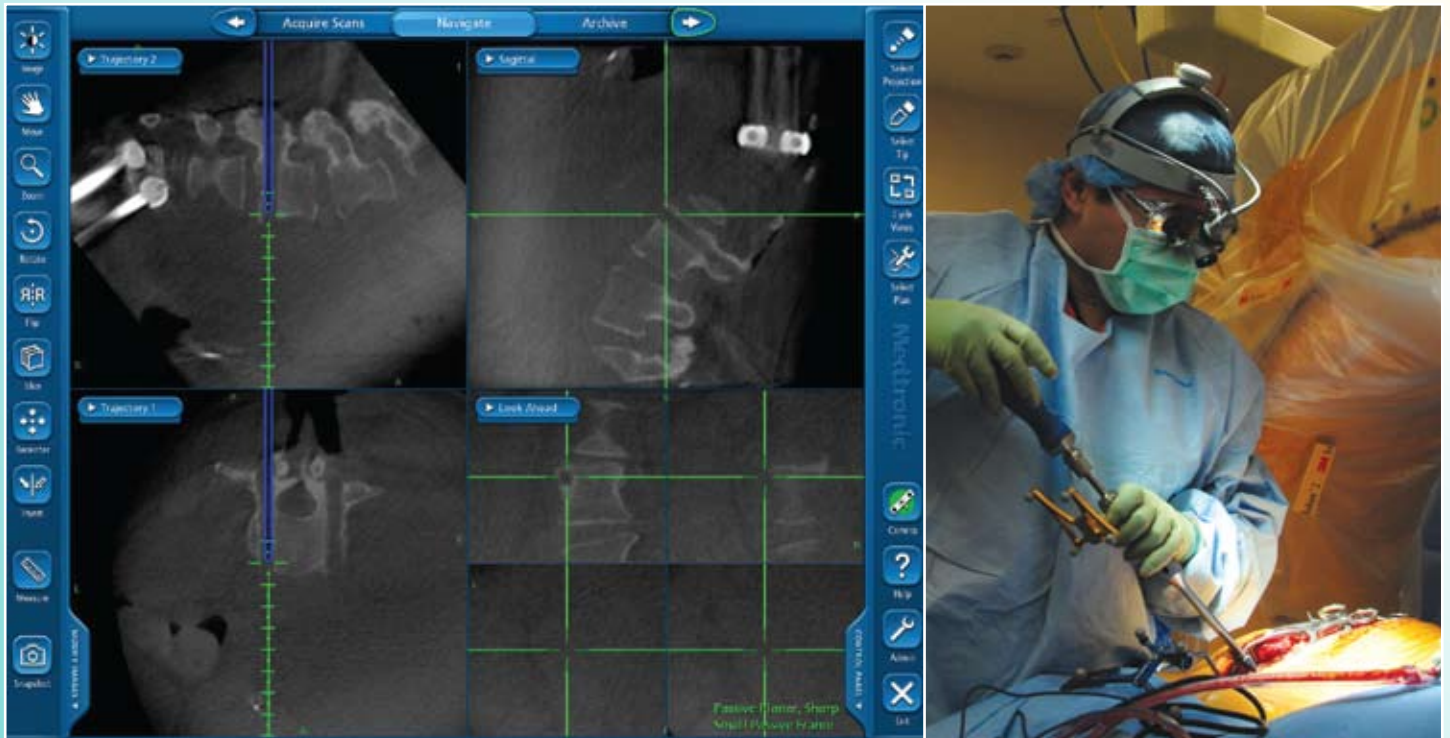


Results of this study are specific to this case and do not necessarily reflect the outcome for all similar surgeries

Figure 3: Post thoracic screw implant O-arm® image, confirming the quality of placement.



Figures 4 & 5: Insertion of ipsilateral screw in lumbar spine, down screw hole from previous surgery, attaining bicortical purchase.



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6,940,941; 7,108,421; 7,001,045;
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