

A Novel Repositioning System for Use in Lateral and Prone Surgeries for Single-Position Surgeon Procedures

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Introduction

Lateral surgery, including transmuscular and anterior to psoas, has become increasingly popular among spine surgeons. Single-position lateral and single-position prone methods have evolved to eliminate the flip time, energy, and costs associated with manually repositioning the patient from the lateral position to the prone position. In the single-position lateral method, screw trajectories are difficult and primarily only percutaneous, and decompression is quite limited and difficult. In the single-position prone method, the interbody cages must be placed from a less desirable prone position, with an occasionally inaccessible L4/L5 level and loss of access to the L5/S1 level. Both levels are critical to maintaining and restoring sagittal alignment. The single-position surgeon patient positioning system allows for screw placement and decompression in the prone position and cage placement in the lateral position while maintaining a sterile field and facilitating simultaneous access.

Aim

This video reports the initial results of a feasibility study to determine if patients can be safely moved from the lateral position to the prone position and back while maintaining a sterile field, permitting simultaneous access.

Materials and Methods

The patient positioning system was used during lateral to prone and prone to lateral positioning in 317 patients (157 male, 160 female). The mean patient age was 63.9 years. Patient weight ranged from 141 lbs to 292 lbs (mean weight, 182 lbs), and patient height ranged from 59 in to 76 in (mean height, 67 in). Degenerative and deformity procedures ranged from single-level screw fixation and lateral interbody fixation to fixed sagittal plane deformity requiring thoracolumbar multilevel fixation, anterior column realignment, and corpectomy as necessary. All patients required a combination of lateral and prone surgical approaches. In this series, seven procedures required posterior-anterior-posterior approaches because of the need to remove hardware before revision. Surgical time, cost of materials, and complications were recorded.

Results

No wound breakdown, abrasion, or ulceration were reported. No loss of airway, Foley catheter, or intravenous line occurred. Somatosensory-evoked potentials and motor-evoked potentials were monitored in all procedures. No common peroneal, ulnar, or brachial plexus findings were reported postoperatively. The mean time from completion of the lateral procedure to starting the prone procedure was less than 8 minutes compared with the 45 minutes in patients who were repositioned. The estimated savings for materials and surgical time was \$2,500 per procedure.

Conclusions

This is the first patient positioning system that successfully and safely enables bidirectional movement or repositioning of the patient between lateral and prone positions while maintaining a sterile field for the advantage of simultaneous access to all three columns of the spine. Surgeons can ergonomically operate in one position while the patient experiences a beneficial physiologic movement throughout the procedure versus the compromises and costs that currently are observed with nonsterile flip, single-position lateral and single-position prone options.