


Enhanced Recovery in Spine Surgery without General Anesthesia

Ernest E. Braxton Jr, MD, MBA, FAANS
Spine and Neurosurgery
Minimally Invasive Spine Surgery
US Ski Team Physician



Disclosures

Medtronic: consulting, research support  **Medtronic**

Globus: consulting  **GLOBUS**
MEDICAL

Aesculap: consulting **AESCULAP**[®]

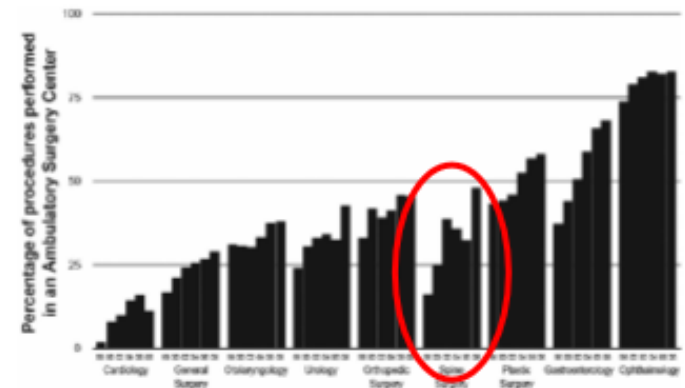
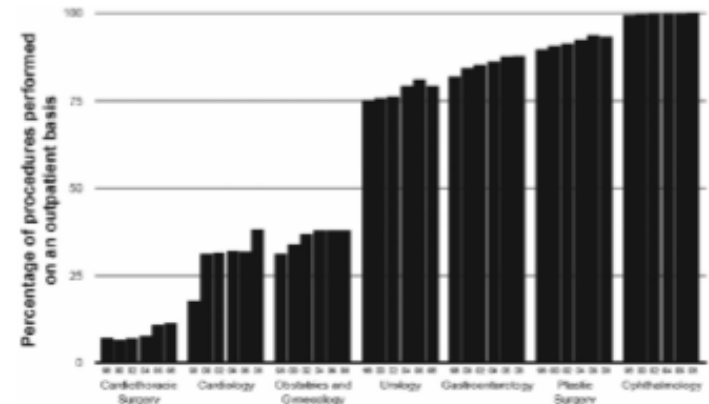
Boston Scientific: consulting **Boston**
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Ambulatory Surgical Care has been rising steadily

- **Approximately 53 million ambulatory surgery procedures annually in U.S.**
 - Seen across specialties
 - Over two-thirds of surgical procedures performed on outpatient basis
- **Quality outcomes have not been found to differ significantly for hospital outpatient vs. ambulatory surgery**
 - Not all studies assess risk-adjusted morbidity
- **Benefit for cost-containment service efficiency and OR efficiency**

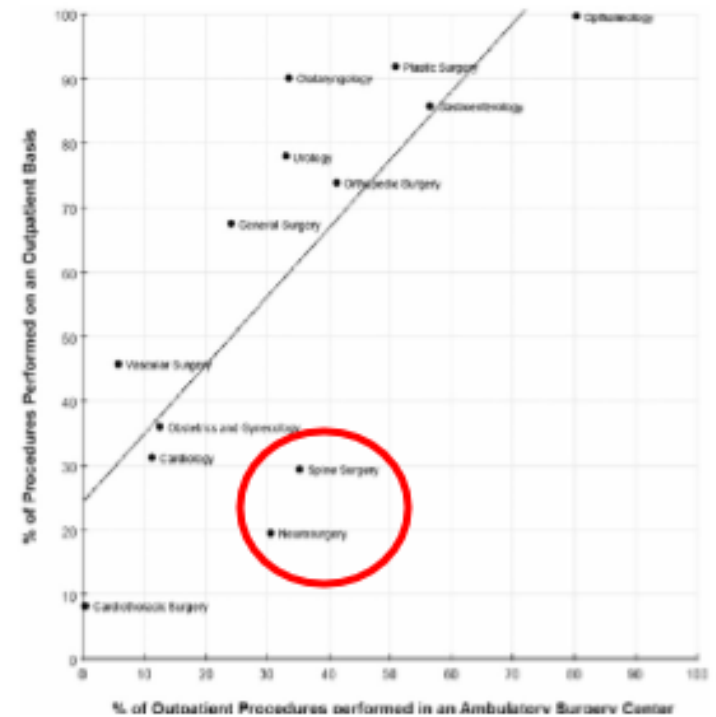
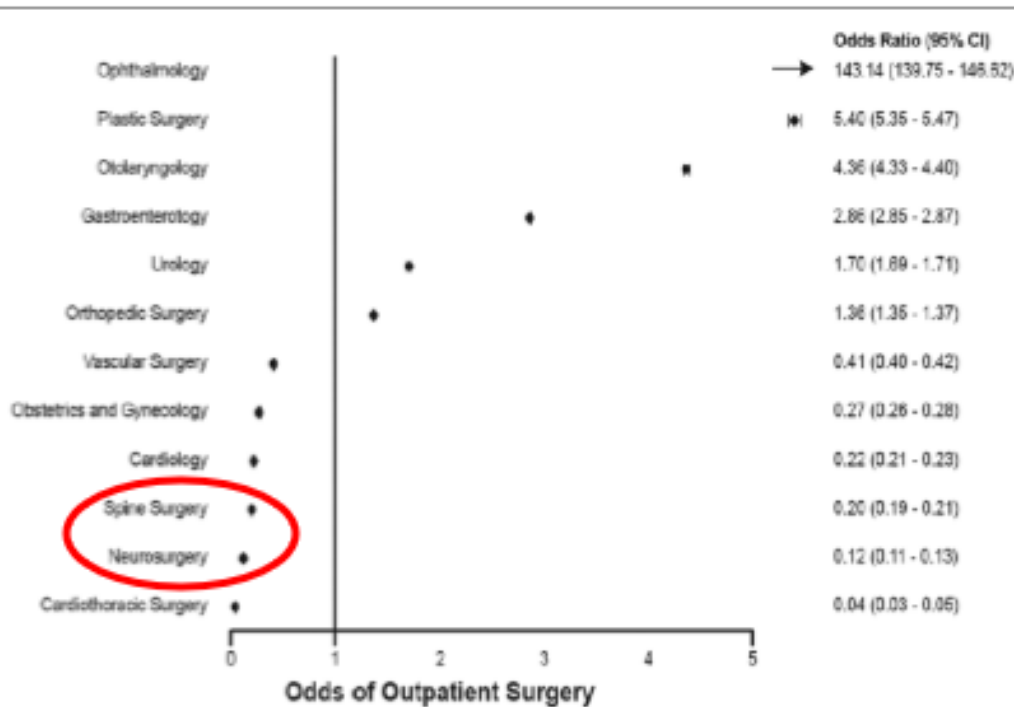


Surg Innov (2013) 21(6): 560-5



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Similar trends for Neurosurgery, Nearly half of all spine procedure were perform in an Outpatient setting



Surg Innov (2013) 21(6): 560-5

Value Proposition of ASCs

- Efficiencies of cost through specialization of care
- Smaller size: improve patient access
- Rapid engagement in changing care
- Value = quality/cost
- Safety: appears equal to hospital setting

The Primary limitation is Length of Stay (LOS)

- The adoption of awake spine surgery has decreased LOS due to enhanced recovery without general anesthesia



Many patients are willing to undergo Awake Surgery if benefits are Explained during the pre-op

Going Under the Knife, With Eyes and Ears Wide Open



Esther Voynow during her surgery at the Rothman Institute in Bensalem, Pa. She was rendered numb with only an injection of a local anesthetic. Mark Makela for The New York Times

FierceHealthcare

HOSPITALS & HEALTH SYSTEMS TECH PAYER FINANCE PRACTICES REGULATORY

Healthcare

More patients choose to stay awake during surgery

by Matt Kuhrt | Mar 28, 2017 10:48am



Many patients appreciate the option to stay awake and watch their doctor work during a surgical procedure.



Benefits of spine surgery without General Anesthesia

MEDICAL-COST

Patients caught in middle of 'outrageous,' and 'unjustified' bills

9NEWS_{com}

Multiple patients charged more than \$100,000 for a medical procedure. One woman's insurance paid the claim – and now it's demanding money back. 9Wants to Know investigation into the 'unjustified' charges prompts hospital internal review.

- Ability to monitor the patient neurologically through out the procedure
 - Eliminates the need for costly intra-operative neurological monitoring and hidden out of network IOM charges.
 - Often patient helps locate pathology
 - Neuropraxia from positioning

Benefits of spine surgery without General Anesthesia

- Avoids the risks of General Anesthesia all together
 - Decrease diastolic pressures during induction
 - Effects of paralytics given
 - Greenhouse gases used
 - Post op nausea and vomiting (PONV)
- Encourages safer handling of soft tissues and humanism for the patient
 - Cautery settings
 - Professionalism in OR

[Anesth Essays Res.](#) 2011 Jan-Jun; 5(1): 5-10.
doi: [10.4103/0259-1162.84171](https://doi.org/10.4103/0259-1162.84171)



PMCID: PMC4173371
PMID: [25885293](#)

Anesthetic gases and global warming: Potentials, prevention and future of anesthesia

[Hina Gadani](#) and [Arun Vyas](#)

- Greater Efficiency in the OR

Effects Of Surgery On A Warming Planet: Can Anesthesia Go Green?

May 6, 2019 · 3:12 PM ET

Heard on All Things Considered

KRISTIAN FODEN-VENCIL

FROM 





“Desflurane is 20 times as powerful in trapping heat in Earth's atmosphere as sevoflurane. It also lasts for 14 years in the atmosphere”

Dr. Brian Chesebro (right), in Portland, Ore., has calculated that by simply using the anesthesia gas sevoflurane in most surgeries, instead of the similar gas desflurane, he can significantly cut the amount of global warming each procedure contributes to the environment.

Kristian Foden-Vencil/OPB

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ORTHOPAEDICS & NEUROSURGERY

Keeping Patients Awake During Spine Surgery is Cutting Recovery Time in Half

By Robin Marks



Praveen Mummaneni (right), MD, performs an awake spine surgery with (from left) Leslie Robinson, MD; Catherine Miller and Jeremy Lieberman, MD. *Photo by Melissa Lau*

“This mean we’re not giving post-operative IV narcotics anymore”
Praveen Mummaneni MD

Contemporary Spine Surgery



VOLUME 17 ■ NUMBER 5 ■ MAY 2016

Spinal Surgery Without General Anesthesia

Matthew F. Gary, MD, and Michael Y. Wang, MD, FACS

“(1) facilitating patient participation during the procedure, which may be more sensitive and accurate than electrophysiological data; (2) rapid postoperative recovery, with many patients able to go home the same day as the surgery; and (3) the potential to reduce the rate of complications attributable to general anesthesia.”

Walcott et al demonstrated that spinal anesthesia was associated with a 10.3% decrease in direct operating room costs as compared with general anesthesia.

Anesthesia ERAS protocol at our institution

- Multi modal pain management pre op
 - Lyrica™ or Neurtonin™
 - Tylenol™
 - Robaxin™
- No solids foods 8 hours prior to surgery
- Clears including carbohydrate drink 2 hrs prior to surgery
 - Gatorade®
 - No fats or protein in the drink

Single surgeon experience from July 2017 to April 2017

- Case volume 201
 - **Laminotomy or Laminectomy for Excision of Herniated Intervertebral Disks** CPT 63030- 84 cases
 - **Laminectomy, facetectomy and foraminotomy with decompression** CPT 63047- 89 cases
 - **Transpedicular/Transfacet approach with decompression of nerve root(s) (eg, herniated disc)** CPT 63056- 28 cases
- Average post operative Length of stay 120.4 min
 - Average Phase I time 37.4 min
 - Average Phase II time 85.1 min
- IV narcotics post-op **none**
- Average Case time: 87.1 min
- Average blood loss: 15 ml

Complications in 201 cases

1 case was abort secondary to symptomatic bradycardia

Cardiology eval was negative (EKG, echo, enzymes)

Did the case under general and patient again had bradycardia

Presumed Vagal sensitivity

Zero (0) wound infections

Zero (0) CSF leaks (incidental dural tears were repaired primarily)

Dural tear did not change length of stay protocol

Illustrative Case Example

Warning: The follow slides contain images of live surgery

We are grateful to the patient for giving written consent to use his surgical images and video for the purpose of education and/or marketing.



Case summary for Left L5/S1 Microforaminotomy with discectomy

- 55 year old male with left paraspinal pain and buttock pain. Worse with activity for 2-3 years. Diagnostic relief from injectional therapy. Unable to stand for more than 1 hour.
- Here for second opinion, another surgery recommend L5/S1 fusion
- Concern about going on business trip to Europe in 2 weeks.

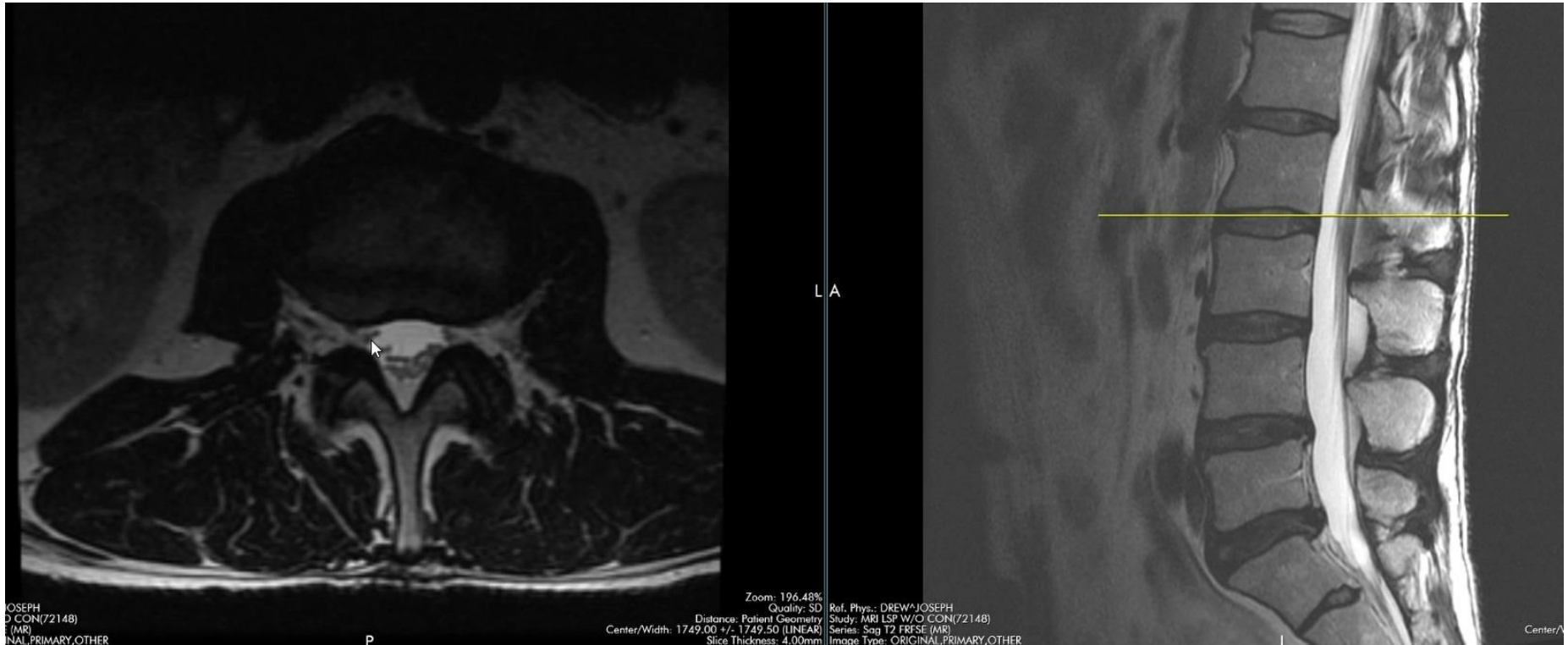
NUMERIC PAIN/VAS - BACK AND LEG (Started On: 05/02/2019)	
VISUAL ANALOG SCALE - BACK AND LEG	
Low Back Pain:	4.27
Right Leg Pain:	0
Left Leg Pain:	5.12
NUMERIC BACK AND LEG	
BACK PAIN - On the scale of 0 to 10, mark your intensity of back pain discomfort with 0 being no pain and 10 being pain as bad as it could be.	5
BACK PAIN - On the scale of 0 to 10, mark how often you had back pain discomfort with 0 being none of the time and 10 being pain all of the time.	4
LEG PAIN - On the scale of 0 to 10, mark your intensity of leg pain discomfort with 0 being no pain and 10 being pain as bad as it could be.	0 - No Pain
LEG PAIN - On the scale of 0 to 10, mark how often you had leg pain discomfort with 0 being none of the time and 10 being pain all of the time.	0 - Pain None Of The Time

ODI 2.1A (Started On: 05/02/2019)	
This questionnaire is designed to give us inf...	
Section 1 - Pain Intensity	I have no pain at the moment.
Section 2 - Personal Care (washing, dressing, etc.)	I can look after myself normally without causing extra pain.
Section 3 - Lifting	I can lift heavy weights without extra pain.
Section 4 - Walking	Pain prevents me walking more than one mile.
Section 5 - Sitting	I can sit in any chair as long as I like.
Section 6 - Standing	Pain prevents me from standing for more than half an hour.
Section 7 - Sleeping	My sleep is never disturbed by pain.
Section 8 - Sex life (if applicable)	My sex life is normal and causes no extra pain.
Section 9 - Social life	My social life is normal and causes me no extra pain.
Section 10 - Travelling	I can travel anywhere without pain.

PATIENT TRENDS	
Scores	05/02/2019 (0 days ago) Surgery
ODI (0 - 100)	8.00



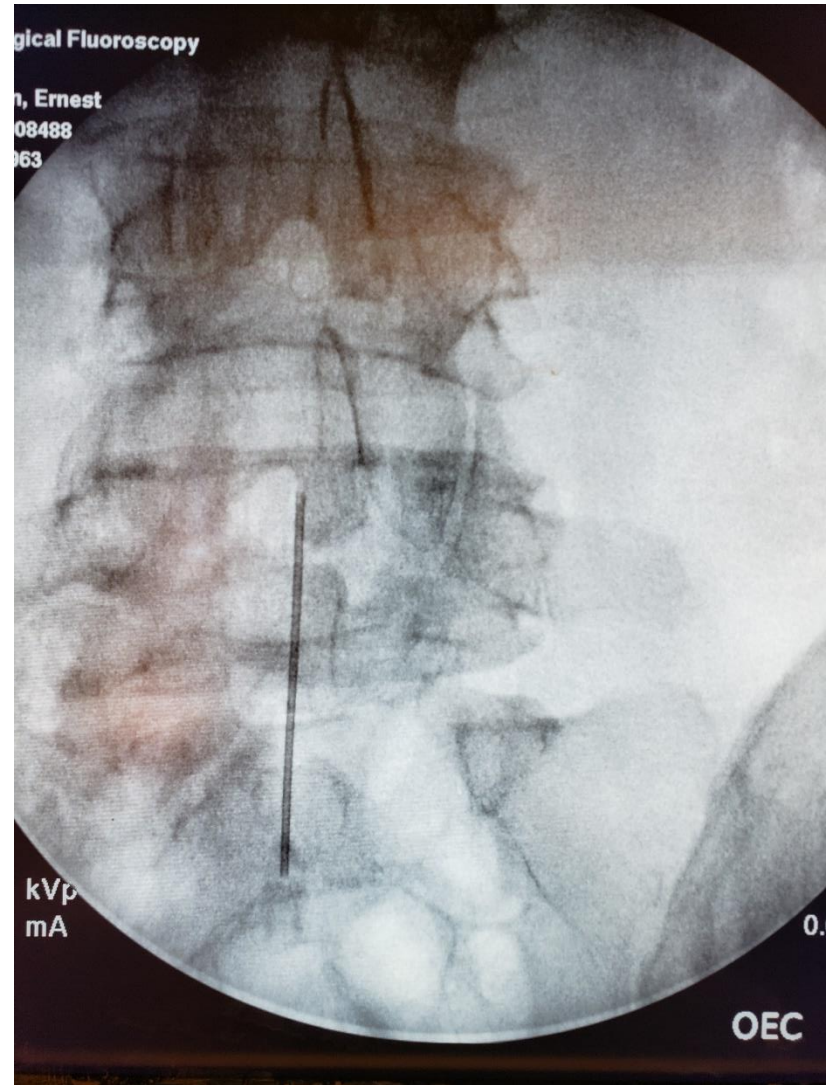
MRI demonstrates foraminal stenosis with disc osteophyte complex complex at Left L5/S1

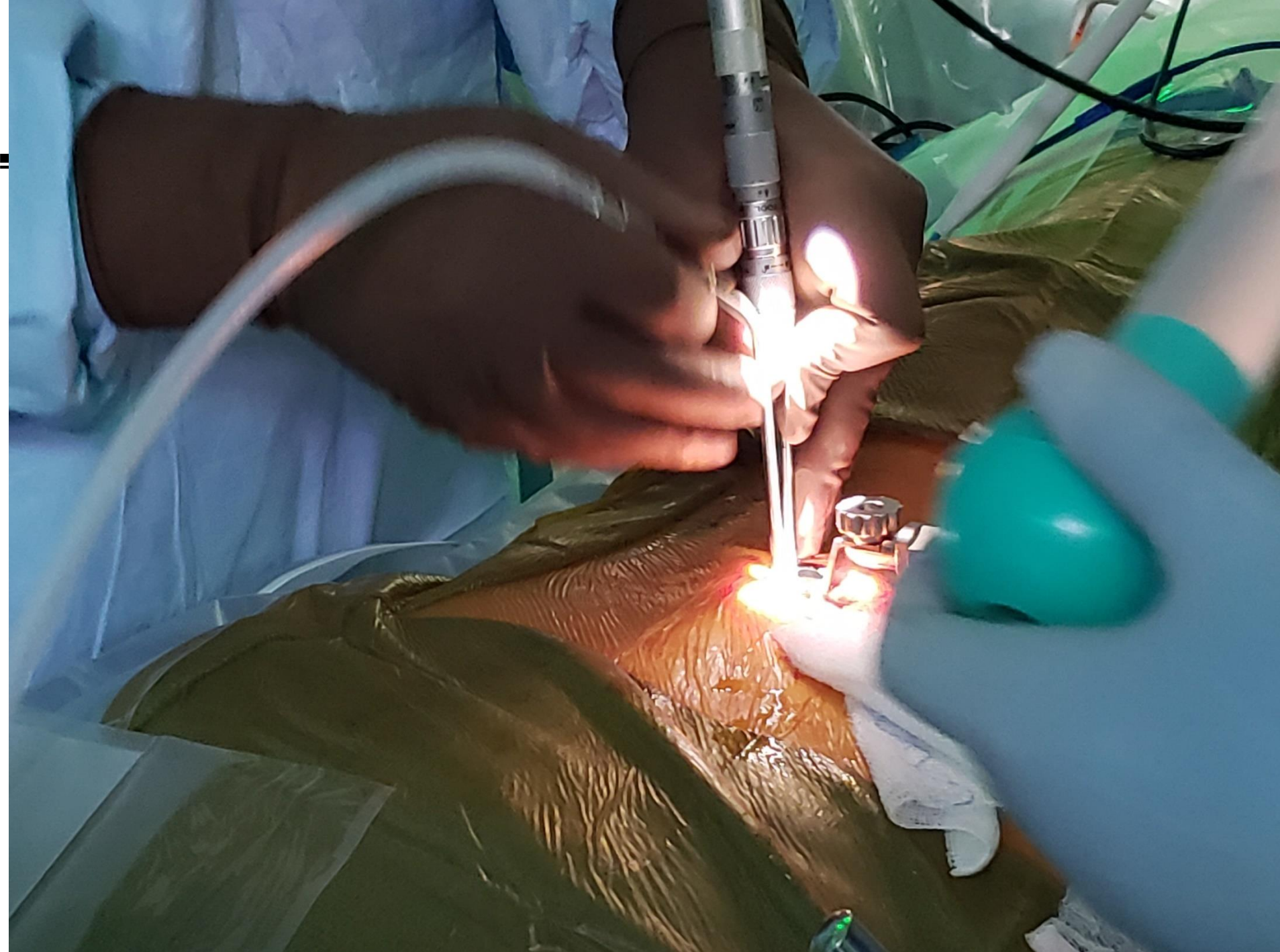


Patient positions themselves, and placed in the standard prone position

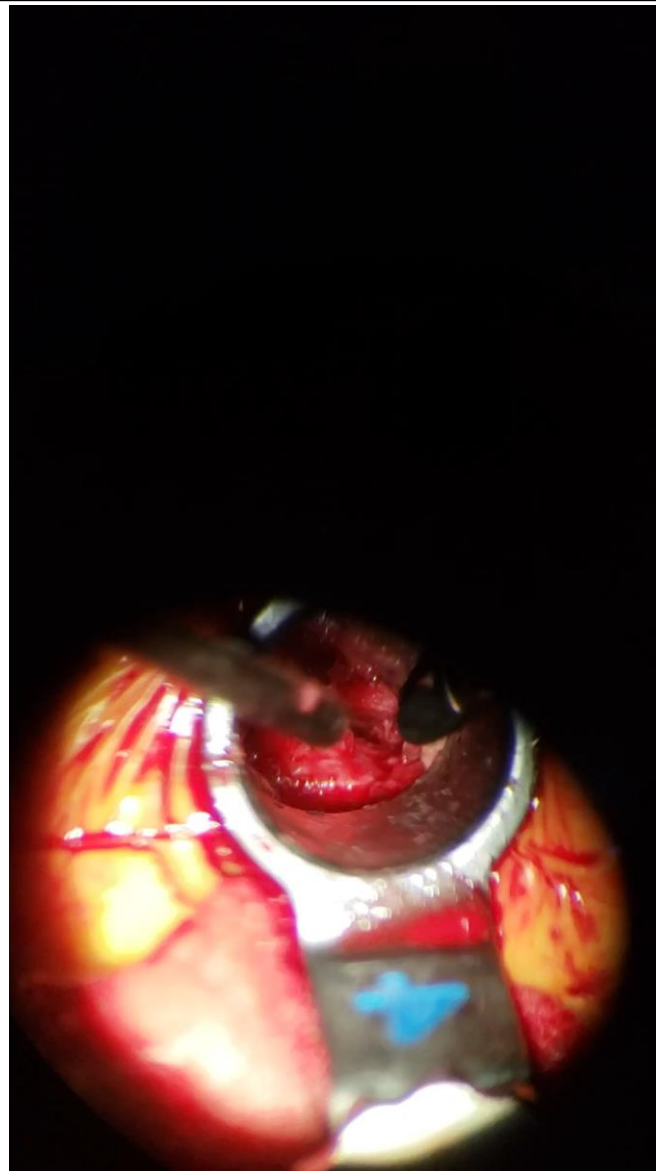


An epidural block is standard along with local anesthesia





We are able to examine the patient can communicate throughout surgery



Awake spine surgery is safe and is associated with enhanced recovery



Ability to monitor the patient neurologically through out the procedure

Avoids the risks of General Anesthesia all together

Encourages safer handling of soft tissues and humanism for the patient

Greater Efficiency in the OR

Average post operative Length of stay 120.4 min
Phase I LOS 37.4 min



