Enhanced Recovery in Spine Surgery without General Anesthesia

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Spine and Neurosurgery
Minimally Invasive Spine Surgery
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Disclosures

Medtronic: consulting, research support

Globus: consulting

Aesculap: consulting

Boston Scientific: consulting

Vail Valley Surgery Center: shareholder
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 morbidly

- Benefit for cost-containment service efficiency and OR efficiency
Similar trends for Neurosurgery, Nearly half of all spine procedure were performed in an Outpatient setting.
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.
Benefits of spine surgery without General Anesthesia

• Ability to monitor the patient neurologically throughout 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

- Greater Efficiency in the OR
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 Chesbro (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
This means we’re not giving post-operative IV narcotics anymore.”

Preveen Mummaneni MD
“(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
  Pressumed 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
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

<table>
<thead>
<tr>
<th>VISUAL ANALOG SCALE - BACK AND LEG</th>
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</thead>
<tbody>
<tr>
<td>Low Back Pain:</td>
</tr>
<tr>
<td>Right Leg Pain:</td>
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<tr>
<td>Left Leg Pain:</td>
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NUMERIC BACK AND LEG

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ODI 2.1A (Started On: 05/02/2019)

This questionnaire is designed to give us........

| 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) 80.00
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 throughout 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