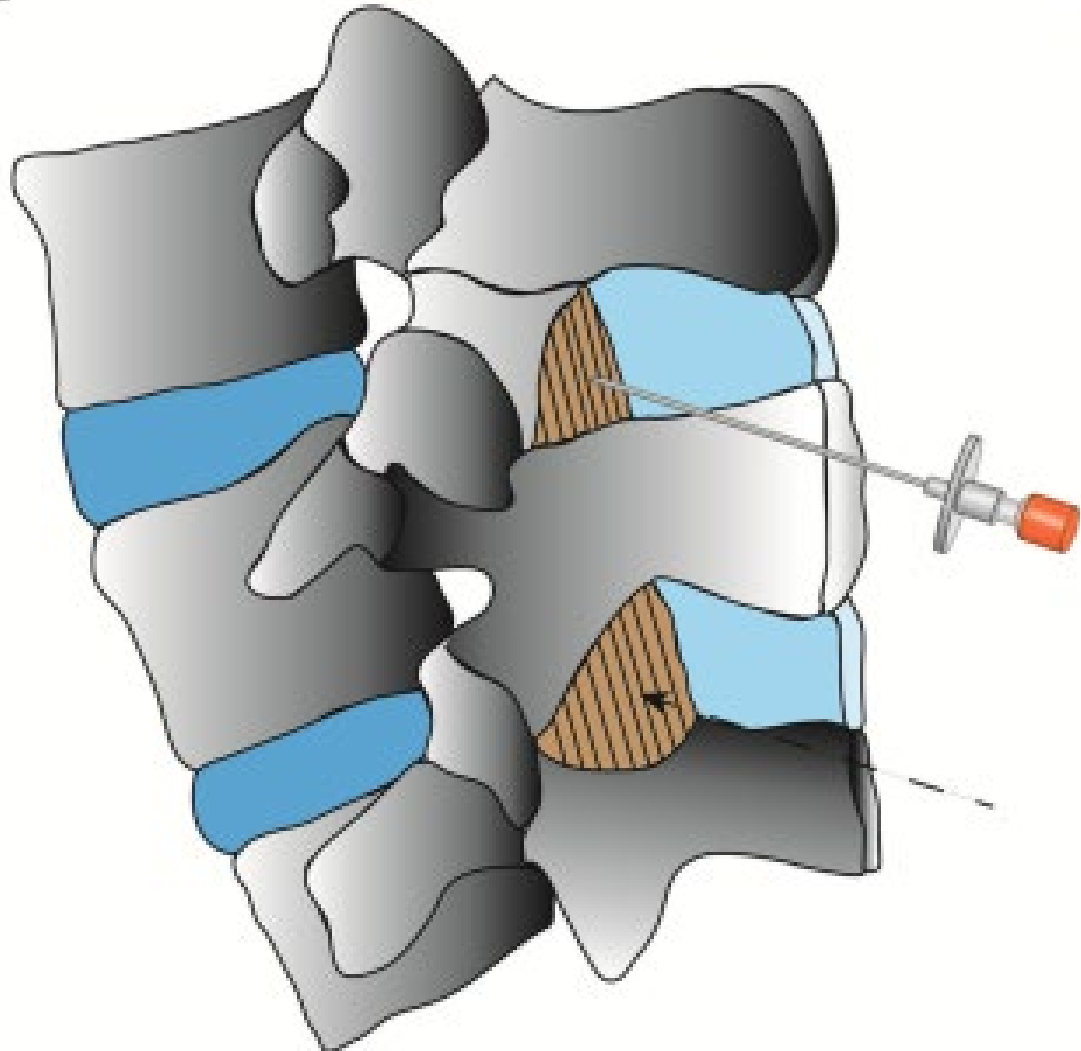




PALERMO 5-7 Ottobre  
**XXVIII** CONGRESSO  
NAZIONALE



# La spinale a oggi

L. Bertini - Centro di Terapia del Dolore ASL Roma 2



# Spinal Anesthesia

1889 Bier performed first spinal anaesthesia



- it is a commonly performed regional anesthesia technique by most anesthesiologists worldwide
- it is the most commonly performed technique in anesthesia in resource-poor developing countries
- Despite being an old technique, spinal anesthesia has evolved and developed in various aspects

# ONIC

UPON A TIME

An anaesthesiologist's story





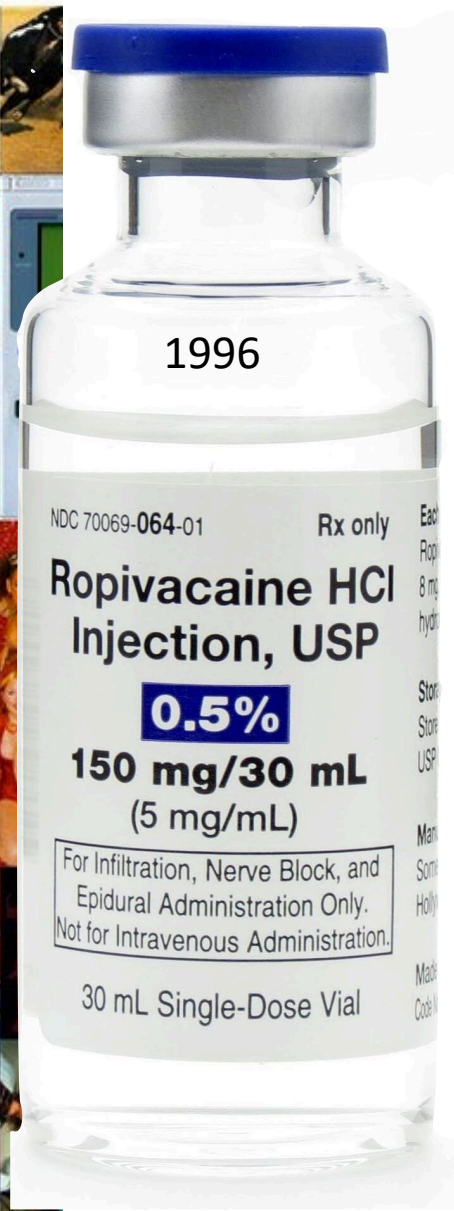
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1980	1983	1987	1989
<b>BIGGEST HIT EACH MONTH</b>			



# HAPPY 90's #2



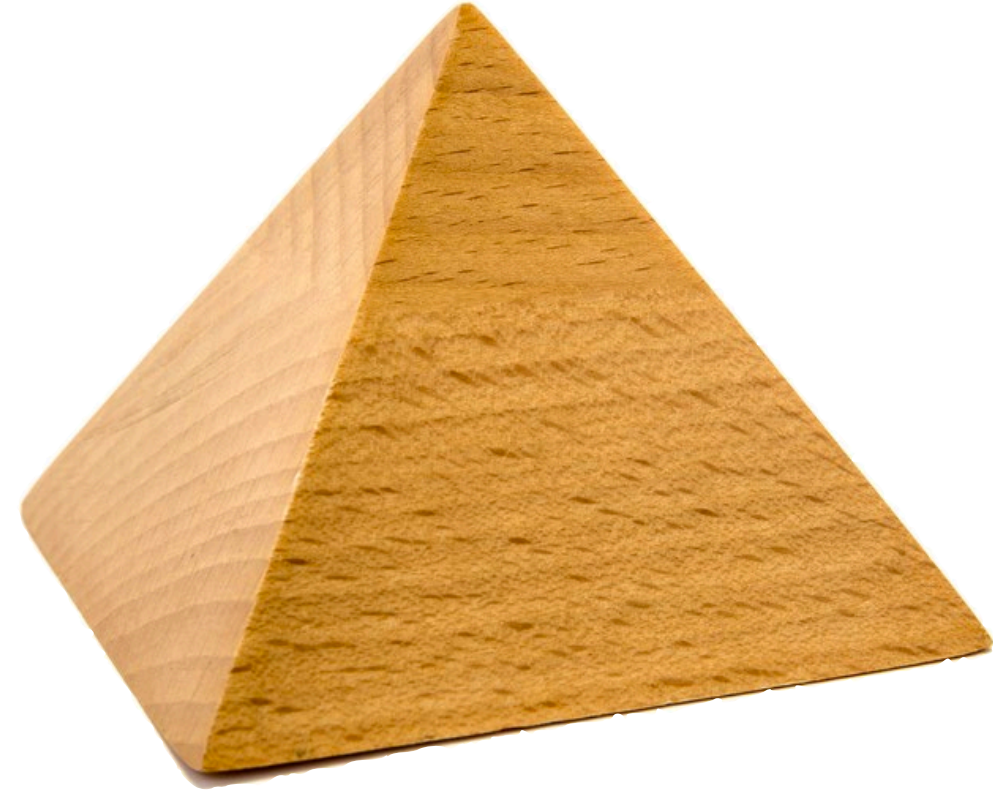


less invasive techniques  
laparoscopic techniques  
reduced blood loss  
ERAS



# Spinal Anaesthesia today 2023

- Technical advances
- Drugs
- Indications





# Technical advances

ESSENTIAL NOTES

BJA Education, 22(8): 295–297 (2022)

## Continuous spinal anaesthesia

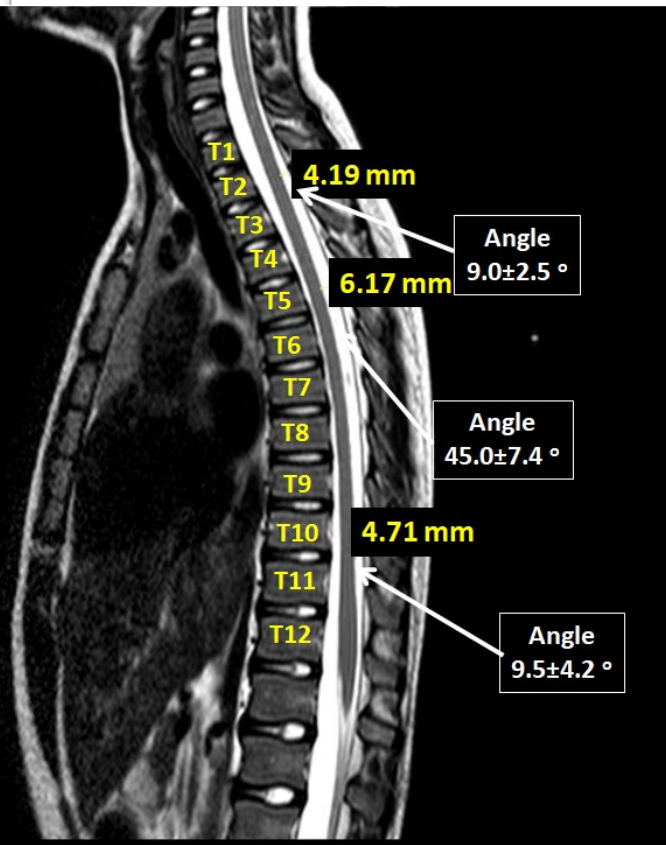
R. Hay and A. Gupta\*

Gateshead Health NHS Foundation Trust, Gateshead, UK

- CSA is an effective method of delivering titratable neuraxial blockade
- Benefits: faster onset, improved haemodynamic stability and low intraoperative failure rate
- CSA should only be performed under the guidance of an experienced practitioner
- It may have a limited role for patients who would perhaps benefit from avoiding general anaesthesia for a long procedure

## Segmental Spinal Anesthesia: A Systematic Review

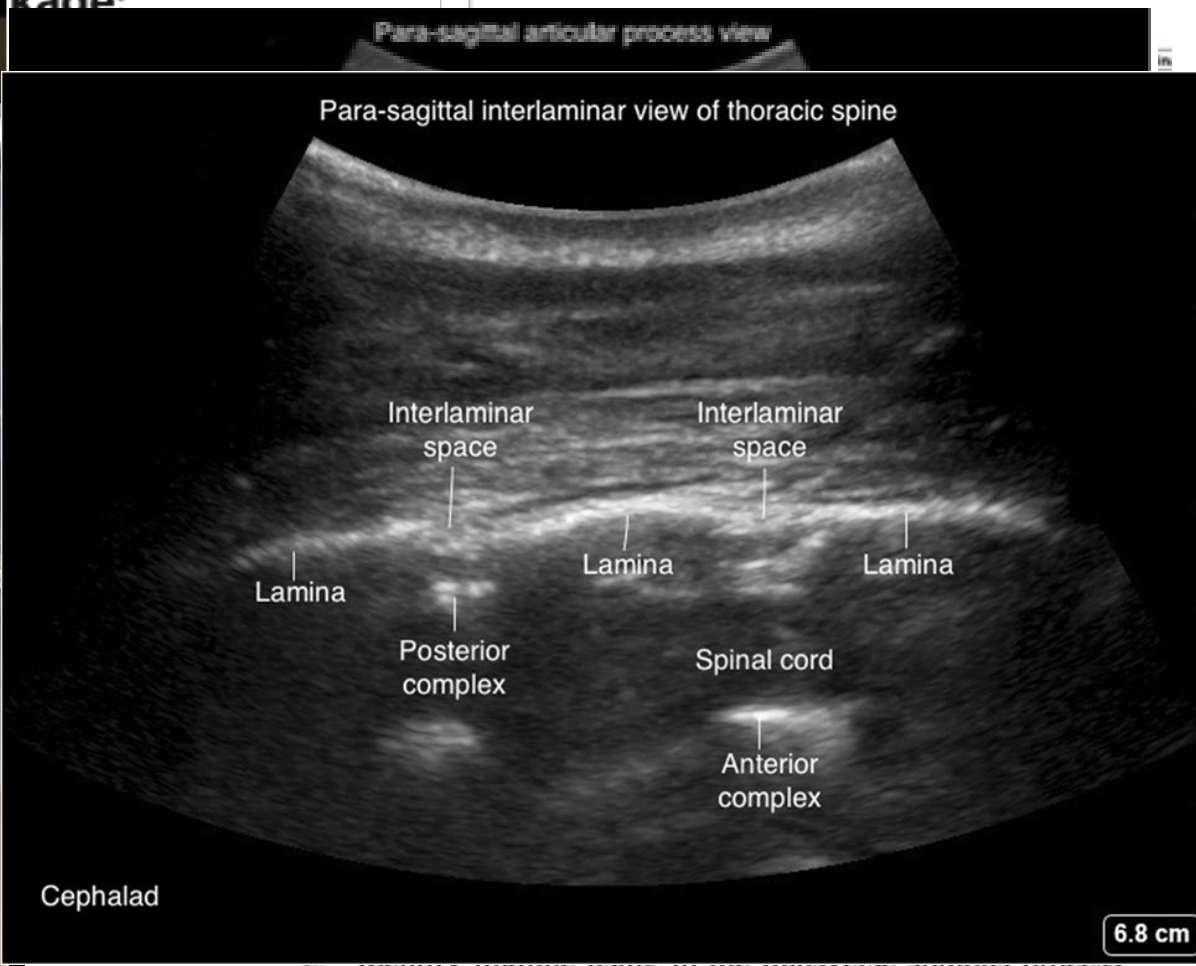
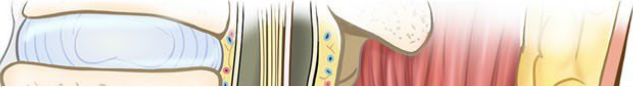
Luiz Eduardo Imbelloni\*, Jaime Weslei Sakamoto, Eduardo Piccinini Viana, Andre Augusto de Araujo, Davi Pöttker, Marcelo de Araujo Pistarino



- Indications:
- shorter procedures with patients considered at high risk of perioperative morbidity and mortality
- patients who are unable to undergo the traditional method of spinal anesthesia in the lumbar region
- Individuals at risk tend to be older patients who decline in physiological reserves, comorbidities, polypharmacy, cognitive dysfunction, and frailty.

**LAST  
BUT NOT  
LEAST**

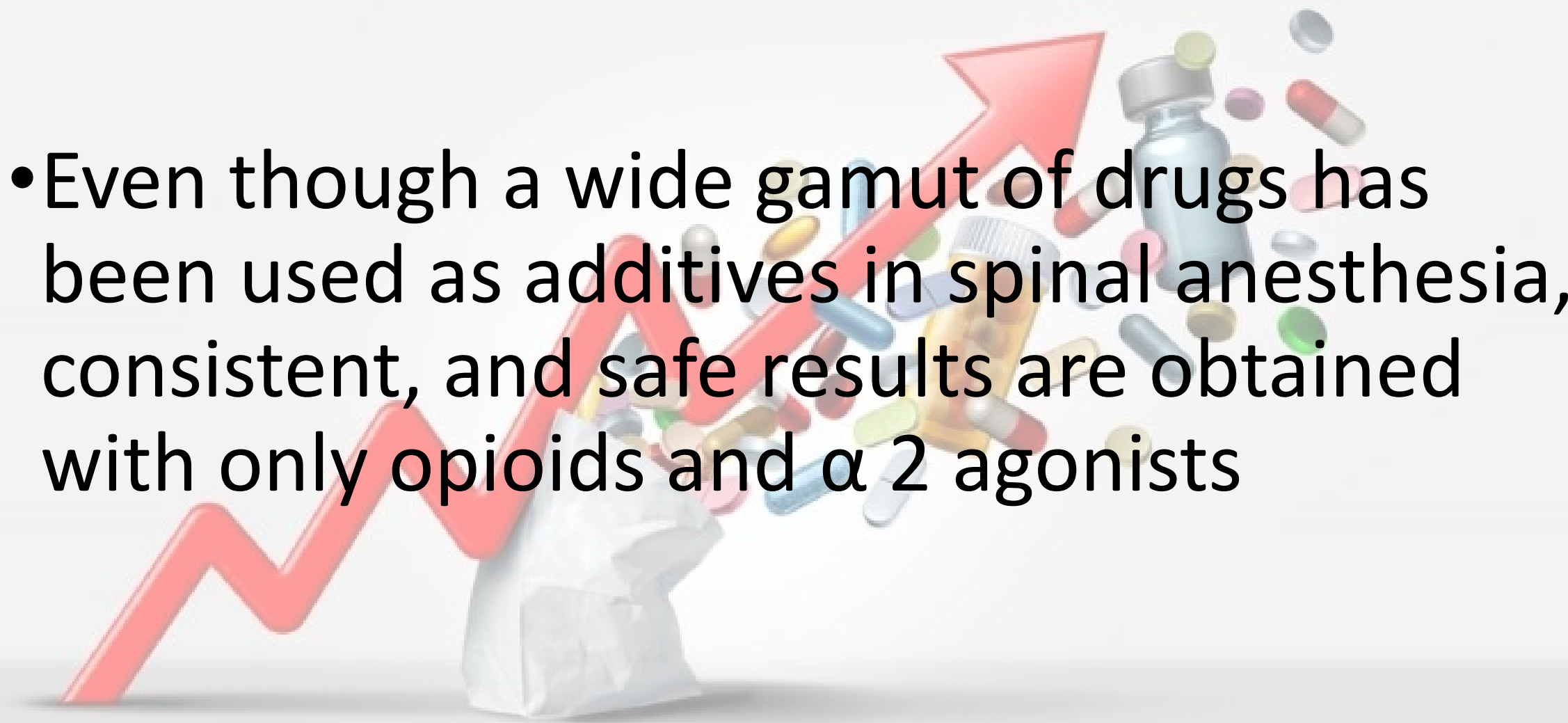
**Ultrasound**



2. Identify the window using the transverse spinous process view and mark. (Fig. 13)
3. Identify the best window in the transverse interspinous view and mark for needle entry. (Figs. 15 and 18)

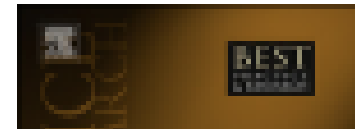
# Drugs

- Even though a wide gamut of drugs has been used as additives in spinal anesthesia, consistent, and safe results are obtained with only opioids and  $\alpha 2$  agonists





Contents lists available at [ScienceDirect](#)



- IT opioids provide highly effective and prolonged perioperative pain relief for thoracic, abdominal, orthopaedic and pelvic surgical procedures. Morphine remains the most common (and the only approved) opioid for IT administration.
- The role of catheter epidural technique is decreasing and that of ITM is increasing, particularly as part of the multimodal analgesia strategy in ERAS protocols.
- ITM is recommended for many major surgical procedures by societies and research groups such as ERAS, SOAP, PROSPECT and NICE.
- There is no evidence that the risk of respiratory depression is lower with IT diamorphine versus ITM.
- Current evidence supports the use of low-dose ITM (up to 150 mcg); the risk of respiratory depression with this dose is no greater than systemic opioids. Post-operatively, patients can be nursed in regular surgical wards without any extended monitoring routines.

Literature Review

 **A Comprehensive Review of the Use of  $\alpha 2$  Agonists in Spinal Anesthetics**

Ruben H. Schwartz, DO<sup>1</sup>, Stephanie Hernandez, MD<sup>2</sup>, Nazir Noor, MD<sup>1</sup>, Jacob Topfer, DO<sup>3</sup>, Kyle Farrell, MD<sup>4</sup>, Naina Singh, MS<sup>5</sup>, Ayushi Sharma, MS<sup>4</sup>, Giustino Varrassi, MD, PhD<sup>5</sup>, and Alan D. Kaye, MD, PhD<sup>5</sup>

- $\alpha 2$  agonists may play a significant role in prolonging spinal blockade limiting cardiovascular complications such as hypotension and bradycardia
- The use of  $\alpha 2$  agonists instead of opioid medications intrathecally decreases pruritus and delayed respiratory depression.
- The synergistic effects of  $\alpha 2$  agonists with opioids in the subarachnoid space is demonstrated
- $\alpha 2$  agonists with local anesthetics showed an increased block duration compared to an opioid with local anesthetics
- They could be an alternative to opioids

# Evidence-Based Guideline on Prevention and Management of Shivering After Spinal Anesthesia in Resource-Limited Settings: Review Article

Hunde Amsalu<sup>1</sup>, Abebayehu Zemedkun<sup>2</sup>, Teshome Regasa<sup>2</sup>, Yayah Adamu<sup>2</sup>

## Grade I shivering

- Cotton blanket
- Gown warming
- warmed fluid + Ketamine 0,24mg/kg IV

## Grade II shivering

- Magnesium sulphate 50mg /kg IV

## Grade III shivering

- Magnesium sulphate 50mg/kg \* 0,2mg/kg as infusion
- Tramadol 0.5mg/KG

## Grade IV shivering

Tramadol 1mg/Kg IV again in shivering persist then consider giving Pethidine 0.5mg/Kg



straightforwardness  
recency  
groundbreaking novelty  
nascent creativeness introduce  
inchoate creation emergent inventive  
emerging begin bracing

# newer

unveil

animating fresh beginning freshly newly  
imaginative creatively initially  
refreshing freshness recent  
inaugurate recently  
unconventional

# indications



# Best Practice & Research Clinical Anaesthesiology

Volume 37, Issue 2, June 2023, Pages 109-121



3

## Spinal anesthesia in ambulatory surgery

Ann-Kristin Schubert (MD)<sup>a</sup>, Thomas Wiesmann (Professor)<sup>a b</sup>,  
Hinnerk Wulf (Professor)<sup>a</sup>  , Hanns-Christian Dinges (MD)<sup>a</sup>

- Spinal anesthesia is a safe alternative to general anesthesia in ambulatory surgery
- The availability and approval of 2-chloroprocaine and prilocaine have increased the use of short-acting local anesthetics for ambulatory spinal anesthesia.
- 2-chloroprocaine and prilocaine provide effective and predictable spinal anesthesia with a lower risk for TNS compared to lidocaine.

# THE CENTER FOR SAME DAY SURGERY



BJA Education, 19(10): 321–328 (2019)

doi: [10.1016/j.bjae.2019.06.001](https://doi.org/10.1016/j.bjae.2019.06.001)

Advance Access Publication Date: 13 August 2019

## Spinal anaesthesia for ambulatory surgery

W. Rattenberry<sup>1</sup>, A. Hertling<sup>2</sup> and R. Erskine<sup>3,\*</sup>

- Proficiency with the use of short-acting spinal anaesthetics should be a core competency of anaesthesia specialty training

Local anesthetic	Structure group	Dose range (mg)	Volume range	Duration of action	Comments
Lidocaine 5%	Amide	50–100	1–2 ml	90–120 min	High risk of TNS. No longer licensed in the United States and the United Kingdom
Mepivacaine 1.5%	Amide	30–60	2–4 ml	90–150 min	Risk of TNS is similar to lidocaine. Not licensed in the United States and the United Kingdom
Bupivacaine 0.5 and 0.75%	Amide	5–20	1–4 ml for 0.5% and 0.75–2 for 0.75%	120–240 min	Prolonged duration. 0.75% hyperbaric licensed in the United States, whereas 0.5% hyperbaric licensed in the United Kingdom
Ropivacaine 0.5%	Amide	15–20	3–4 ml	120–210 min	Does not offer an advantage over bupivacaine. Not licensed in the United States or the United Kingdom
Levobupivacaine 0.5%	Amide	12.5–15	2.5–3 ml	~390 min; >5 h for mobilization	Senantiomer of bupivacaine; speed of onset and quality of block similar to hyperbaric bupivacaine; isobaric levobupivacaine may have shorter motor and sensory duration; isobaric levobupivacaine licensed in the United Kingdom
Articaine	Amide	60–90	2–3 ml	60–90 min	Concerns for severe hypotension and neurotoxicity
Prilocaine 2% hyperbaric	Amide	40–60	2–3 ml	60–90 min	Similar in onset and offset of lidocaine. Metabolites may be responsible for methemoglobinemia Licensed in the United Kingdom, but not in the United States
2-Chloroprocaine 1%, plain formulation	Ester	30–60	3–6 ml	40–90 min	Licensed in the United States and the United Kingdom



- **SA is a viable alternative to general anaesthesia in neonates, infants and older children.**
- A larger dose of a long-acting local anaesthetic (typically bupivacaine) is required in younger children compared with adults.
- Duration of block is age-dependent and considerably shorter than in adults.
- Typical duration of plain bupivacaine in infants is approximately 1 h.
- To prolong the duration, various adjuvant drugs can be used.
- These must be preservative-free to avoid potential neurotoxicity.
- SA can be useful even in paediatric outpatients.
- Regards success rate and PDPH, needle design does not appear to play as important a role as in adults



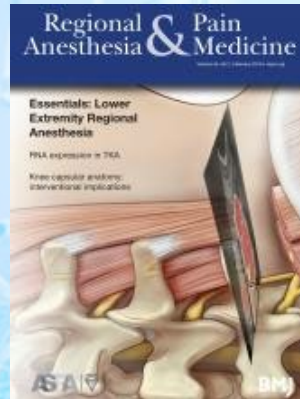
Review

## Laparoscopy in Gynecologic and Abdominal Surgery in Regional (Spinal, Peridural) Anesthesia, the Utility of the Technique during COVID-19 Pandemic

Attila Louis Major <sup>1,2,\*</sup>, Kudrat Jumaniyazov <sup>3</sup>, Shahnoza Yusupova <sup>3</sup>, Ruslan Jabbarov <sup>3</sup>, Olimjon Saidmamatov <sup>4,\*</sup> and Ivanna Mayboroda-Major <sup>5,\*</sup>

During COVID-19 pandemic regional anesthesia is a good alternative for laparoscopy and is well tolerated by patients, if carried out in low pressure pneumoperitoneum. If procedures are not urgent, surgery should be postponed in symptomatic Covid patients. Once recovered from COVID, a usual benefice/risk ration considering neuraxial anesthesia and general anesthesia is indicated.

# Cardiac Surgery



## Impact of high spinal anesthesia technique on fast-track strategy in cardiac surgery: retrospective study

Satoshi Hanada,<sup>1</sup> Atsushi Kurosawa,<sup>2</sup> Benjamin Randall,<sup>3</sup> Theodore Van Der Horst,<sup>4</sup> Kenichi Ueda<sup>1</sup>

### High Spinal Anesthesia vs TEA

- lower risk epidural haematoma (smaller needle, no catheter)
- easily performed at lumbar level ( 37,5/45 mg bupivacaine + opioids)
- less beta-receptor dysfunction & lower stress response even after sternotomy

- better Fast-track extubation & extubation in operating room

### Contraindication (relative)

- severe aortic stenosis and compromised left ventricular function

# Neuraxial Anesthesia Versus General Anesthesia in Spine Surgery Patients: Benefits, Risks, and Why It Should Be Considered

Advancing Evidence-Based Pain Management

**APPROVED**

## Spinal anesthesia in awake surgical procedures of the lumbar spine: a systematic review and meta-analysis of 3709 patients

Roberto J. Perez-Roman, MD, Vaidya Govindarajan, BS, Jean-Paul Bryant, MS, and Michael Y. Wang, MD

- low
- low

### NEURAXIAL ANESTHESIA CAUTIONS

no hypovolemic pts or fixed cardiac outflow  
avoided in procedure >3 hrs

no complex surgery or less experienced surgeons

special care: OSA, less neck mobility, obesity, known difficult airway



# THE

# DI Y

Spinal anesthesia is a reliable, safe, and effective form of anesthesia.

Much has changed since its beginnings in the late 19th century.

Patient safety must always be at the forefront when considering performing a spinal anesthetic

Spinal anesthesia is an indispensable technique in the practice of modern anesthesia

- spinal anesthesia, an old and commonly





**THANK  
YOU!**