



# Intratekální morfin v pooperační analgezii

XXVIII. kongres ČSARIM, 15. 9. 2022

MUDr. Petr Reimer, Ph.D. KARIM FNO

# starý lék, starý postup

- 1805 Friedrich Sertúrner izolace morfinu z opia
- 1853 Alexander Wood – první parenterální – subkutánní (s.c.) aplikace
- 1863 James Paget – první s.c. podání k pooperační analgezii
- 1979 první práce o podání morfinu intratekálně (ITM)

Clinical Trial > [Anesthesiology](#). 1979 Feb;50(2):149-51.

doi: [10.1097/00000542-197902000-00013](https://doi.org/10.1097/00000542-197902000-00013).

## **Pain relief by intrathecally applied morphine in man**

[J K Wang](#), [L A Nauss](#), [J E Thomas](#)

PMID: 373503 DOI: [10.1097/00000542-197902000-00013](https://doi.org/10.1097/00000542-197902000-00013)

> [Anesthesiology](#). 1979 Nov;51(5):378-9.

## **Intrathecal morphine: a new method of obstetric analgesia?**

[M H Alper](#)

PMID: 582882

> [Anesthesiology](#). 1980 Dec;53(6):523-4. doi: [10.1097/00000542-198012000-00023](https://doi.org/10.1097/00000542-198012000-00023).

## **Intrathecal opiates, a potent tool to be used with caution**

[T H Stanley](#)

PMID: 6893904 DOI: [10.1097/00000542-198012000-00023](https://doi.org/10.1097/00000542-198012000-00023)

> [Br Med J](#). 1980 Aug 2;281(6236):351-3. doi: [10.1136/bmj.281.6236.351](https://doi.org/10.1136/bmj.281.6236.351).

## **Intrathecal morphine as sole analgesic during labour**

[P V Scott](#), [F E Bowen](#), [P Cartwright](#), [B C Rao](#), [D Deeley](#), [H G Wotherspoon](#), [I M Sumrein](#)

PMID: 6893559 PMCID: [PMC1713526](https://pubmed.ncbi.nlm.nih.gov/PMC1713526/) DOI: [10.1136/bmj.281.6236.351](https://doi.org/10.1136/bmj.281.6236.351)



# ITM dnes

- pubmed.gov – „intrathecal morphine“ [Title/Abstract]
  - do roku 2022 – 1415 výsledků
- dávka – efektivita – nežádoucí účinky (+prevence, terapie) – monitorace
- zastoupeny téměř všechny chirurgické obory
  - nejvíce asi porodnická analgezie
  - recentně v rámci ERAS

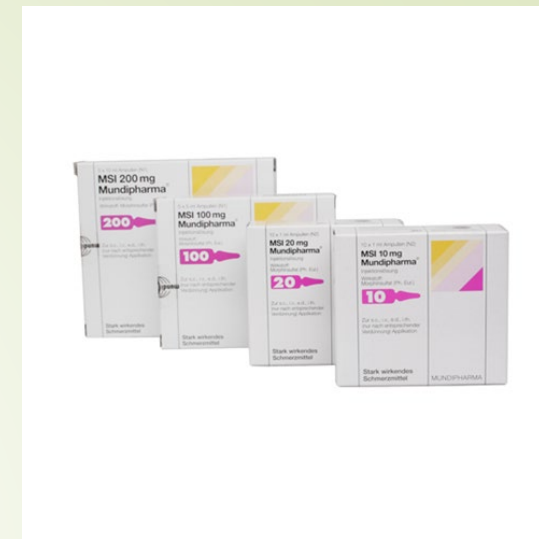


# proč morfin ?

- Máme přece novější opiody ( fentanyl, sufentanil)
  - ↑lipofilní (rychle se navážou na cílové struktury – 5 min
  - ↑clearance z CSF – délka účinku 2 – 4 h
  - ↓ nežádoucí účinky – PONV
  
- Morfin je hydrofilní
  - nástup účinku 30 - 60 min, trvání 14 – 36 h
  - potenciál dechové deprese

# jaký jsme měli morfin

- 1%, 10 mg / ml, morphini sulfas pentahydricus
- HVLP, mimořádný dovoz
- ředění pro IT podání vede k chybám (až o 100%) - nelze zaručit exaktní koncentraci
  - limitace – typ jehly 18G, protřepání...



Journal of Clinical Anesthesia (2015) 27, 638–645



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Original Contribution

### Accuracy in obtaining 100 $\mu$ g from 10 mg of morphine for spinal anesthesia<sup>☆</sup>

Mehdi Benkhadra MD, PhD\*, Jean-Christophe Rivory MD, Claire Wessels MD, Pascal Guerard MD, PhD, Lucie Vadot PharmD, Karine Astruc MD, Monique Dumas MD, PhD, Claude Girard MD, PhD

University Hospital le Bocage, Dijon, France

Journal of Clinical Anesthesia

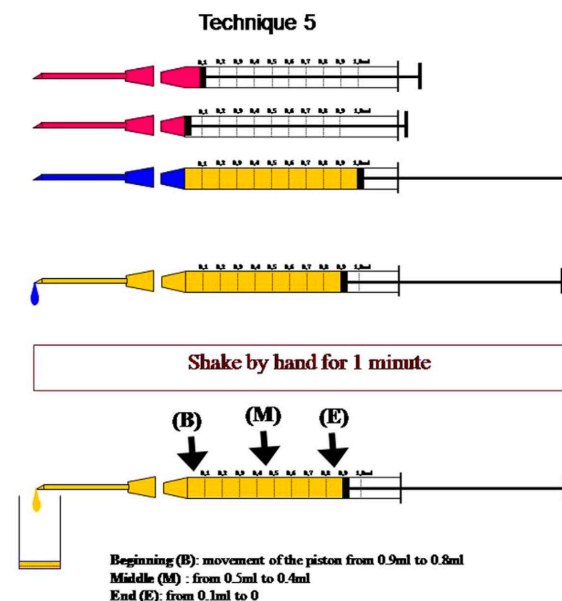
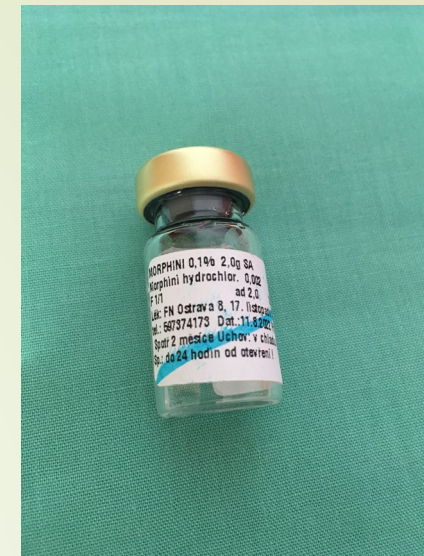
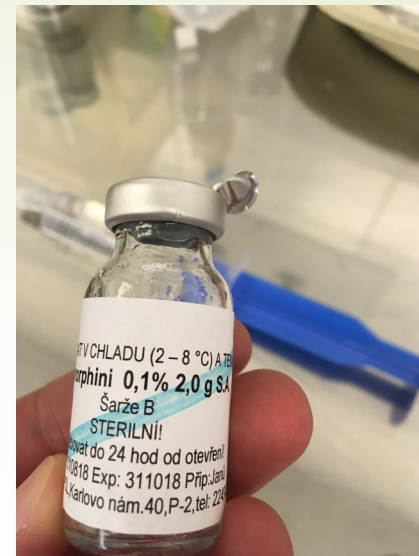


Fig. 5 Description of the preparation of 100  $\mu$ g/mL of morphine using technique 5. Color code as in Figure 1.

# jaký máme morfin

- 0,1 % - 1mg / 1ml, morphini hydrochlorici
- Dr. Janů (VFN), Mgr. Bašanda (FNO)
- náročná příprava syntézy v lékárně - hygiena, sterilizace - není jednoty (rozdíly v teplotě, čase), bez konzervantů
- lednice se zámek
- cca 1500 Kč / 20 amp
- odebírají od nás i okresní nemocnice



Pořadové číslo tiskopisu: \*203864  
 Kód obecního úřadu obce s rozšířenou působností: 554782  
 Datum: 11.10.2018  
 Razítko poskytovatele: VŠEOBECNÁ FAKULTNÍ NEMOCNICE V PRAZE, KLINIKA ANESTEZIOLOGIE, RESUSCITACE A INTENZIVNÍ MEDICÍNY  
 Žádanka na léčivou přípravku s obsahem psychotropní látky seznamu I a psychotropní látky seznamu II  
 Předpis: MORPHINI HYDROCHLORICI MILLIGRAMATTA DUO 0,002 AQUA PRO INJECTIONE ISOTONICA AD 2, - DENTUR TABLETAS DOSAS N° XX (VIGINTI) STERILIZEM  
 S: CNY FORMULA

Pořadové číslo tiskopisu: \*052982  
 Kód obecního úřadu obce s rozšířenou působností: 8119  
 Datum:   
 Razítko poskytovatele: FAKULTNÍ NEMOCNICE OSTRAVA, 17. listopadu 1790, 708 52 Ostrava-Paruba, KLINIKA ANESTEZIOLOGIE, RESUSCITACE A INTENZIVNÍ MEDICÍNY, Anestezie odb. 708  
 Žádanka na léčivou přípravku s obsahem psychotropní látky seznamu I a psychotropní látky seznamu II  
 Předpis: MORPHINI HYDROCHLORICI 0,04 MILLIGRAMATTA DUO AQUA PRO INJECTIONE ISOTONICA DENTUR TABLETAS DOSAS N° XX (viginti) STERILIZEM DS: CNY FORMULA  
 Celkem: FAKULTNÍ NEMOCNICE OSTRAVA, Razítko lékárně I  
 Datum: 12-08-2022

# ještě něco přidat ?

- lipofilní opioid
  - fentanyl 10 – 15 µg, ↑ analgezií, ↑ PONV
  - sufentanil 2,5 – 10 µg
    - (FDA: z opioidů pro IT podání schválen pouze morfin)
- α2 agonisté
  - clonidin 75 µg (↓ P substance, modulace NMDA, ↑ NO)
  - dexmedetomidin 5 µg (synergický analgetický účinek)

Clinical Trial/Experimental Study **Medicine** OPEN

## Perioperative analgesia after intrathecal fentanyl and morphine or morphine alone for cesarean section

**A randomized controlled study**

Wojciech Weigl, MD, PhD<sup>a,b,\*</sup>, Andrzej Bieryło, MD<sup>a</sup>, Monika Wielgus, MD<sup>a,c</sup>, Świetlana Krzemień-Wiczyńska, MD, PhD<sup>a</sup>, Marcin Kolacz, MD, PhD<sup>a</sup>, Michał J. Dąbrowski, PhD<sup>d,\*</sup>

Pain Medicine 2016; 17: 2109–2118  
doi: 10.1093/pm/prw031

OXFORD

### ACUTE & PERIOPERATIVE PAIN SECTION

*Original Research Article*

## Combined Intrathecal Morphine and Dexmedetomidine for Postoperative Analgesia in Patients Undergoing Major Abdominal Cancer Surgery

Journal of Clinical Anesthesia (2016) 33, 395–402

Journal of Clinical Anesthesia

ELSEVIER

Original Contribution

## Randomized study of postcesarean analgesia with intrathecal morphine alone or combined with clonidine ☆☆☆★

Francisco A.E. Carvalho MD (Instructor in Anesthesiology)<sup>a,\*</sup>, Sérgio B. Tenório MD, PhD (Associate Professor of Anesthesiology)<sup>b,3,4</sup>, Fabiano T. Shiohara MD (Instructor in Anesthesiology)<sup>a,5,6</sup>, Luiz R. Maia MD (Instructor in Anesthesiology)<sup>a,5,6</sup>, Angela Mota RN<sup>a,6,7</sup>

<sup>a</sup>Department of Anesthesiology and Pain Treatment, Hospital Santa Cruz, 1889, Batel Av, Batel, Curitiba, Paraná, Brazil 80420-090  
<sup>b</sup>Surgery Department and Anesthesiology Service, Hospital de Clínicas, Universidade Federal do Paraná, General Carneiro St, Downtown, Curitiba, Paraná, Brazil 80.060-900

Received 26 March 2015; revised 22 March 2016; accepted 24 April 2016

# ještě něco přidat ?

- ketamin – 0,1 mg/ kg, NMDA, celé receptorové spektrum, iontové kanály
- závěr
  - nejsou jednoznačné výsledky, off label použití
  - když chci mít dlouhodobou analgezií, tak mi stačí morfin sám (+ 0,9 % NaCl)
  - když chci mít analgezií hned, většinou i s anestezií (+ lokální anestetikum)

## *Original Research Article*

**Effect of Intrathecally Administered Ketamine, Morphine, and Their Combination Added to Bupivacaine in Patients Undergoing Major Abdominal Cancer Surgery a Randomized, Double-Blind Study**





# jaké výkony ?

- sectio cesarea
- kardiologická operativa
- břišní, gynekologická operativa – ERAS
- ortopedie
- spondylochirurgická operativa

# sectio cesarea

- nejvíce prací a zdá se studováno do největší hloubky
- nejefektivnější analgetizace

Isr Med Assoc J. 2014 Mar;16(3):153-6.

## **National survey of postoperative pain control after cesarean delivery.**

Orbach-Zinger S, Ioscovich A, Aviram A, Babytz S, Fein S, Reuveni A, Eidelman LA.

### **Abstract**

**BACKGROUND:** Postoperative pain is a common problem after cesarean deliveries.

**OBJECTIVES:** To characterize common obstetric anesthesia practices after cesarean deliveries in Israel in order to standardize postoperative pain relief protocols.

**METHODS:** A questionnaire was completed during an interview with every obstetric anesthesia unit in all 25 delivery wards in Israel. Data were gathered on intraoperative anesthesia and analgesia protocols as well as postoperative pain relief protocols. A sub-analysis compared units whose director completed a formal obstetric anesthesia training program with those whose directors did not.

**RESULTS:** Neuraxial morphine was used routinely in 12% of hospitals. No unit providing intrathecal morphine complied with American Society of Anesthesiologists guidelines for respiratory monitoring after use of neuraxial opioids. Additionally, non-steroidal anti-inflammatory drugs (NSAIDs) were used routinely in only half the wards, while patient-controlled analgesia was used infrequently. Postoperative verbal analog scores were not recorded routinely in 71% of units on postoperative day 1. The unit director's training significantly influenced the unit protocols.

**CONCLUSIONS:** Intrathecal morphine, the gold standard of care in cesarean deliveries is rarely used, mainly due to shortage of staff and lack of formal obstetric anesthesia training. In addition, NSAIDs are also underused. There is a need for more formal training for obstetric anesthesiologists in Israel.

# jak moc řešit bolest u SC ?

*Keywords:* Anesthesia; Spinal; Cesarean delivery; Dexamethasone;

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## Introduction

Postoperative pain is often cited as one of the greatest concerns of women having cesarean delivery.<sup>1</sup> Inadequate postoperative analgesia limits patient mobility, self-care and the ability to care for the newborn. Acute severe postoperative pain may be a risk factor for postpartum depression and chronic pain.<sup>2,3</sup> Multimodal analgesia, including systemic and neuraxial opioids, nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen, is commonly prescribed for the management of post-cesarean delivery pain. However, these drugs may not provide adequate pain relief and can be associated with serious adverse effects, especially in

↑ HRQoL (Health Related Quality of Life) - „effective pain control, mobility and fast return back to usual daily activities“

# dávka ?

- 50 – 200 µg (u SC)
- některé práce říkají nižší dávka má stejný analgetický účinek jako vyšší a zároveň nemá nežádoucí účinky
- jiné práce říkají vyšší dávka má kvalitnější analgetický účinek než nižší a nemá signifikantně více nežádoucích účinků
- **není jednoty**, nejčastěji však 100 µg (u SC)
- nesporná závislost: **dávka – analgezie – nežádoucí účinky**
- u nás k **SC** – začínali jsme 200 µg, nyní dáváme **100 µg**

Society for Obstetric Anesthesia and Perinatology

Section Editor: Jill M. Mhyre

■ META-ANALYSIS

## The Effect of Intrathecal Morphine Dose on Outcomes After Elective Cesarean Delivery: A Meta-Analysis

Pervez Sultan, MBChB, FRCA,\* Stephen H. Halpern, MD,† Ellile Pushpanathan, MBBS, BMedSci, FRCA,‡  
Selina Patel, MBBS, FRCA,\* and Brendan Carvalho, MBBCh, FRCA§

a když si žena sama vybere ?

BJA

British Journal of Anaesthesia, 118 (5): 762–71 (2017)

doi: 10.1093/bja/aex039  
Obstetrics

OBSTETRICS

### Patient choice compared with no choice of intrathecal morphine dose for caesarean analgesia: a randomized clinical trial

B. Carvalho<sup>1,\*</sup>, F. Mirza<sup>2</sup> and P. Flood<sup>1</sup>

<sup>1</sup>Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Stanford, CA, USA and <sup>2</sup>Department of Anesthesiology, Santa Rosa Hospital, Santa Rosa, CA, USA

**Results:** Women who requested the larger ITM dose required more supplemental opioid [median 0.8 (95% CI 0.4–1.3)] mg morphine equivalents at each assessment interval;  $P < 0.001$ ] and reported more pain with movement [median 1.2 (95% CI 0.5–1.9)] verbal numerical rating score of 0–10 points] than patients who requested the smaller ITM dose ( $P = 0.0008$ ), regardless of the ITM dose given. There was no difference in opioid use whether the patient was offered a perceived choice or not.

**Conclusions:** Women who were given a choice and chose the larger ITM dose correctly anticipated a greater postoperative opioid requirement and more pain compared with women who chose the smaller dose. Simply being offered a choice did not impact opioid use or pain scores after caesarean delivery.

**Trial Registration:** ClinicalTrials.gov (NCT01425762).

**bolest** (definice dle IASP – International Association for the Study of Pain)

je nepříjemná senzorická a emocionální zkušenost spojená se skutečným nebo potencionálním poškozením tkání a je vždy **subjektivní**

# I v Nepálu ví...

Nepal Med Coll J. 2013 Mar;15(1):37-9.

## **Intrathecal morphine in combination with bupivacaine: a comparative study following caesarean section.**

Sharma NR<sup>1</sup>, Timalsena P<sup>2</sup>, S DC<sup>2</sup>.

### **Author information**

- 1 Department of Anesthesia and Critical Care, Lumbini Medical College, Pravash, Tansen, Palpa, Nepal. nilrajnp@gmail.com
- 2 Department of Anesthesia and Critical Care, Lumbini Medical College, Pravash, Tansen, Palpa, Nepal.

### **Abstract**

Post operative pain is very unpleasant. Adequate analgesia during post operative period gives good patient satisfaction. To assess the adequacy of post operative analgesia in patients undergoing caesarean section. This prospective study was carried out in Lumbini Medical College, Palpa in the year, and April 2011 to October 2011. A total of 60 caesarean section cases of ASA grading I or II were selected for the study. All patients received an intrathecal injection of 0.5% (2.5 ml) hyperbaric Bupivacaine with 100 microgm and 200 microgm of preservative free morphine. Patients were monitored for 12 hours for adequacy of analgesia. Statistical analysis was done using SPSS (21) software. The median age of the patients was 22.75 (SD = 4.309). The duration of analgesia was prolonged with the patients who had 200 microgm of morphine and less with the 100 microgm of morphine which was statistically not significant ( $p = 0.09$ ). The incidence of pruritus, nausea and vomiting was more with 200 microgm of morphine as compared to 100 microgm of morphine and was statically not significant ( $p$  value 0.09 and 0.373 respectively). Intrathecal morphine provides satisfactory analgesia. By decreasing the dose than what is recommended we can safely acheive adequate analgesia.

# bezpečnost – respiratory depression

- jistý účinek na dechové centrum (pre-Bötzingerův komplex v mozgovém kmeni)
- bifázický průběh - časný (30 – 90 min), pozdní (6-18h)
- ale definice
  - Bradypnoe ( $\downarrow$  10 dechů /min)
  - Hypooxémie (desaturace,  $spO_2 < 90 \%$ )
  - Hyperkapnie (transkutánní kapnometrie)

Review > [Can J Anaesth.](#) 2003 Aug-Sep;50(7):679-88. doi: 10.1007/BF03018710.

## Definitions of "respiratory depression" with intrathecal morphine postoperative analgesia: a review of the literature

Samuel Ko <sup>1</sup>, David H Goldstein, Elizabeth G VanDenKerkhof

# reálný výskyt ?

non-obstetric 0,01 – 7 %

obstetric: 0-0,9 %

Review > [Anesth Analg.](#) 2008 Sep;107(3):956-61. doi: 10.1213/ane.0b013e318168b443.

## Respiratory depression after neuraxial opioids in the obstetric setting

Brendan Carvalho <sup>1</sup>

Affiliations + expand

PMID: 18713913 DOI: [10.1213/ane.0b013e318168b443](#)



# reálný výskyt

- mnoho retrospektiv obsahující tisíce pacientů
- **dávka** v přímé úměře k možnosti dechové deprese
- poklesy saturace byly u pacientů s obesitou, OSA (**komorbidity**)
  - + byly přidávány opioidy systémově
- opioidy podávané systémově mají stejnou či vyšší incidenci respirační deprese

› [Anesth Analg.](#) 2013 Dec;117(6):1368-70. doi: 10.1213/ANE.0b013e3182a9b042.

## A retrospective assessment of the incidence of respiratory depression after neuraxial morphine administration for postcesarean delivery analgesia

Theresa R Crowgey <sup>1</sup>, Jennifer E Dominguez, Cathleen Peterson-Layne, Terrence K Allen, Holly A Muir, Ashraf S Habib

› [J Clin Anesth.](#) 2005 Nov;17(7):537-42. doi: 10.1016/j.jclinane.2005.01.006.

## The frequency and timing of respiratory depression in 1524 postoperative patients treated with systemic or neuraxial morphine

Arie Shapiro <sup>1</sup>, Edna Zohar, Ruth Zaslansky, David Hoppenstein, Shay Shabat, Brian Fredman

Affiliations + expand

PMID: 16297754 DOI: 10.1016/j.jclinane.2005.01.006

# monitorace po ITM je postup lege artis

Practice Guideline > Anesth Analg. 2019 Aug;129(2):458-474.

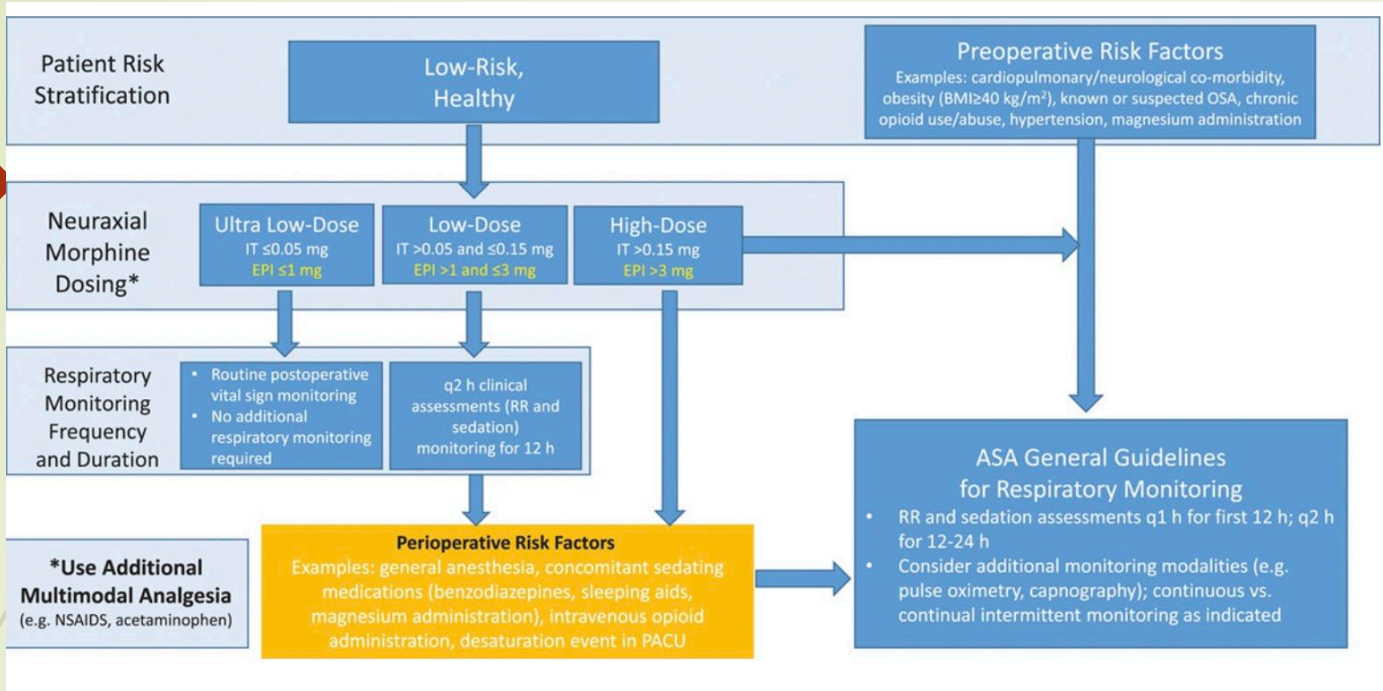
doi: 10.1213/ANE.0000000000004195.

## **Society for Obstetric Anesthesia and Perinatology Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated With Administration of Neuraxial Morphine for Cesarean Delivery Analgesia**

Jeanette R Bauchat <sup>1</sup>, Carolyn F Weiniger <sup>2</sup>, Pervez Sultan <sup>3</sup>, Ashraf S Habib <sup>4</sup>, Kazuo Ando <sup>5</sup>,  
John J Kowalczyk <sup>6</sup>, Rie Kato <sup>7</sup>, Ronald B George <sup>8</sup>, Craig M Palmer <sup>9</sup>, Brendan Carvalho <sup>10</sup>

Affiliations + expand

PMID: 31082964 DOI: 10.1213/ANE.0000000000004195



Risk Factors	Neuraxial Morphine Dose		Postoperative Respiratory Monitoring Recommendation
	Intrathecal	Epidural	
None (healthy, normal BMI)	≤0.05 mg	≤1 mg	No further respiratory monitoring needed in addition to institutional guidelines for postoperative monitoring in this patient population
	>0.05 and ≤0.15 mg	>1 and ≤3 mg	Q 2 h for 12 h RR and sedation checks
	>0.15 mg	>3 mg	Follow ASA/ASRA guidelines <sup>3</sup> : 1. RR and sedation assessments for Q 1 h for first 12 h; Q 2 h for 12–24 h 2. Consider additional monitoring modalities (eg, pulse oximetry, capnography); continuous versus continual intermittent monitoring as indicated
Patient risk factors examples Cardiopulmonary/neurological comorbidity Class III obesity (BMI ≥40 kg/m <sup>2</sup> ) Known or suspected OSA <sup>a</sup> Chronic opioid use Hypertension	≤0.05 mg	≤1 mg	No further respiratory monitoring needed in addition to institutional guidelines for postoperative monitoring in this patient population
Peri/postoperative risk factors examples General anesthesia Supplemental IV opioid Concomitant sedating medications <sup>b</sup> Magnesium administration Desaturation event in the PACU	>0.05 mg	>1 mg	Follow ASA/ASRA guidelines <sup>3</sup> : 1. RR and sedation assessments for Q 1 h for first 12 h; Q 2 h for 12–24 h 2. Consider additional monitoring modalities (eg, pulse oximetry, capnography); continuous versus continual intermittent monitoring as indicated



> [F1000Res.](#) 2017 Feb 13;6:133. doi: 10.12688/f1000research.10705.2. eCollection 2017.

## Neuraxial opioids as analgesia in labour, caesarean section and hysterectomy: A questionnaire survey in Sweden

[Anette Hein](#)<sup>1</sup>, [Caroline Gillis-Haegerstrand](#)<sup>1</sup>, [Jan G Jakobsson](#)<sup>1</sup>

Affiliations [+ expand](#)

PMID: 28435667 PMCID: PMC5381617 DOI: 10.12688/f1000research.10705.2

[Free PMC article](#)

- prvních 2-6 h na pooperačním porodnickém pokoji
- do 12 na standardním pokoji

# nežádoucí účinky

## PONV

- jasná patofyziologie (rostrální šíření CSF ke kmeni, + vaskulárním vstřebání)
  - jasně doporučována antiemetická kombinace:
    - ondasetron 4 – 8 mg iv (serotonin 5-HT<sub>3</sub> receptorový antagonist) – přímá blokáce chemoreceptorových triggerových zón
    - dexametason 8 mg iv (analgeticko – protizánětlivý efekt)
- + propofol subanestetická dávka < 0,5 mg/kg
- když chci lehce sedovat

[Afr Health Sci](#). 2014 Jun;14(2):453-9. doi: 10.4314/ahs.v14i2.23.

## **Dexamethasone versus a combination of dexamethasone and ondansetron as prophylactic antiemetic in patients receiving intrathecal morphine for caesarean section.**

[Imeh A<sup>1</sup>](#), [Olaniyi O<sup>2</sup>](#), [Simeon O<sup>3</sup>](#), [Omotola O<sup>4</sup>](#).

*International Journal of Obstetric Anesthesia* (2018) 35, 57–63  
0959-289X/\$ - see front matter © 2018 Elsevier Ltd. All rights reserved.  
<https://doi.org/10.1016/j.ijoa.2018.03.008>



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[www.obstetanesia.com](http://www.obstetanesia.com)

ORIGINAL ARTICLE

## **The effect of a single intraoperative dose of intravenous dexamethasone 8 mg on post-caesarean delivery analgesia: a randomized controlled trial**

U. Ituk, K. Thenuwara

*Department of Anesthesia, Carver College of Medicine, University of Iowa, Iowa City, USA*

[BMC Anesthesiol](#). 2019 Sep 14;19(1):177. doi: 10.1186/s12871-019-0847-y.

## **Sub-hypnotic dose of propofol as antiemetic prophylaxis attenuates intrathecal morphine-induced postoperative nausea and vomiting, and pruritus in parturient undergoing cesarean section - a randomized control trial.**

[Kampo S<sup>1,2</sup>](#), [Afful AP<sup>3</sup>](#), [Mohammed S<sup>4</sup>](#), [Ntim M<sup>5</sup>](#), [Buunaaim ADB<sup>6</sup>](#), [Anabah TW<sup>3,4</sup>](#).

# nežádoucí účinky

## PRURITUS

- IT opioidy aktivují 5 HT-3 receptory v dorzálních míšních rozích + další oblasti
- profylaktická antagonizace 5 HT-3 receptorů (ondasetron) – kauzální preventivní řešení pruritu

[Int J Obstet Anesth](#). 2018 Aug;35:52-56. doi: 10.1016/j.ijoa.2018.02.004. Epub 2018 Feb 16.

**Pruritus after intrathecal morphine for cesarean delivery: incidence, severity and its relation to serum serotonin level.**

[Aly M<sup>1</sup>](#), [Ibrahim A<sup>2</sup>](#), [Farrag W<sup>2</sup>](#), [Abdelsalam K<sup>2</sup>](#), [Mohamed H<sup>2</sup>](#), [Tawfik A<sup>2</sup>](#).

## ITM k CA u velkých onkologických výkonů

- + 0,9 NaCl, dávky vyšší, u nás 400 – 500 µg

[Pain Physician](#). 2014 May-Jun;17(3):255-64.

**High dose intrathecal morphine for major abdominal cancer surgery: a prospective double-blind, dose-finding clinical study.**

Fares KM<sup>1</sup>, Mohamed SA, Abdel-Ghaffar HS.

**Conclusion:** One mg ITM provided superior analgesia for 48 hours postoperative compared with 0.2 mg and 0.5 mg ITM with a nonsignificant difference in the incidence of side effects. Further studies of larger sample size are recommended to confirm these findings.





# ITM a ERAS

Randomized Controlled Trial > [Reg Anesth Pain Med](#). 2018 Feb;43(2):166-173.

doi: [10.1097/AAP.0000000000000703](https://doi.org/10.1097/AAP.0000000000000703).

## **Intrathecal Morphine for Laparoscopic Segmental Colonic Resection as Part of an Enhanced Recovery Protocol: A Randomized Controlled Trial**

[Mark V Koning](#), [Aart Jan W Teunissen](#), [Erwin van der Harst](#), [Elisabeth J Ruijgrok](#), [Robert Jan Stolker](#)

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# ITM vs EDK

Randomized Controlled Trial > [BMJ Open](#). 2019 Mar 4;9(3):e024484.

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## Effect of intrathecal morphine and epidural analgesia on postoperative recovery after abdominal surgery for gynecologic malignancy: an open-label randomised trial

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**Results:** LOS was statistically significantly shorter for the ITM group compared with the EDA group (median [IQR] 3.3 [1.5-56.3] vs 4.3 [2.2-43.2] days;  $p=0.01$ ). No differences were observed in pain assessment or QoL. The ITM group used postoperatively the first week significantly less opioids than the EDA group (median (IQR) 20 mg (14-35 mg) vs 81 mg (67-101 mg);  $p<0.0001$ ). No serious adverse events were attributed to ITM or EDA.

**Conclusions:** Compared with EDA, ITM is simpler to administer and manage, is associated with shorter hospital stay and reduces opioid consumption postoperatively with an equally good QoL. ITM is effective as postoperative analgesia in gynaecological cancer surgery.

**Trial registration number:** [NCT02026687](#); Results.

**Keywords:** gynecological malignancy; laparotomy; opioid consumption; quality improvement; regional analgesia.

> [Malays J Med Sci](#). 2017 Dec;24(6):21-28. doi: 10.21315/mjms2017.24.6.3. Epub 2017 Dec 29.

## Comparison of Single-Shot Intrathecal Morphine Injection and Continuous Epidural Bupivacaine for Post-Operative Analgesia after Elective Abdominal Hysterectomy

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## ERAS 2022 - Abstract Submission

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### INTRATHECAL MORPHINE IN ONCOGYNECOLOGIC SURGERY

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**Presentation Preference:** Oral or Poster

**Objectives:** The main aim of the study was to evaluate whether intrathecal morphine (ITM) can replace systemic opioids in postoperative pain control in patients undergoing radical surgery for gynaecological cancers.

**Methods:** This is a retrospective, single center study analyzing perioperative data of patients who underwent surgery for a gynaecologic malignancy from January 2019 to December 2021.

We reviewed use of systemic opioids in 24 hours after surgery, visual analog scale (VAS, 0-10) assessing pain during the first 24 hours and time from ITM application to the first VAS 3 or more was measured. We analyzed the most frequent side effects of ITM - incidence of pruritus, nausea and vomiting, hypotension and respiratory depression during the first 24 hours after ITM administration.

**Results:** Intrathecal morphine in dose 0.2 - 0.5 mg was used in 170 patients before the surgery for postoperative analgesia. Systemic opioids were administered during the first 24 hours after surgery only in 3 cases.

65 patients had one or more side effects. 3 patients had pruritus, 46 patients suffered from nausea or vomitus.

Postoperative hypotension with vasopressors treatment was reported in 26 cases. There was no case of respiratory depression requiring mechanical ventilation.

**Conclusion:** Our results show that intrathecal morphine is an effective method of postoperative analgesia in patients undergoing radical oncogynecologic surgery. We managed to minimize the use of systemic opioids with a very low frequency of side effects.



## závěrem

- ITM je efektivní, minimalistický analgetický postup
- pro SA vždy 1mg/1ml
- dávka – výkon, pacient
- prevence PONV, pruritu
- racionální monitorace
  
- otázka zda by nepomohlo doporučení ČSARIM k aplikaci a monitoraci