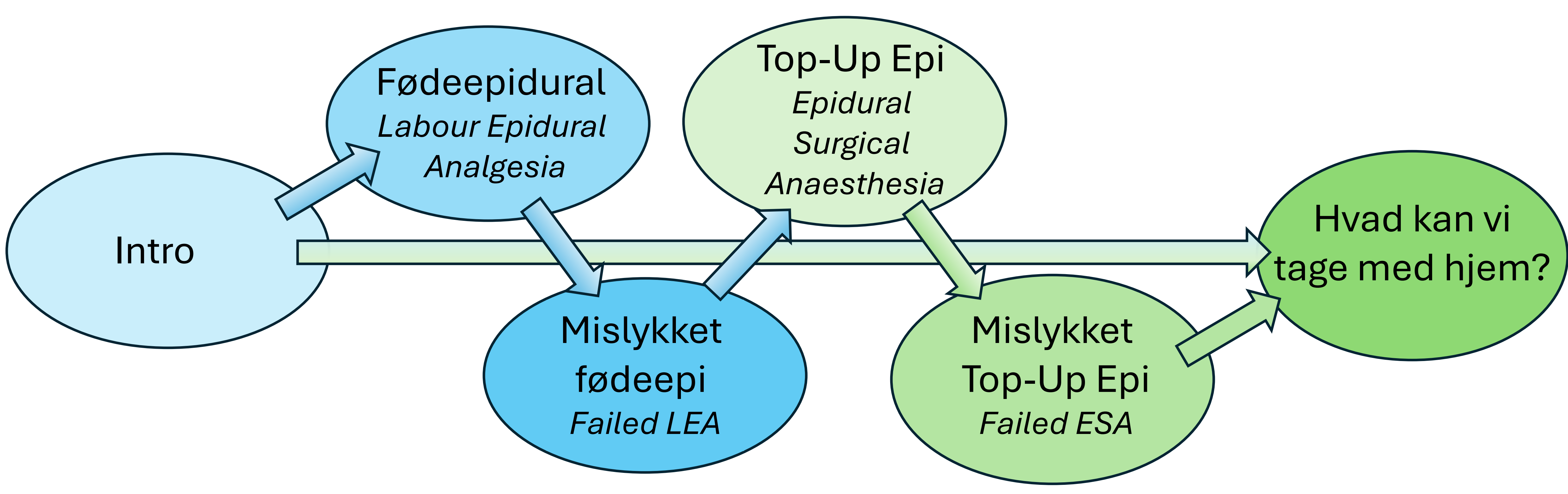
Top-up epidural som anæstesiform ved sectio

Tværfagligt Symposium 17.4.2024 13:55-14:15

Kim Ekelund

- Overlæge med fagligt ansvar for den obstetriske anæstesi på RH
- Chair SSAI Obstetric Anaesthesia

Agenda



Vær omhyggelig og tag ansvar

1. Efter epidural → Virker epiduralen – godt nok?

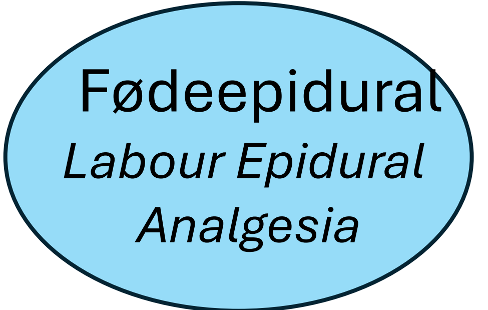
2. Inden sectio → Har epiduralen virket – godt nok?

3. JA → Top-Up

NEJ → Spinal (CSE)

Hvad kan vi tage med hjem?

Labour Epidural Analgesia, LEA



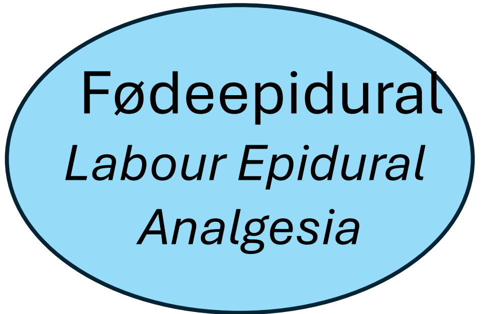
1. Hvad er det?
    - CEI, PCEA, PIEB, Bolus

2. Hvem får det?
    - 50% af P0
    - 25% af P1, P2, P3…

3. Hvem bør have det? Indikation?
    - Obstetrisk
        - Smerter…
    - Anæstesiogisk
        - Adipøse, vanskelig luftvej, hjertesyg, PE…

4. Hvor gode er fødeepiduralerne?
5. Hvad gør vi det?

Labour Epidural Analgesia, LEA



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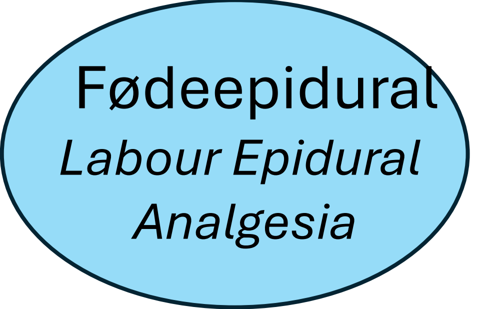

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4. Hvor gode er fødeepiduralerne?
5. Hvad gør vi det?

Failed Labour Epidural Analgesia

- Hvad er det?

Definition of failed labour epidural?

1. Lack of adequate pain relief by 45 min from epidural placement?
2. Dural-puncture?
3. Re-siting or abandoning the epidural?
4. Maternal dissatisfaction with analgesia at the follow-up visit?
5. When it documented in the anesthetic record as failure
6. When there is an unilateral block?
7. Based on a midwife satisfaction scoring system?
8. VPS >10, 30mins after initial dose?
9. VAPS >30, 20mins after initial dose?
10. 3 episodes of breakthrough pain?

Definition of failed labour epidural?

1. Lack … ural placement?
2. Dura…
3. Re-s…
4. Mat… llow-up visit?
5. Whe… failure
6. Whe…
7. Bas… ?
8. VPS…
9. (VAF…
10. 3 episodes of breakthrough pain?

1-4 Thangamuthu et al, 2013, Delphi

5. Hood et, 1993

6. Eappen et al, 1998

7. Dresner et al, 2006

8. Agaram et al, 2009.

9. Le Coq et al , 1998

10. Hess et al, 2001

Failed Labour Epidural Analgesia?

Faktorer associeret med Failed Labour Epidural Analgesia:

1. Højt BMI (>30kg/m^2)
2. Uerfarne anæstesilæger
3. Multiparity
4. Tidligere Failed Labour Epidural Analgesia
5. Cervical dilatation > 7cm

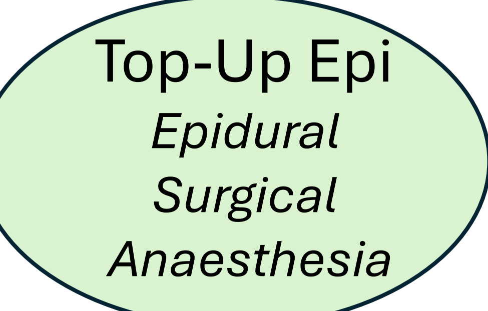
Top-up epidural som anæstesiform ved sectio

Top-Up Epi
Epidural Surgical Anaesthesia

Hvordan gør man det?

Risiko for højt blok?

Top-up epidural som anæstesiform ved sectio



Hvordan gør man det?

ORIGINAL ARTICLE

ELSEVIER
www.obstetanesthesia.com

The extension of epidural blockade for emergency caesarean section: a survey of Scandinavian practice

K. Wildgaard,[a] F. Hetmann,[b] M. Ismaiel[a,c]

[a]*Department of Anaesthesiology, Næstved Hospital, Næstved, Denmark*
[b]*Department of Nursing, Oslo and Akershus University College of Applied Sciences, Oslo, Norway*
[c]*Department of Anaesthesiology, Malmö Central Sykehus, Skånes Universitetssjukhus, Malmö, Sweden*

12 forskellige Top-Up blandinger i DK

25 i Skandinavien

15ml Lidokain 2% m adr 5 mikrog/ml
2ml Natrium-Bikarbonat 1mg/ml
2ml Sufentanil 5mikrog/ml

19ml Top-Up

5min-ish...

Temperatur

+/- Sufentanil...

OP

Test? → 10-19ml

Top-up epidural som anæstesiform ved sectio

Top-Up Epi
Epidural
Surgical
Anaesthesia

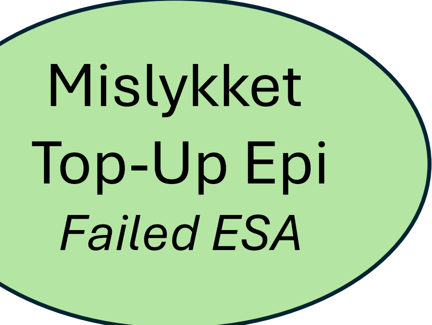
Risiko for højt blok?

- Afhænger af bolus' tidspunkt og volumen…
- Litteraturen: <0,03% (Shepherd et al 2023)

  <1% (Yoon et al 2017)

  2,2% (Shen et al 2022)

Failed Top-Up



1. Anæstesi: Fødeepi kan ikke bruges
2. Obstetriker: Øget muskeltonus
3. Patient: Smerter i forbindelse med kejsersnit

Failed Top-Up

Mislykket
Top-Up Epi
Failed ESA

1. Anæstesi: Fødeepi kan ikke bruges
2. Obstetriker: Øget muskeltonus
3. Patient: Smerter i forbindelse med kejsersnit

Stol på epiduralen, når…

International Journal of Obstetric Anesthesia (2012) 21, 294–309
0959-289X/$ - see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.ijoa.2012.05.007

ORIGINAL ARTICLE

Risk factors for failed conversion of labor epidural analgesia to cesarean delivery anesthesia: a systematic review and meta-analysis of observational trials

M.E. Bauer,[a] J.A. Kountanis,[a] L.C. Tsen,[b] M.L. Greenfield,[a] J.M. Mhyre[a]
[a] *Department of Anesthesiology, University of Michigan Health System, Ann Arbor, MI, USA*
[b] *Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA, USA*

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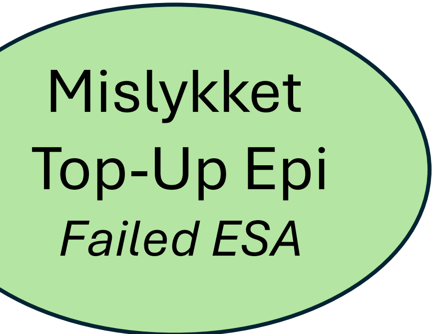

- Evidence for:
  - Behov for boli under veer ↓
  - Ikke-obstetrisk anæstesilæge ↓
  - Enhanced urgency for CS ↓
- Insufficient evidence – to evaluate
  - CSE vs Epidural
  - Duration of labor analgesia
  - BMI / weight

Mislykket
Top-Up Epi
Failed ESA

International Journal of Obstetric Anesthesia (2012) **21**, 357–359
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SPECIAL ARTICLE

Failed epidural top-up for cesarean delivery for failure to progress in labor: the case against single-shot spinal anesthesia

B. Carvalho
Department of Anesthesiology, Stanford University School of Medicine, Stanford, CA, USA

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Epi-spinal, CSE - fordi

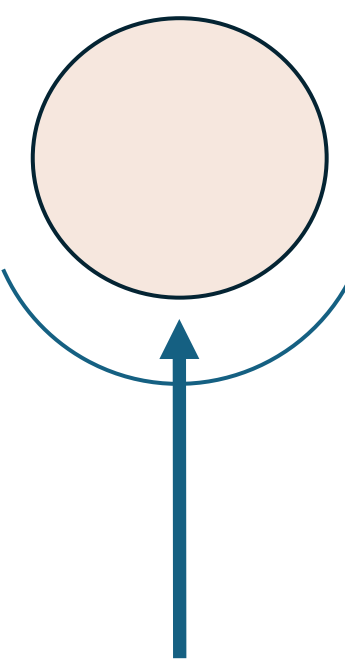
- Low dose - og top-up om nødvendigt
- “Sikrere” epidual - midtlinje > spinal
- Den teknik, vi anvender hele tiden

Og fordi

- Spinal > Epidural → høj spinal

Men

- CSE – “ny” teknik = rescue teknik. Smart?



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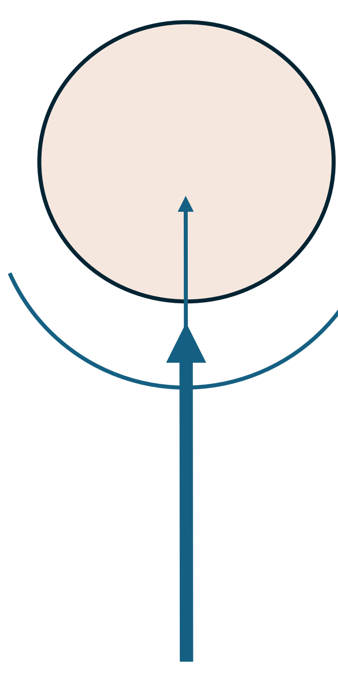

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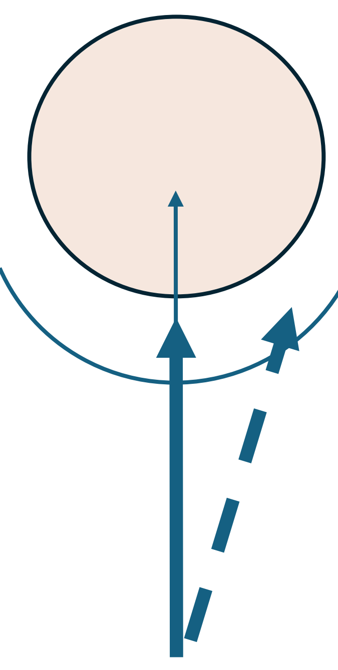

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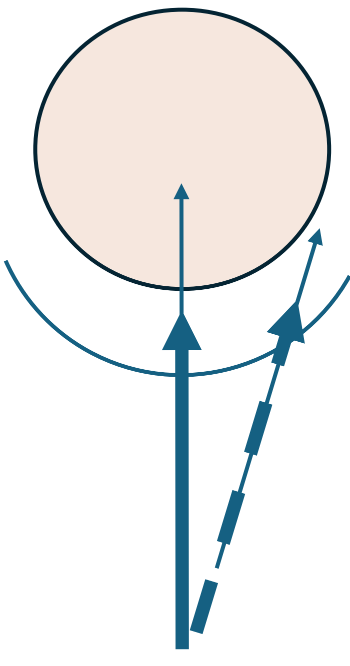

Failed Top-Up

Mislykket
Top-Up Epi
Failed ESA

1. Anæstesi: Fødeepi kan ikke bruges
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Failed conversion

Original Article

A comparison of spinal and epidural anesthesia for cesarean section following epidural labor analgesia: A retrospective cohort study

Chia-Hsiang Huang [1], Yi-Jer Hsieh [1], Ko-Hsin Wei [1], Wei-Zen Sun [2], Shao-Lun Tsao [1 *]

[1] *Department of Anesthesiology, Changhua Christian Hospital, Changhua, Taiwan, ROC*
[2] *Department of Anesthesiology, National Taiwan University Hospital, Taipei, Taiwan, ROC*

Acta Anaesthesiologica Taiwanica 53 (2015) 7–11

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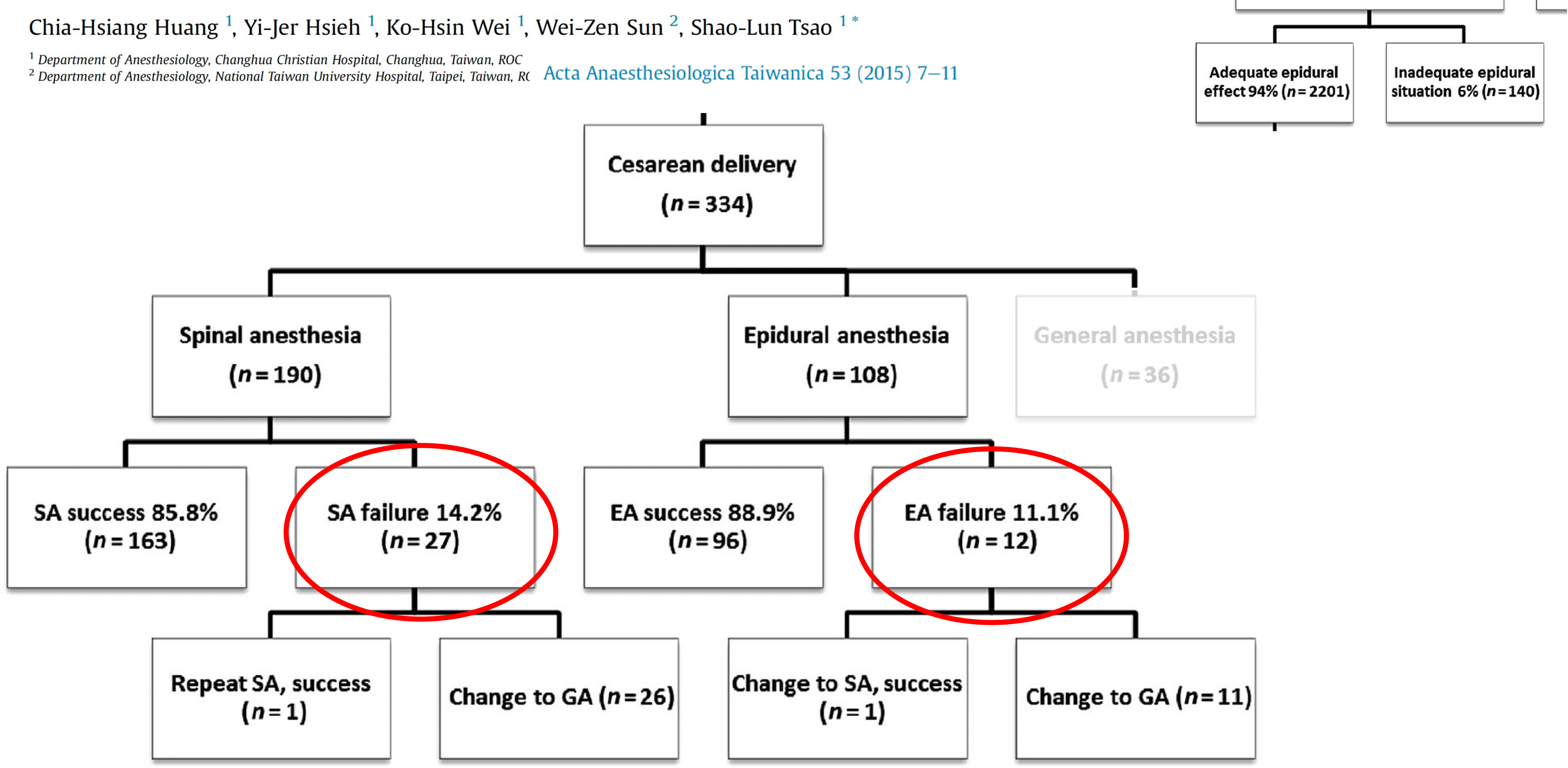


PROC (BAYL UNIV MED CENT)
2023;36(4):473–477
Copyright © 2023 Baylor University Medical Center
https://doi.org/10.1080/08998280.2023.2204288

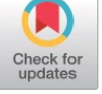
A comparison of anesthetic outcomes between activation and removal of epidural catheters for patients who underwent unscheduled intrapartum cesarean delivery

Bailey Shepherd, MD[a], Emily E. Sharpe, MD[b], Kendall Hammonds, MPH[c], and Michael P. Hofkamp, MD[a]

- Retrospektivt.
- 124 CSE/Spinal matched vs 124 Top-Up
- 3/124 Unable to obtain new neuraxial technique
- Conversion to GA 10% vs 19%
- *Results: After adjusting for parity, depression, last neuraxial labor analgesic technique, physician-administered rescue analgesia boluses, and duration from neuraxial placement to entering the operating room for cesarean delivery, patients who had removal of their epidural catheters were more likely to have regional anesthesia without conversion to general anesthesia or administration of additional anesthetic medication (odds ratio 4.298; 95% confidence interval 2.448, 7.548; P<0.01).*

Alternativ til Top-Up Epidural

pISSN 2005-6419 • eISSN 2005-7563



Comparing epidural surgical anesthesia and spinal anesthesia following epidural labor analgesia for intrapartum cesarean section: a prospective randomized controlled trial

Hea-Jo Yoon[1], Sang-Hwan Do[2], and Yeo Jin Yun[1]

Department of Anesthesiology and Pain Medicine, [1]Cheil General Hospital and Women's Healthcare Center, Dankook University College of Medicine, Seoul, [2]Seoul National University Bundang Hospital, Seongnam, Korea

Clinical Research Article
pISSN 2005-6419 · eISSN 2005-7563

dural surgical
spinal anesthesia
ıral labor analgesia
ı cesarean section:
ındomized

Yun[1]

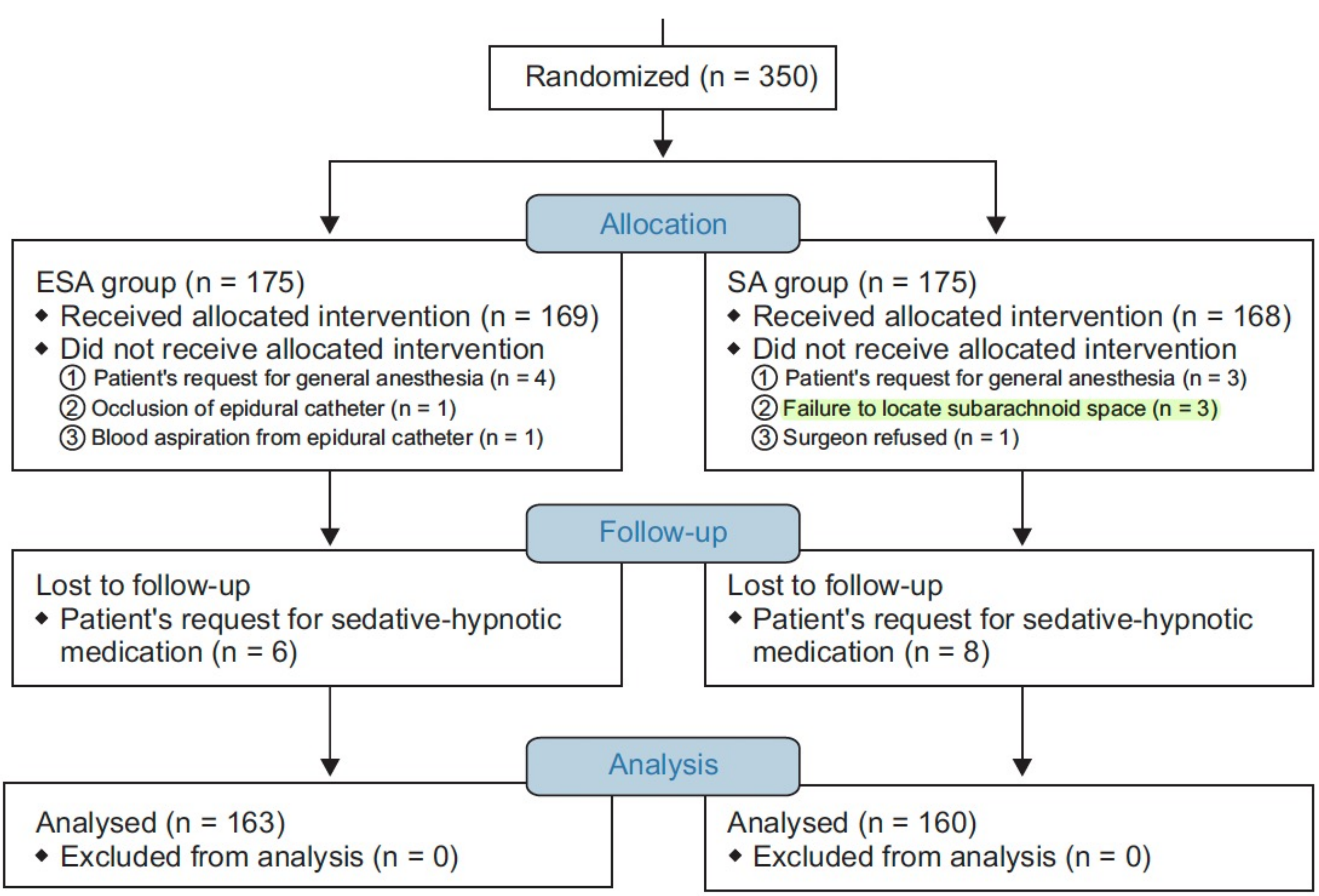


Fig. 1. CONSORT flow diagram.

Clinical Research Article
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Alternativ til Top-Up Epidural

Table 4. Outcome Data

	ESA (n = 163)	SA (n = 160)	P value
Failure of pain-free surgery (1+2)	25 (15.3%)	4 (2.5%)	< 0.001
1. Conversion to general anesthesia (①–⑤)	4 (2.5%)	2 (1.3%)	0.697
① Failed sensory block	0	0	
② Sensory block height below T5	1 (0.6%)	1 (0.6%)	0.486
③ Poor quality	2 (1.2%)	1 (0.6%)	0.987
④ Patchy block	1 (0.6%)	0	0.993
⑤ Pain from forceps pinching at the surgical site	0	0	
2. Analgesic supplements (100 μg fentanyl iv)	21 (12.9%)*	2 (1.3%)	< 0.001
Mean phenylephrine requirement (mg)	0 (0–0)*	425 (362–512)	< 0.001
Side effects			
High neuraxial block	0	1 (0.6%)	0.993
Nausea	10 (6.1%)	8 (5.0%)	0.980
Vomiting	3 (1.8%)	4 (2.5%)	0.761
Hypotension	8 (4.9%)	12 (7.5%)	0.462
Shivering	30 (18.4%)	25 (15.6%)	0.605
Fetal outcomes			
1 min Apgar score	8 (7–8)	8 (7–8)	0.310
5 min Apgar score	9 (9–9)	9 (8–9)	0.799
Birth weight (kg)	3.4 ± 0.3	3.3 ± 0.4	0.712

Alternativ til Top-Up Epidural

Clinical Research Article
pISSN 2005-6419 • eISSN 2005-7563

In conclusion,
SA may lower the failure rate of pain-free surgery,
as well as the rescue analgesic requirement
during intrapartum CS
compared with ESA.

Anaesthesia
Journal of the Association of Anaesthetists of Great Britain and Ireland

Anaesthesia, 2008, **63**, pages 822–832 doi:10.1111/j.1365-2044.2008.05499.x

A prospective audit of regional anaesthesia failure in 5080 Caesarean sections*

S. M. Kinsella

Consultant Anaesthetist, Department of Anaesthesia, St Michael's Hospital, Bristol BS2 8EG, UK

A prospective audit of regional anaesthesia failure in 5080 Caesarean sections*

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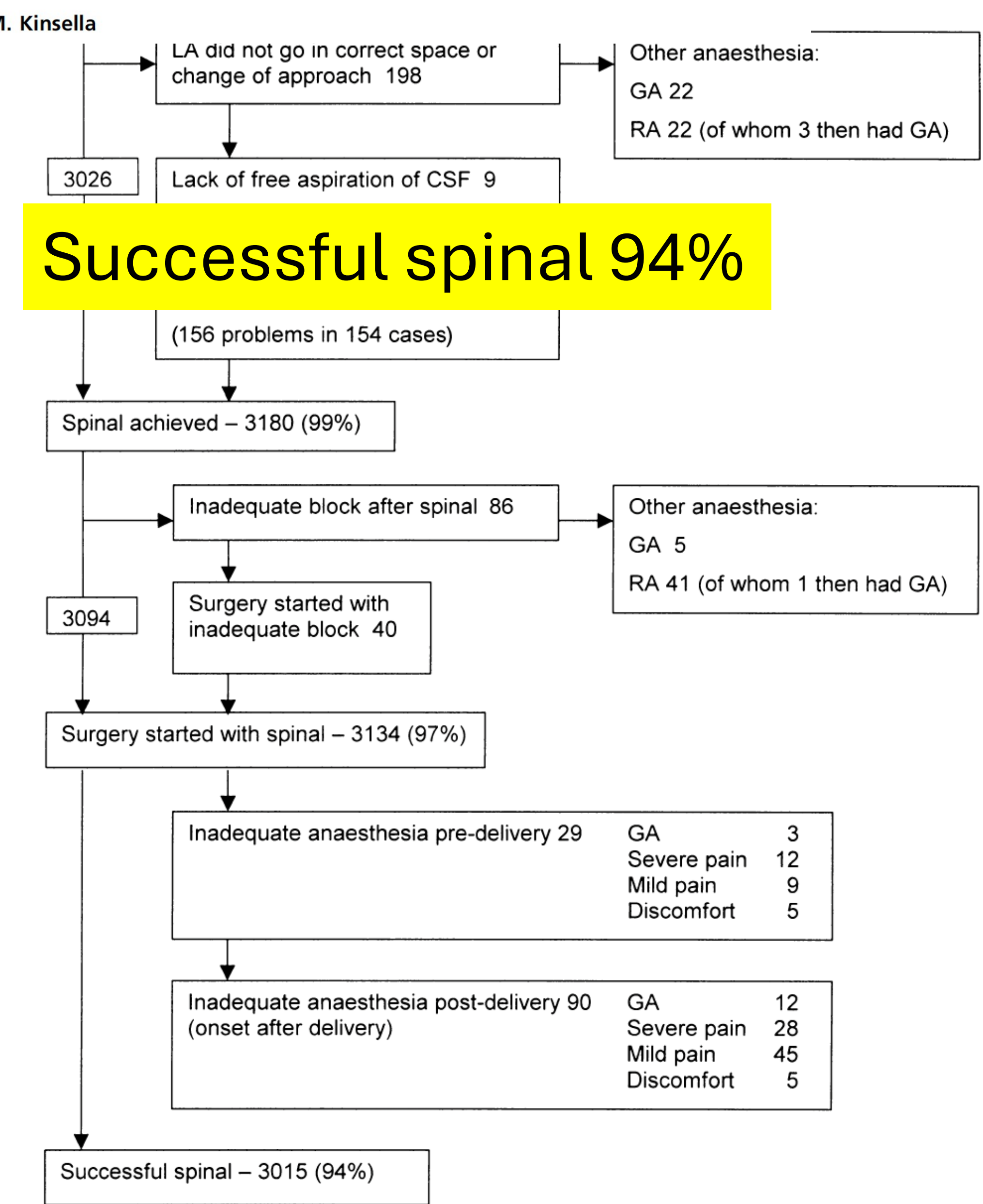


Epidural – 1286

LA did not go in correct space or change of approach 13

Other anaesthesia:
GA for high epidural 1
GA 1
RA 9 (of whom 1 then had GA)

Successful epidural 76%

Epidural achieved – 1275 (99%)

Inadequate block after top-up 177

Other anaesthesia:
GA 39
RA 91 (of whom 8 then had GA)

1098

Surgery started with inadequate block 47

Surgery started with epidural – 1145 (89%)

Inadequate anaesthesia pre-delivery 70

GA	18
Severe pain	27
Mild pain	22
Discomfort	3

Inadequate anaesthesia post-delivery 91 (onset after delivery)

GA	6
Severe pain	32
Mild pain	52
Discomfort	1

Successful epidural – 984 (76%)

Failed conversion → IntraOp Pain

Anaesthesia 2022, 77, 588–597 doi:10.1111/anae.15717

Guidelines

Prevention and management of intra-operative pain during caesarean section under neuraxial anaesthesia: a technical and interpersonal approach

F. Plaat,[1] S. E. R. Stanford,[2] D. N. Lucas,[3] J. Andrade,[4] J. Careless,[5] R. Russell,[6] D. Bishop,[7] Q. Lo[8] and D. Bogod[9]

Failed conversion – Recommendations

Plaaet al, *Anaesthesia 2022, 77, 588–597*

Mislykket
Top-Up Epi
Failed ESA

1. Informed consent

2. Discuss the planned level of block and how it will be tested, the sensations that should be expected with an effective blo… ways of trea…

3. For non-e… should inclu…

4. Use a rec… caesarean de… anaesthetic a…

5. Use light… aiming for a…

6. Identify t… sensation is first felt when moving from blocked to unblocked dermatomes between the mid-axillary and midclavicular lines bilaterally.

7. Test the lower limit of the block as well as the upper limit, using the back of the leg if necessary to avoid spraying near the genital area.

…ing as a simple and …An effective block …ight leg raise

…pain or distress …, then use …etamine in the first

…sia should be

11. Any patient who feels pain during caesarean section should be followed-up before they leave hospital.

1.	Informeret samtykke
2.-3.	Informér patienten
4.	Anvend anerkendt teknik og doser af anæstetika inkl opioid
5.-8.	Test. T4 + bagsiden af låret + motorblok
9.	Ved smerteklager → Stop kir. → Behandl smerterne
10.	Overvej GA
11.	Alle ptter, der oplever smerter bør tilses efterfølgende

Vær omhyggelig og tag ansvar

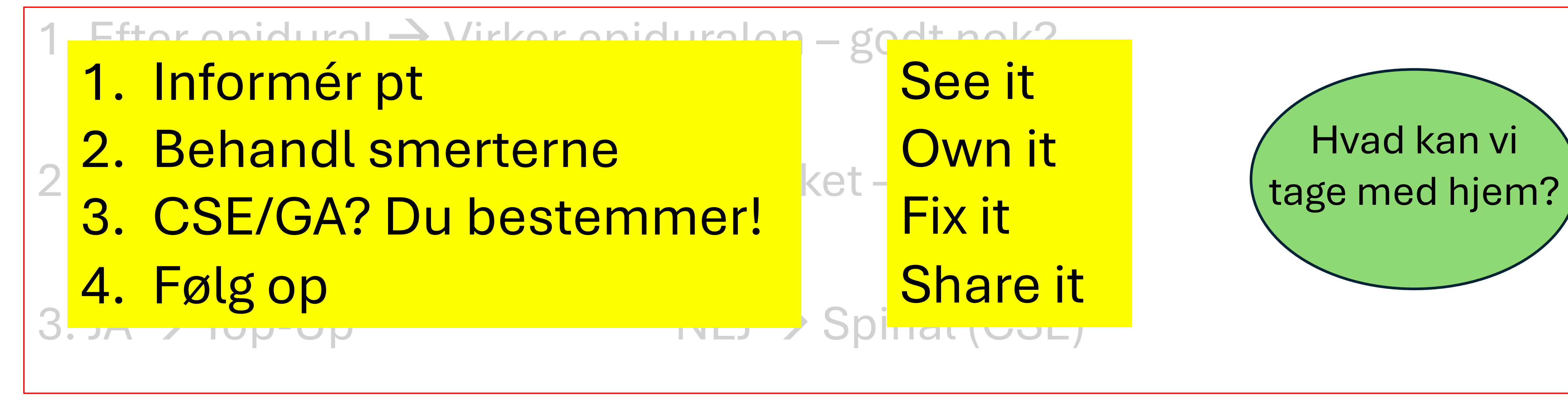
1. Efter epidural → Virker epiduralen – godt nok?

2. Inden sectio → Har epiduralen virket – godt nok?

3. JA → Top-Up NEJ → Spinal (CSE)

Hvad kan vi tage med hjem?

Vær omhyggelig og tag ansvar



"Mr. Osborne, may I be excused? My brain is full."

Hvad kan vi tage med hjem?

NB!

Hvad har betydning for mine valg?

NB!

Hvad har betydning for mine valg?

Anæstesiens 3 T'er

Travl
Træt
Tusind andre ting

ESAIC Guideline

- Delphi process
- Literature
- PICOs…
- No evidence!
- Guideline – coming…

ESAIC Guideline

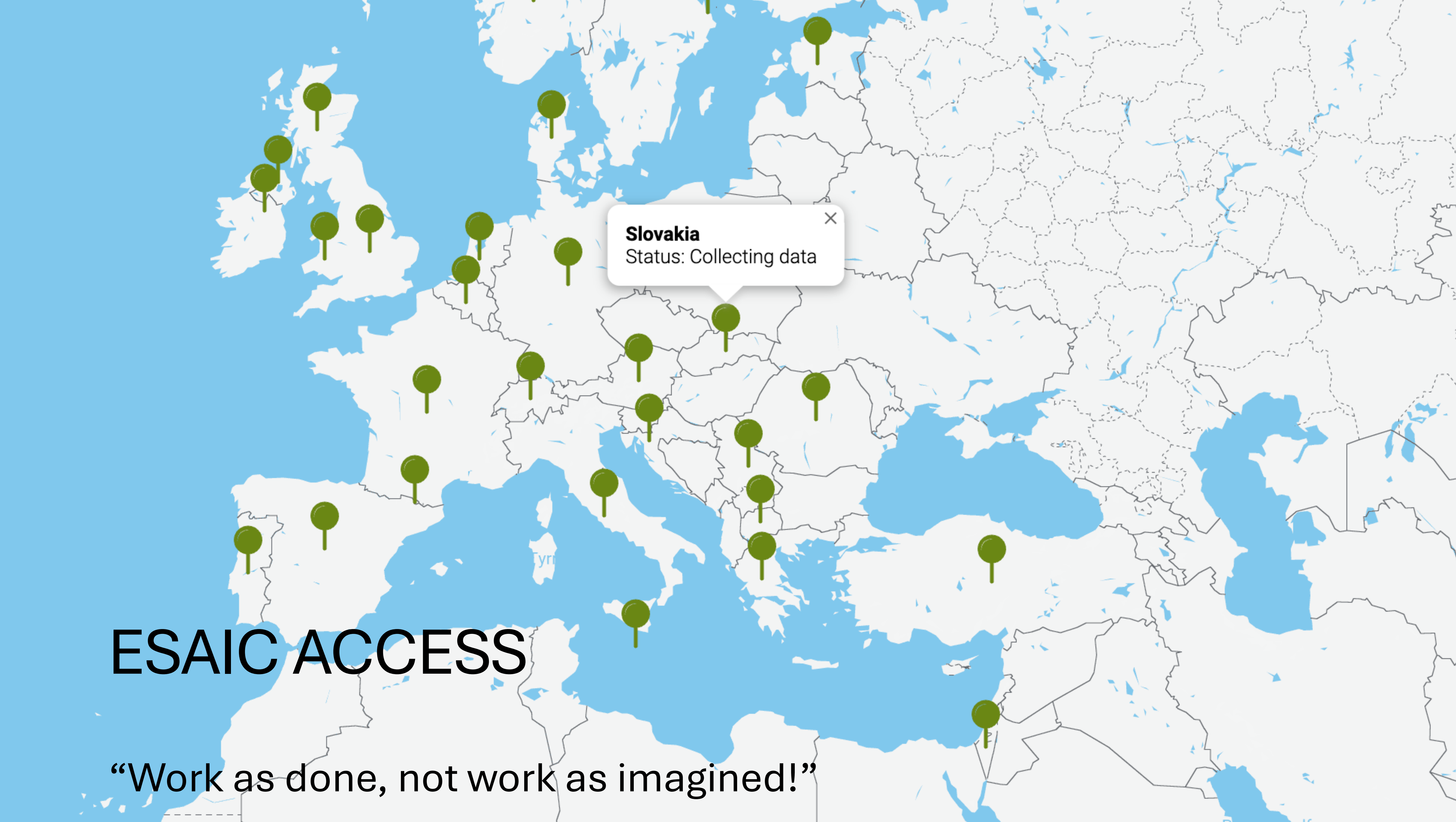
- Delphi process
- Literature
- PICOs…
- No evidence!
- Guideline – coming…

ESAIC ACCESS

“Work as done, not work as imagined!”

ESAIC ACCESS

City	Center Name	Center ID Number	IRB Status	Data Share agreement status	Local Centre Data collection method	Local Center Data Upload resource	Survey period	ready to go?
Herlev	Herlev Hospital	DK001	Approved	Approved	REDCap	REDCap	15&16	Yes
København	Rigshospitalet	DK004	Approved	Approved	REDCap	REDCap	15&16	Yes
Hillerød	Nordsjællands Hospital i Hillerød	DK008	Approved	Approved	REDCap	REDCap	15&16	Yes
Rønne	Bornholms Hospital	DK010	Approved	Approved	REDCap	REDCap	15&16	Yes
Holbæk	Holbæk Sygehus	DK013	Approved	Not needed	REDCap	REDCap	15&16	No
Roskilde	Sjællands Universitetshospital	DK016	Approved	Not needed	REDCap	REDCap	15&16	No
Slagelse	Slagelse Sygehus	DK019	Approved	Not needed	REDCap	REDCap	15&16	No
Nykøbing F.	Nykøbing F. Sygehus	DK021	Approved	Not needed	REDCap	REDCap	15&16	No
Odense C	Odense Universitetshospital	DK025	Approved	Approved	REDCap	REDCap	15&16	Yes
Svendborg	Svendborg Sygehus	DK028	Approved	Approved	REDCap	REDCap		No
Kolding	Kolding Sygehus	DK030	Approved	Approved	REDCap	REDCap	15&16	Yes
Esbjerg	Sydvestjysk Sygehus Esbjerg	DK033	Approved	Approved	REDCap	REDCap	15&16	Yes
Aabenrå	Sygehus Sønderjylland	DK036	Approved	Approved	REDCap	REDCap	15&16	Yes
Horsens	Hospitalsenheden Horsens	DK039	Approved	Not needed	REDCap	REDCap	16&17	Yes
Aarhus C.	Århus Universitetshospital	DK042	Approved	Not needed	REDCap	REDCap	15&16	Yes
Herning	Regionshospitalet Herning og Hols	DK046	Approved	Not needed	REDCap	REDCap	15&16	Yes
Viborg	Regionshospitalet Viborg	DK048	Approved	Not needed	REDCap	REDCap	15&16	Yes
Randers	Regionshospitalet Randers	DK050	Approved	Not needed	REDCap	REDCap	8&9	Yes
Aalborg	Aalborg Universitetshospital	DK053	Approved	In progress	REDCap	REDCap	15&16	No
Thisted	Regionshospital Nordjylland	DK057	Approved	In progress	REDCap	REDCap		No
Hjørring	Regionshospital Nordjylland	DK059	Approved	In progress	REDCap	REDCap		No


Slovakia
Status: Collecting data
ESAIC ACCESS
“Work as done, not work as imagined!”

Failed Top-Up

Mislykket
Top-Up Epi
Failed ESA

1. Anæstesi: Fødeepi kan ikke bruges
2. Obstetriker: Øget muskeltonus
3. Patient: Smerter i forbindelse med kejsersnit

Anaesthesia 2022, 77, 598–604 doi:10.1111/anae.15657

Review Article

Inadequate neuraxial anaesthesia in patients undergoing elective caesarean section: a systematic review

R. Patel,[1] J. Kua,[1] N. Sharawi,[2] M.E. Bauer,[3] L. Blake,[4] S. R. Moonesinghe[5] and P. Sultan[6]

Inadequate NA:
Supplemental analgesia
Conversion to GA
Patient reported assessment
Anaesthetist assessment
Block height threshold
Pain score threshold
Not Given

- 54 studier. 3497 ptter.
  - 78% Spinal/CSE.
  - 22% Epi de novo.

- 15% Inadækvat neuraxial anæstesi (behov for suppl intraopr)
  - 10% Spinaler, 30% Epidural
  - GA: 2/3497 ptter (0,06%)

Received: 30 March 2021 | Accepted: 24 August 2021
DOI: 10.1002/ejp.1856

ORIGINAL ARTICLE

Intraoperative pain during caesarean delivery: Incidence, risk factors and physician perception

Amir Keltz[1,2] | Philip Heesen[3] | Daniel Katz[4] | Ido Neuman[1,2] | Anna Morgenshtein[5] | Karam Azem[1,2] | Yair Binyamin[6,7] | Eran Hadar[8,2] | Leonid A. Eidelman[1,2] | Sharon Orbach-Zinger[1,2]

- Prospektivt, elektivt sectio
- 193 ptter spurgt efter sectio om smerter intraopr. Ja/Nej
- 12% Ja. (4% inden forløsning, 8% efter)

Spinal med Hyperbar Bupivacain 12mg, Fentanyl 20mikrog, Morfin 100mikrog.

Before surgery began, the block was assessed via four distinct tests:
1. Motor-block (parturient unable to lift legs),
2. Sensory assessment to pinprick bilaterally to T4 (using a sharp instrument),
3. Sensory assessment to cold assessed by cold alcohol swab,
4. Surgical test using tweezers at level of skin incision.

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- Obstetrikerens opfattelse
- 4% har smerter

- Falsk Positiv 2%

  Obst opfatter smerter.

  Pt har IKKE smerter
- Falsk Negativ 83%

  Obst opfatter IKKE smerter.

  Pt har smerter

Received: 30 March 2021 | Accepted: 24 August 2021
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- Obstetrikerens opfattelse
- 4% har smerter

- Falsk Positiv 2%

  Obst opfatter smerter.

  Pt har IKKE smerter
- Falsk Negativ 83%

  Obst opfatter IKKE smerter.

  Pt har smerter

- Anæstesilægens opfattelse
- 17% har smerter

- Falsk Positiv 12%

  Anæst opfatter smerter.

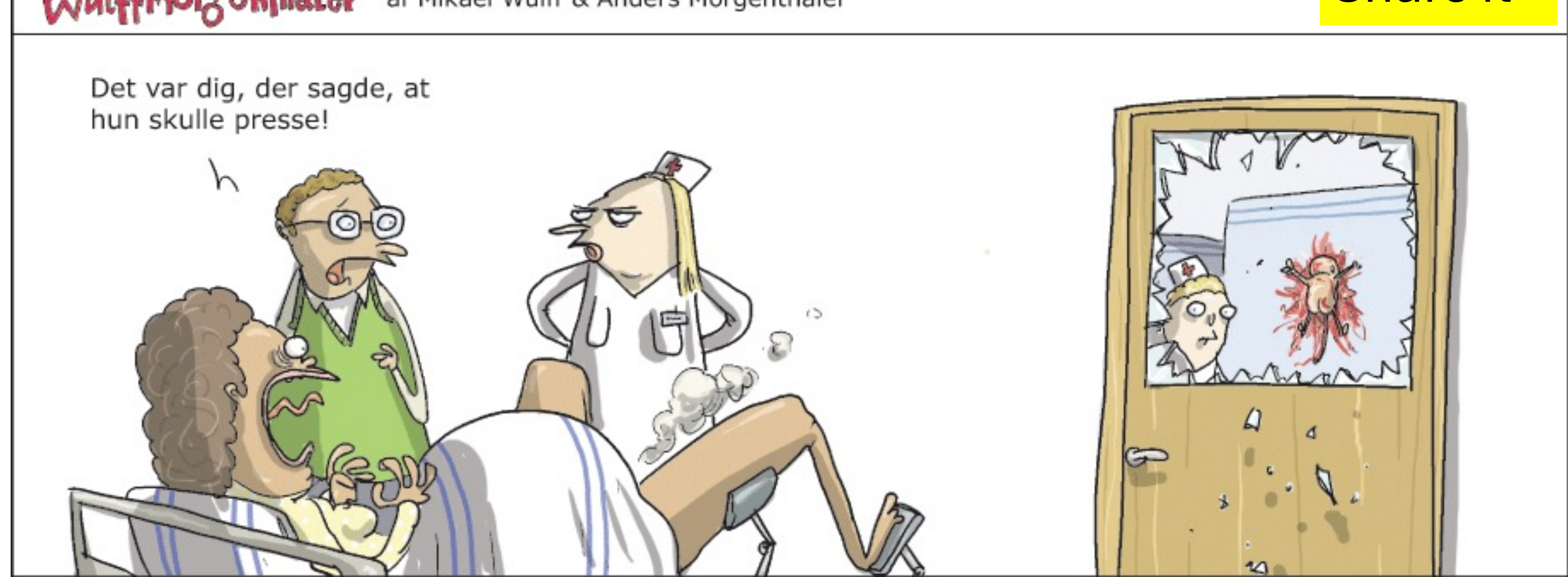
  Pt har IKKE smerter
- Falsk Negativ 52%

  Anæst opfatter IKKE smerter.

  Pt har smerter

Spørgsmål?

See it
Own it
Fix it
Share it

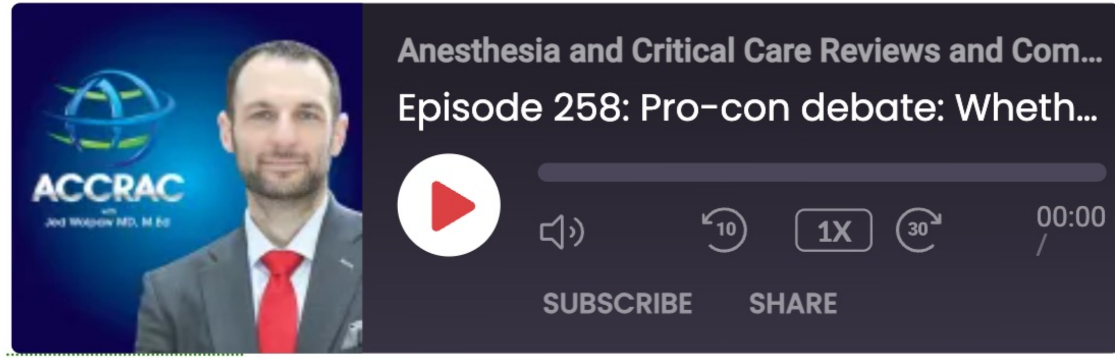


Podcast

ANESTHESIA, OB

EPISODE 258: PRO-CON DEBATE: WHETHER TO USE AN EXISTING LABOR EPIDURAL FOR C-SECTION WITH DRS. HOFKAMP AND SHARPE

JULY 3, 2023 1 COMMENT



Download file | Play in new window | Recorded on May 23, 2023

In this 258th episode I welcome Dr Emily Sharpe and Dr. Mike Hofkamp back to the show to have a pro-con debate about what to do when a woman in labor with an epidural in place has to go unexpectedly for c-section. Dr. Hofkamp argues for removing the epidural and doing a second neuraxial technique while Dr. Sharpe argues for using the existing epidural.

7 Obstetric practice

Edited by Dr Nuala Lucas
QI editor Dr Carolyn Johnston

7.6 Caesarean section anaesthesia: technique and failure rate

Dr Makani Purva, Hull Royal Infirmary
Dr S Mike Kinsella, University Hospitals Bristol

Best practice

Caesarean section	Category (%)		
	4	2-3	1
Carried out with regional anaesthesia	> 95	> 85	> 50
Regional to general anaesthesia conversion	< 1	< 5	< 15

Other suggested outcomes that might be monitored include:

- compliance with a 30-minute decision to delivery interval for category 1 caesarean sections
- rate of pain during caesarean sections carried out with regional anaesthesia for different urgency categories.[1]

- Type of anaesthesia (general anaesthetic); all regional anaesthesia; epidural top-up; spinal; combined spinal-epidural; other, according to urgency of the type of caesarean section.
- Regional anaesthesia failure – conversion to general anaesthesia for a case where regional anaesthesia has been started (a needle was inserted into the back or a drug given down an epidural catheter for the purpose of surgery).