



**Tankar kring duraperforation och  
annat som kan hända  
när vi sticker patienter i ryggen**

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# Major complications of central neuraxial block: report on the Third National Audit Project of the Royal College of Anaesthetists

## NAP3

**Obstetric CNB 45 % of all CNB in the UK**  
**14 % of all complications**

*NAP 3 BJA 2009;102: 179-90*

*<http://www.rcoa.ac.uk/index.asp?PageID=717>*

# Vad vill våra patienter veta?

*Kelly et al, IJOA 2004; 13: 71-4*

- Number of women wanting to know about each complication (total 100)

● Complication	Number of women
● Hypotension	87
● Temporary leg weakness	94
● Nausea & vomiting	85
● Urinary retention	93
● Failure	94
● Post dural puncture headache	94
● Temporary neurological deficit	82
● Permanent neurological deficit	77
● Meningitis	70
● High spinal block	77

# Postspinal huvudvärk - PS-HV

## Känd duraperforation?

### 30 % är ej noterade!

50 %	18 G Tuhoj epiduralnål
36 %	22 G Quincke (skärande)
3 %	22 G pencil point
1 %	25 G pencil point

*Thew M, Paech MJ. Management of postdural puncture headache in the obstetric patient. Curr Opin Anaesthesiol 2008;21:288-92*

**LONG-TERM FOLLOW-UP OF PATIENTS WHO RECEIVED 10,098  
SPINAL ANESTHETICS**

**SYNDROME OF DECREASED INTRACRANIAL PRESSURE (HEADACHE AND OCULAR AND  
AUDITORY DIFFICULTIES)**

**Leroy D. Vandam, M.D.**  
and  
**Robert D. Dripps, M.D., Philadelphia**

*TABLE 3.—Relation of Gauge of Needle Used for Lumbar  
Puncture to Incidence of "Spinal" Headache*

Needle Gauge	Spinal Anesthetics, No.	"Spinal" Headaches	
		No.	%
16.....	839	151	18
19.....	154	16	10
20.....	2,098	377	14
22.....	4,952	430	9
24.....	634	37	6
	<hr/>	<hr/>	<hr/>
	9,277	1,011	11

# LONG-TERM FOLLOW-UP OF PATIENTS WHO RECEIVED 10,098 SPINAL ANESTHETICS

SYNDROME OF DECREASED INTRACRANIAL PRESSURE (HEADACHE AND OCULAR AND AUDITORY DIFFICULTIES)

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TABLE 1.—*Relation of Age of Patient to Incidence of "Spinal" Headache*

Age, Yr.	Spinal Anesthetics, No.	"Spinal" Headaches	
		No.	%
10-19.....	537	51	10
20-29.....	1,994	321	16
30-39.....	1,833	261	14
40-49.....	1,769	192	11
50-59.....	1,736	133	8
60-69.....	1,094	45	4
70-79.....	397	7	2
80-89.....	27	1	3
	<hr/> 9,277	<hr/> 1,011	<hr/> 11

# PS-HV 24 h-1 v efter duraperforation

<b>Duration:</b>	<b>Dagar- veckor</b> Efter 2 veckor är de flesta återställda
<b>Behandling:</b>	<b>Vila</b> <b>Analgetika</b> <b>epidural morfin?*</b> <b>Blood-patch</b>
<b>Ingen /Tveksam effekt:</b>	<b>Intrathekal kateter **</b>  <b>Koffein-</b> <b>Extra vätska</b> <b>Gördel</b> <b>Sumatriptan</b>

\* *Al-metwalli RR, Anaesthesia 2008; 63(8): 847-51*

\*\* *Russel IF, IJOA 2012; 21: 7-16*



# Postspinal Huvudvärk PS-HV

**Behandling: Analgesi/blood-patch**

**Avvakta blood-patch 24-48 timmar**

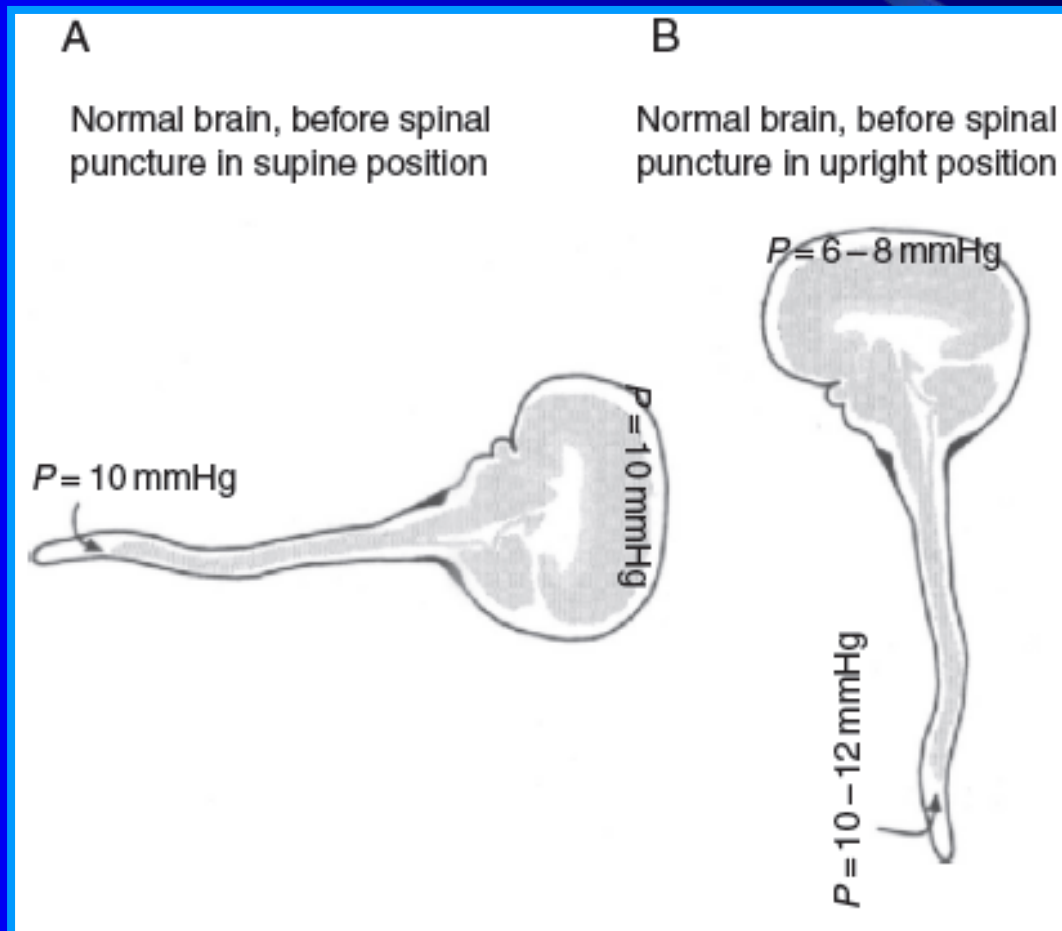
**Uppföljning tills patienten återställs!**

*Apfel CC, et al. Prevention of postdural puncture headache after accidental dural puncture: a quantitative systematic review. Br J Anaesth 2010; 105: 255-63*

*Darvish B, et al. Management of accidental dural puncture and post-dural puncture headache after labour: a Nordic survey. Acta Anaesthesiol Scand 2011; 55: 46-53*

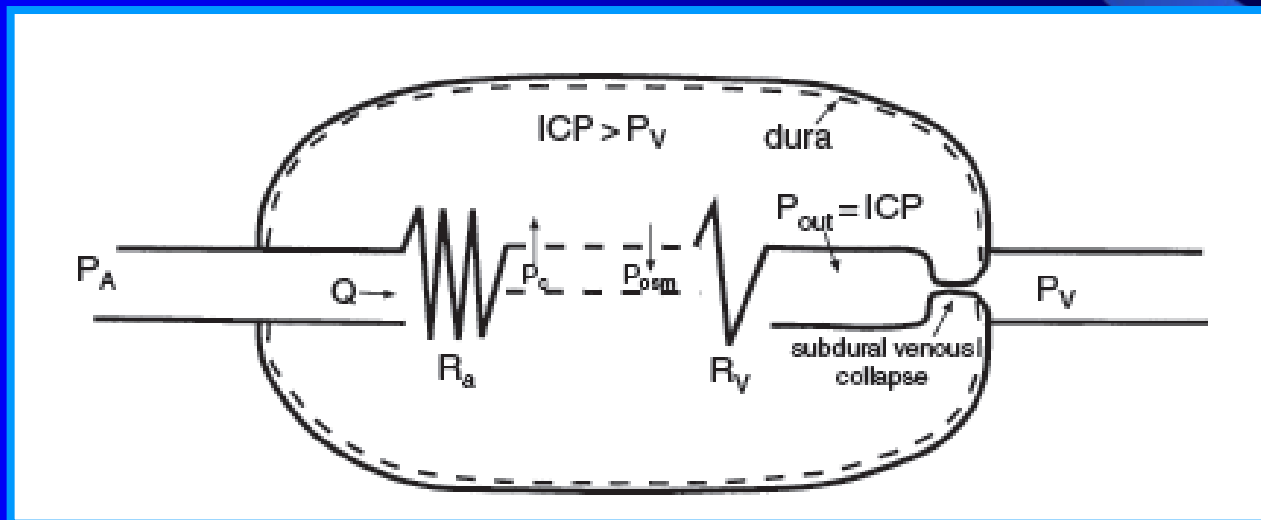
# PS-HV: patogenes

Grände PO, *Acta Anaesthesiol Scand* 2005; 49: 619-26



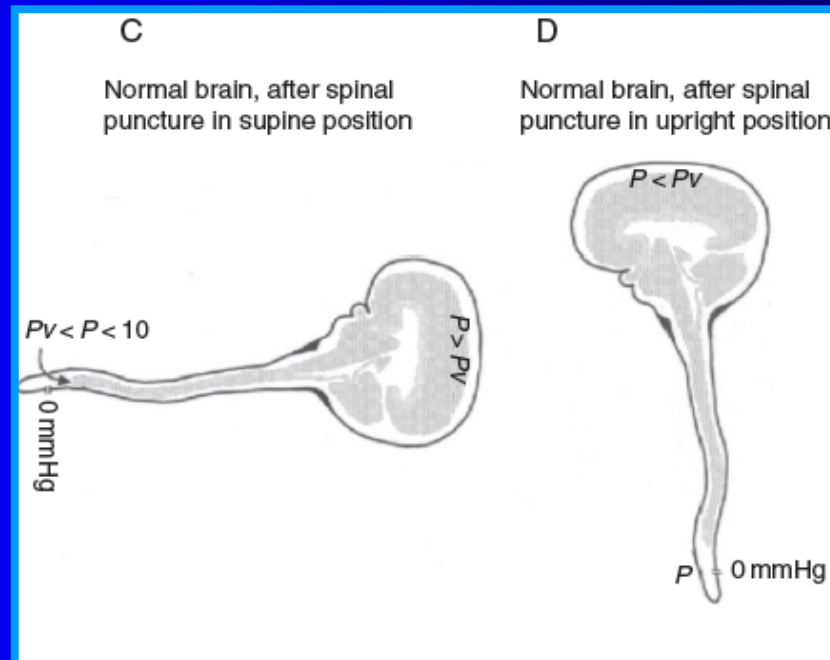
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# PS-HV: patogenes

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# Grändes modell kan förklara:

- PS-HV- latens
- Högre incidens PS-HV om kvinnan krystar
- Omedelbar effekt av Blood-Patch
- Kraniell Subduralhematom (?)

# PS-HV och kraniell subduralhematom

- "komplikation till komplikationen":  
    ➔ 1991 : 45 case reports
- 1994-2010: 57 case reports
- 2012: 8 case reports-  
    5 obstetriska
- Efter såväl spinal som epidural
- Lurigt!

# Kraniell subduralhematom

*Demetriades AK, et al Fatal bilateral subdural haematoma after epidural anaesthesia for pregnancy. Archives of gynecology and obstetrics. 2011;284(6):1597-8.*

43 årig kvinna, EDA vid förlossning.  
De kommande 3 veckor upprepade  
läkarbesök p g a HV – PSHV

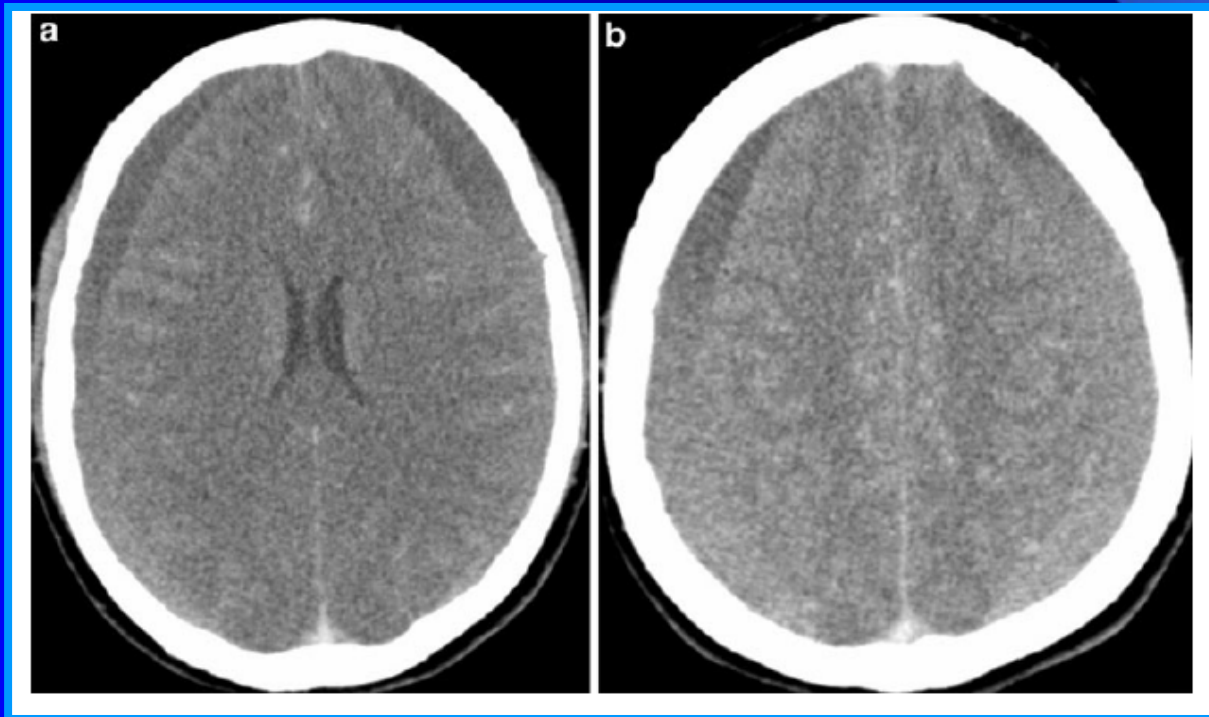
Initialt typiskt lägesberoende

22 dagar postpartum: Desorienterad  
och MV påverkad GCS 9/15

# Kraniell subduralhematom

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*Archives of gynecology and obstetrics.*  
*2011;284(6):1597-8.*



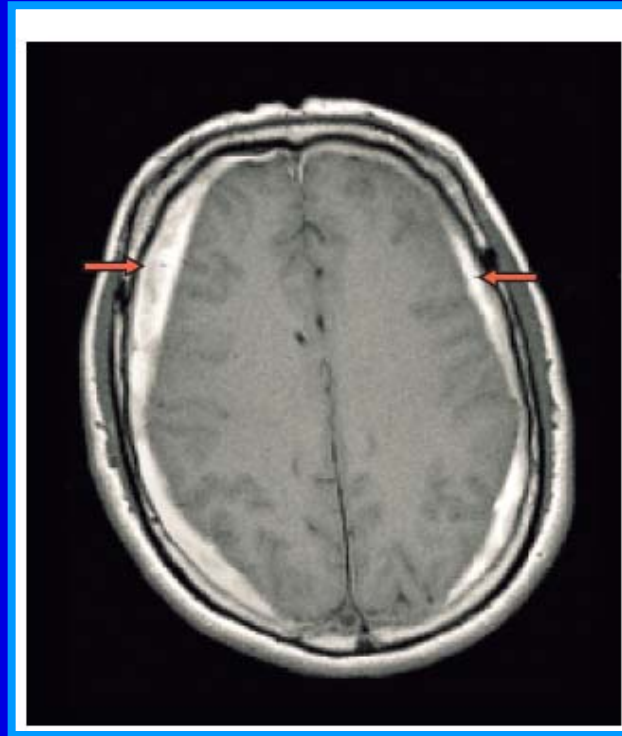


# MRI vid spontan lågtryckshuvudvärk: SIH Pachymeningit

*Sveinsson et al, LT 2011; 35(108): 1622-25*



# MRI vid spontan lågtryckshuvudvärk: SIH Subduralhematom



# MRI vid spontan lågtryckshuvudvärk: SIH Nedragning av hjärnstammen



# Hotande inklämning vid ↑ ICP

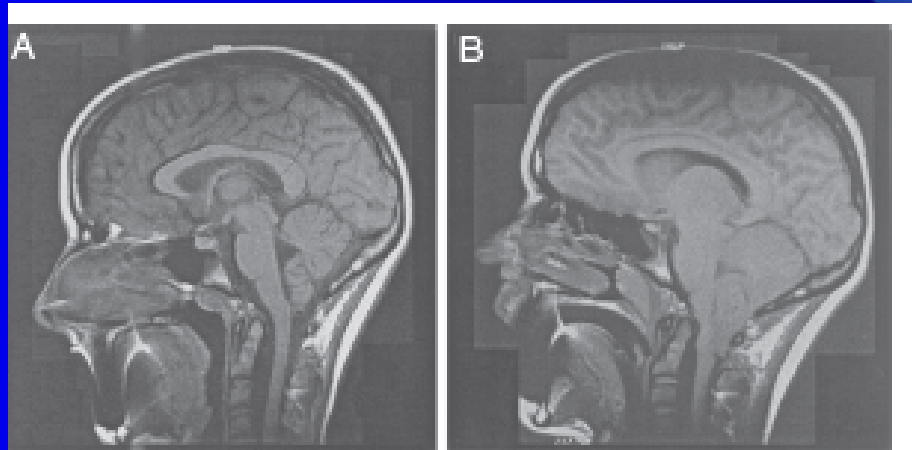


Fig. 5. An MRI picture of the brain of a 14-year-old girl suffering from meningitis with raised ICP a few hours after lumbar dural puncture (LP) (B), and 5 weeks later when ICP was normalized (A).

# CT-bild vid ↑ ICP

- **Grände:** 10 pat Uppmätt ↑ ICP  
5 CT hjärnödem på CT
- **Nagra:** 4 av 103 CT visade  
alla hade klinik på ICP ↑

*Grande PO et al Treatment of intracranial hypertension and aspects on lumbar dural puncture in severe bacterial meningitis. Acta Anaesthesiol Scand 2002; 46: 264-70.*

*Nagra et al The role of cranial CT in the investigation of meningitis. JRSM Short Rep 2011; 2: 20.*

# Och så till frågan: var sticker vi egentligen?

- Traumatiska skador medulla/conus :
- BMI
- Gravida
- Medulla slutar caudalt om L1-L2 hos
- 20 %
- Touffier´s linja: L3-L4 ?

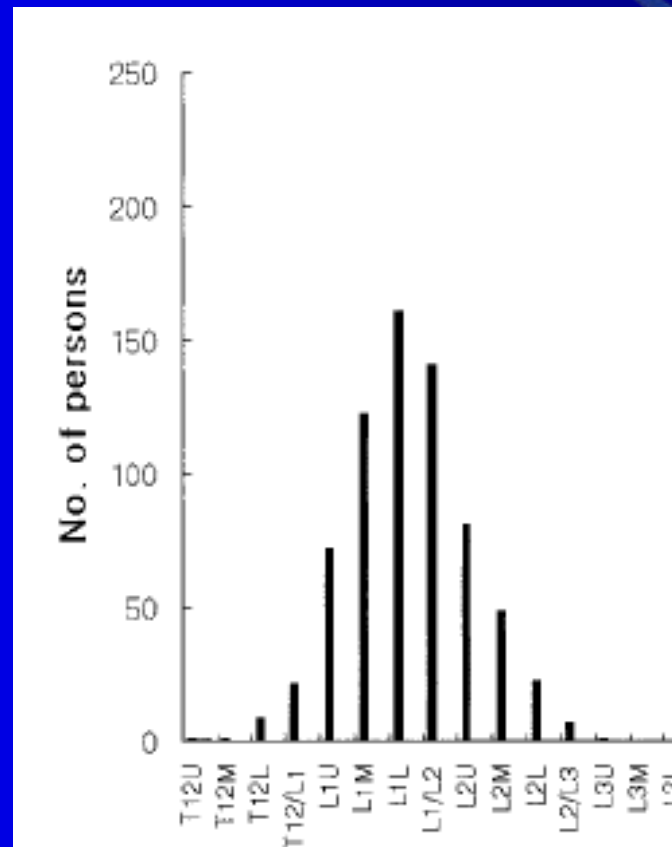
*Chakraverty et al, Identification of the correct lumbar..... Anaesthesia, 2007;62: 1121–1125*

*Reynolds F. Damage to the conus medullaris following spinal anaesthesia. Anaesthesia; 2001;56: 235- 47*

# *Influence of Age and Sex on the Position of the Conus Medullaris and Tuffier's Line in Adults*

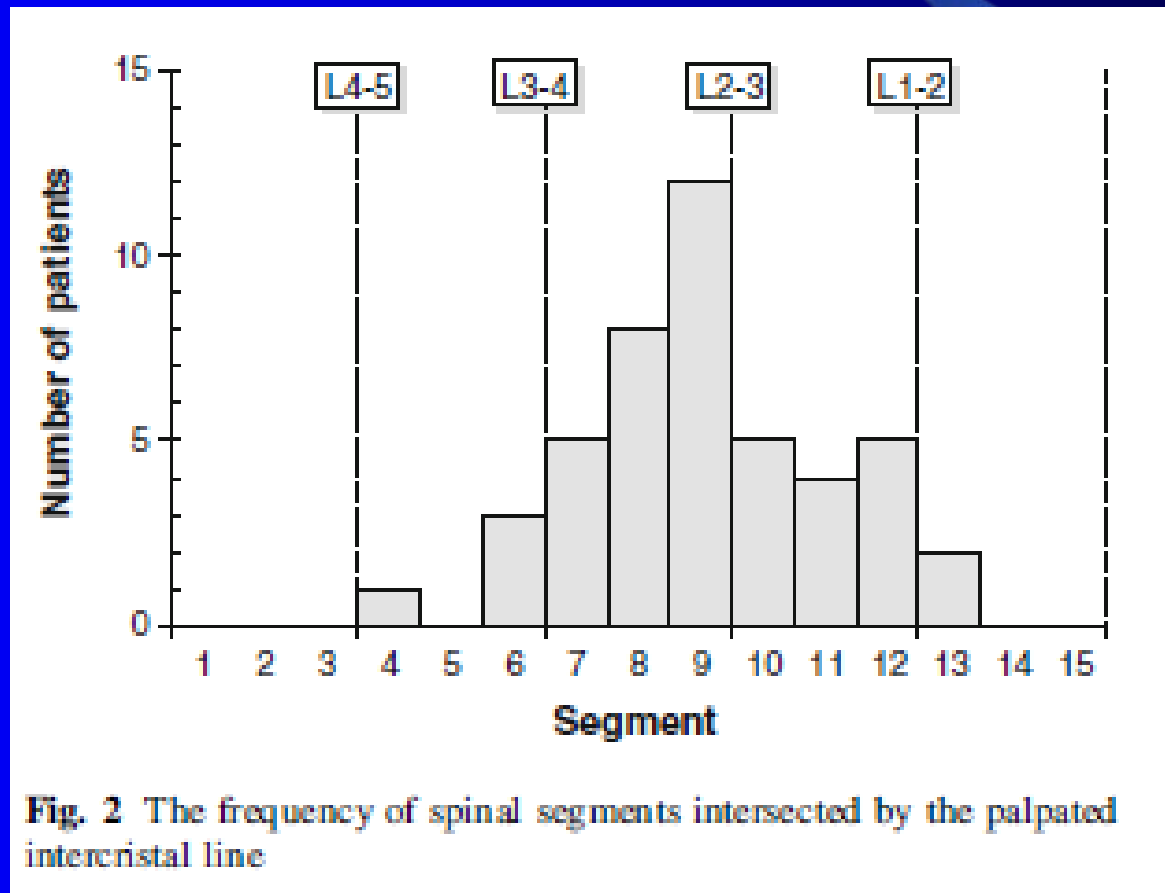
Jin-Tae Kim, M.D.,\* Jae-Hyon Bahk, M.D.,† Jooheon Sung, M.D., Ph.D.‡

Anesthesiology 2005; 99:1359-63



# Intercristal line and interspace

*Margarido CB, et al The intercrystal line determined by palpation is not a reliable anatomical landmark for neuraxial anesthesia. Can J Anaesth 2011;58(3):262-6.*





# Determination of interspace

*Broadbent CR, et al Ability of anaesthetists to identify a marked lumbar interspace. Anaesthesia. 2000;55(11):1122-6.*

Actual level	Anaesthetists' opinions						
	T <sub>12</sub> -L <sub>1</sub>	L <sub>1-2</sub>	L <sub>2-3</sub>	L <sub>3-4</sub>	L <sub>4-5</sub>	L <sub>5</sub> -S <sub>1</sub>	S <sub>1-2</sub>
T <sub>11-12</sub>	2	3		1			
T <sub>12</sub> -L <sub>1</sub>		10	4	2			
L <sub>1-2</sub>	1	<u>16</u>	39	24			
L <sub>2-3</sub>		5	<u>26</u>	45			
L <sub>3-4</sub>				<u>13</u>	5		
L <sub>4-5</sub>					<u>2</u>		
L <sub>5</sub> -S <sub>1</sub>						<u>1</u>	1

# Direkt trauma

## Ultrasound vs clinically evaluated interspace

Clinical evaluation	Echographic evaluation					Total
	L1L2	L2L3	L3L4	L4L5	L5S1	
L1L2	0	0	0	0	0	0
L2L3	1	6	5	2	0	14
L3L4	4	28	29	7	1	69
L4L5	1	4	10	1	0	16
L5S1	0	0	0	0	0	0
Total	6	38	44	10	1	99

*Schlotterbeck et al. BJA 2008*

**Och vad annat följer med in?**

## 2 Case reports Ohio 2009

**Pat A: 26 år frisk kvinna**

**SPi förlossningsanalgesi (Anest A)**

**Okomplicerad förlossning**

**15 t postpartum: feberfrossa, svår**

**HV, därefter MV påverkad**

**LP: Bakteriell meningit**

**Ab behandling, tillfrisknande**

## 2 Case reports Ohio 2009

**Pat B: 26 år frisk kvinna**

**SPI förlossningsanalgesi ( Anest A)**

**Okomplicerad förlossning**

**13 t postpartum: feberfrossa,**

**Svår HV, derefter MV påverkad**

**19 t postpartum: Avlider**

**PCR: Identisk S salivarius**

**Pat A/Pat B/Anest A**

# Infektionskomplikationer: Iatrogen meningit

**Vanligaste Patogen:**

**Alpha-hemolytiska streptococcer**

**Flora :**   munhåla  
              övre luftvägar  
              uro-genitalt

**INTE hudflora**

**Men oftast går det ju faktiskt bra!**