CATHETER PERINERVEUX

Quelles indications en 2021 ?

Axel Maurice-Szamburski
M.D., Anesthésie Réanimation, Clinique Juge
Ph.D., Centre d'Etude et de Recherche sur les Services de Santé et la Qualité de Vie

Réactualisation de la recommandation sur la douleur postopératoire☆

Frédéric Aubrun [1], Karine Nouette Gaulain [2], Dominique Fletcher [3], Anissa Belbachir [4], Hélène Beloeil [5], Michel Carles [6], Philippe Cuvillon [7], Christophe Dadure [8], Gilles Lebuffe [9], Emmanuel Marret [10], Valéria Martinez [3], Michel Olivier [11], Nadia Sabourdin [12], Paul Zetlaoui [13], Société française d'anesthésie et de réanimation

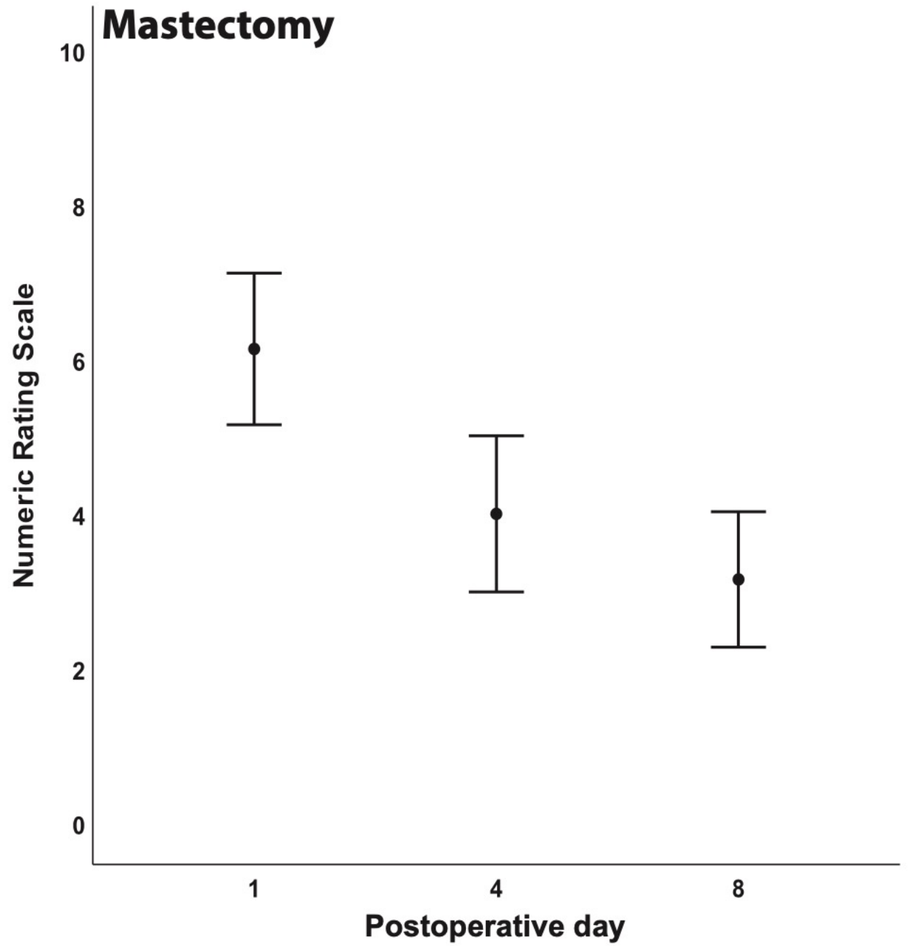
Argumentaire : la littérature récente confirme l'intérêt d'un cathéter périnerveux en cas de risque de douleur postopératoire modérée à sévère en particulier dans la chirurgie prothétique de l'épaule (interscalénique) et du genou (fémoral) [60,61]. Outre l'efficacité analgésique prolongée, le bénéfice porte sur l'épargne opioïde et la réduction des effets adverses morphiniques (NVPO), sur l'amélioration du sommeil et la satisfaction des patients.

Using postoperative pain trajectories to define the role of regional analgesia in personalised pain medicine

E. R. Mariano,[1,2] **K. El-Boghdadly**[3,4] and **B. M. Ilfeld**[5,6]

Anaesthesia

Association of Anaesthetists



Mariano 2020

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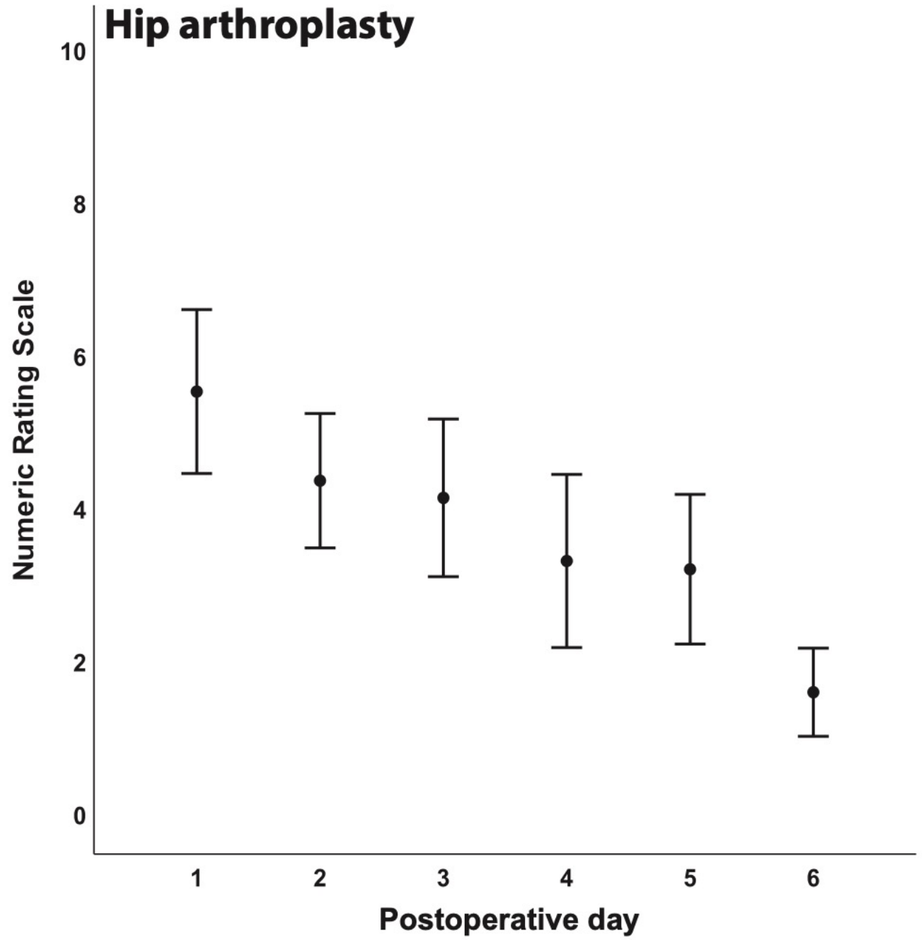

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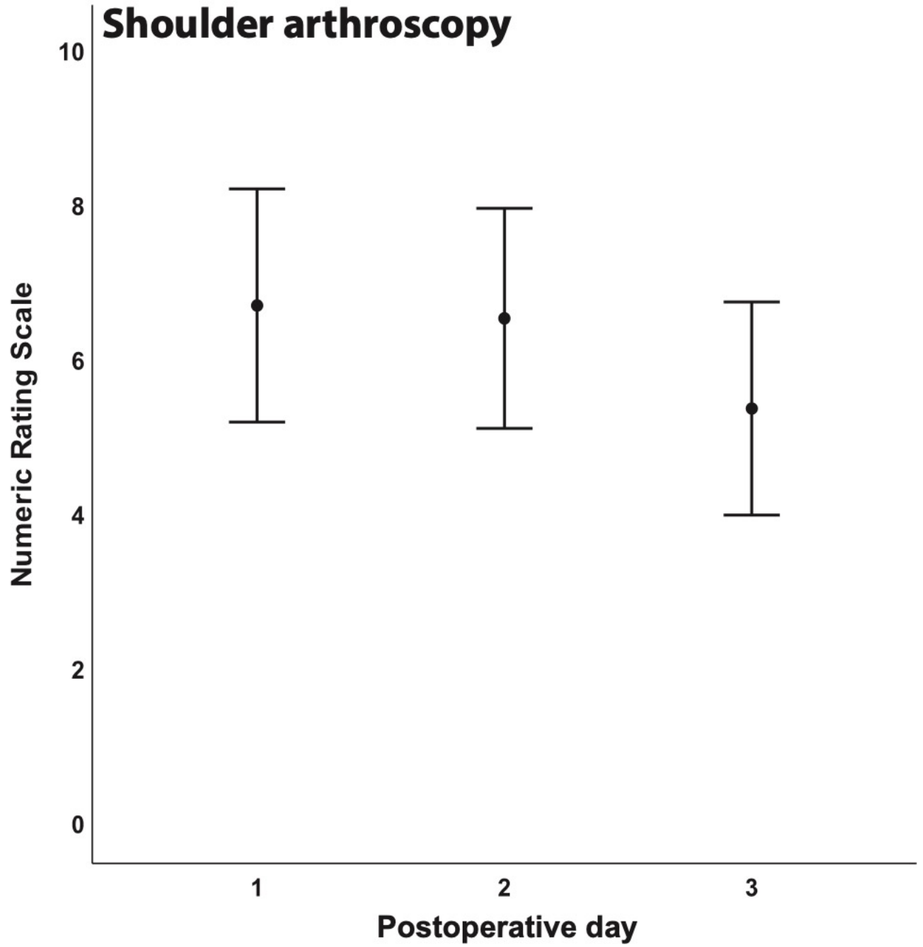

Mariano 2020

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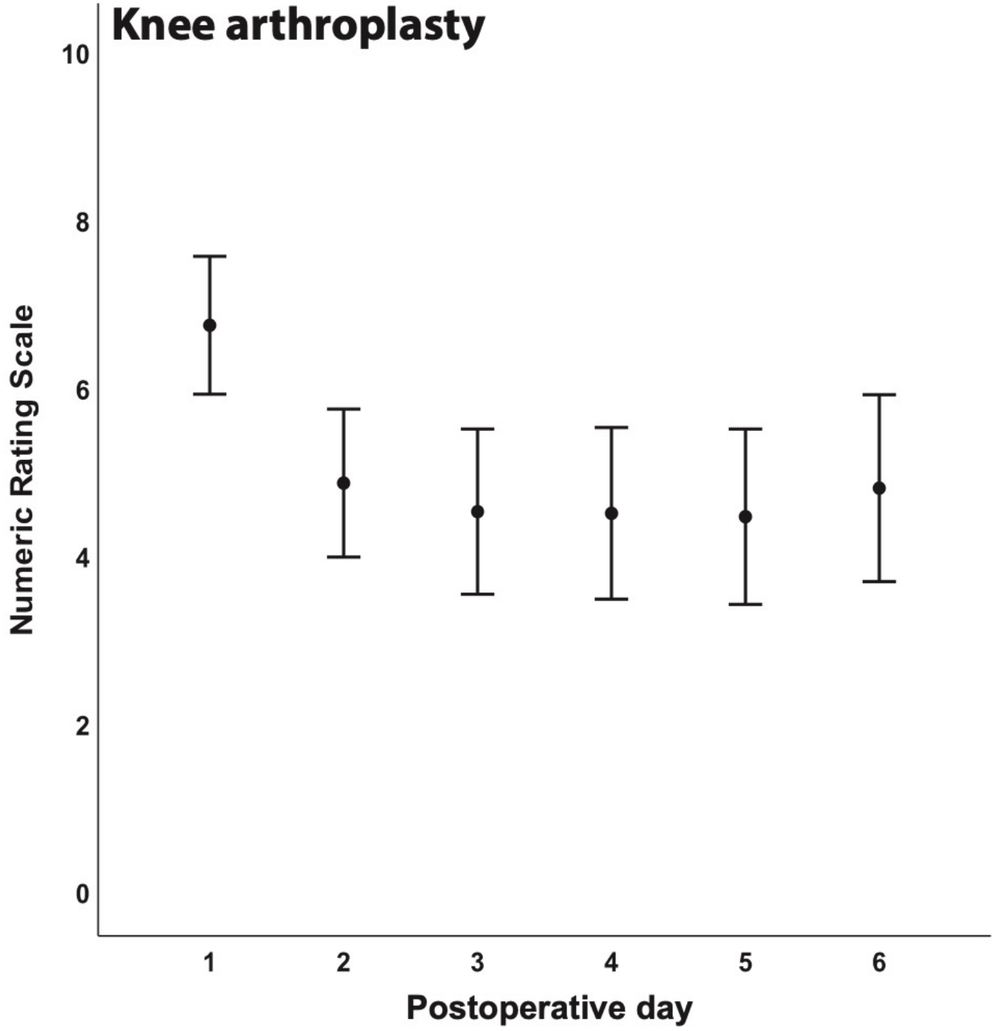
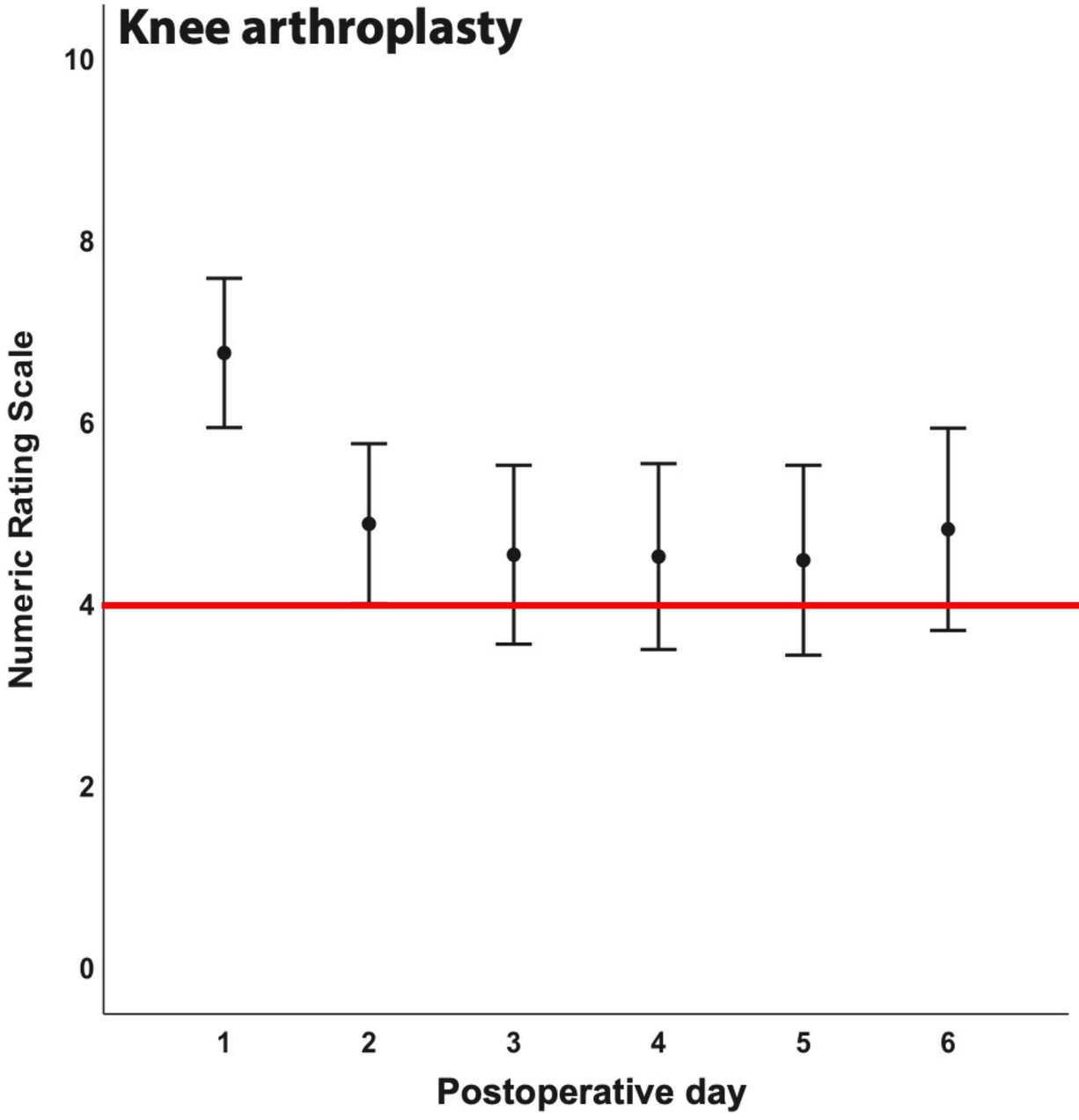
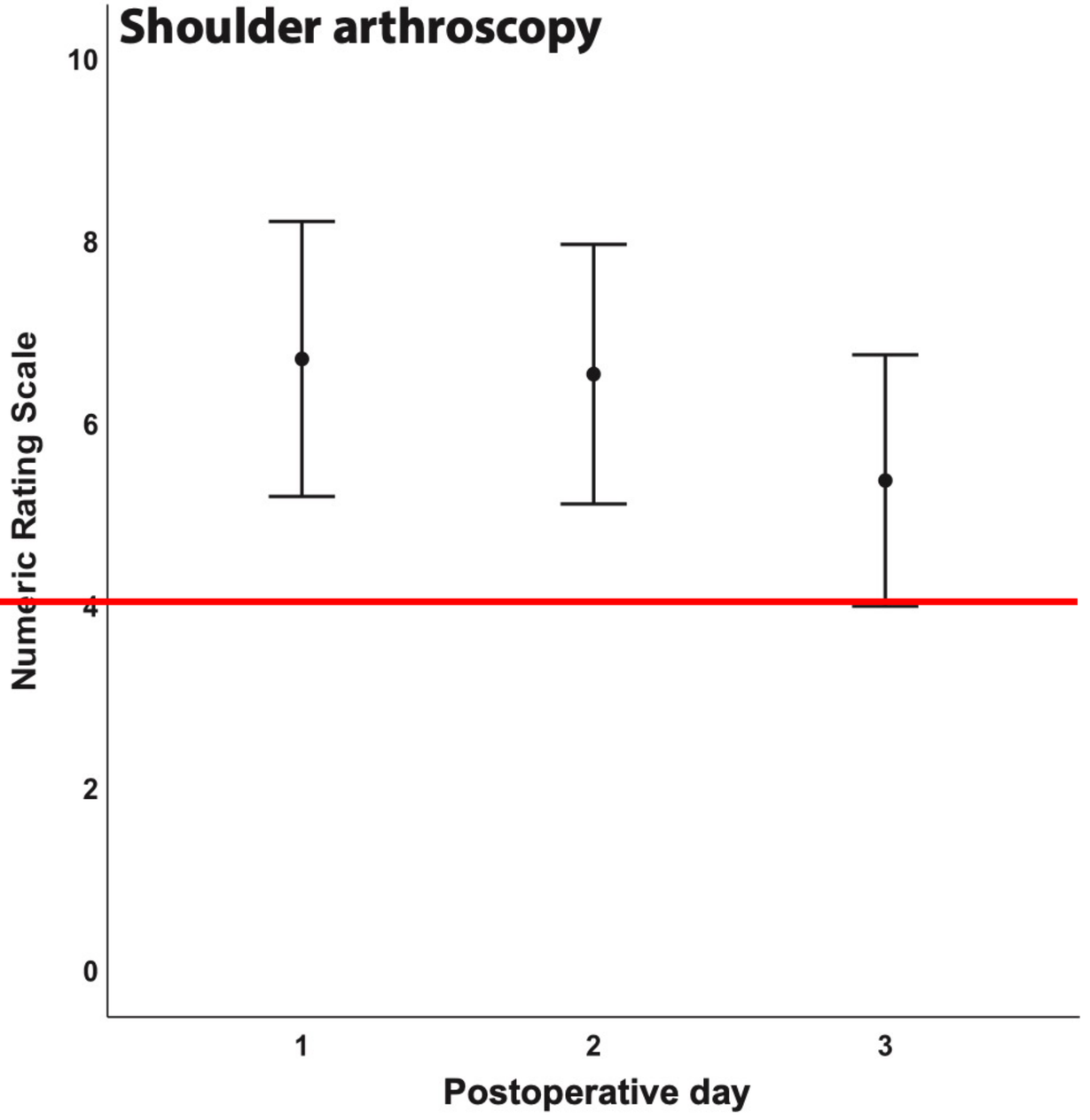


Mariano 2020


Knee arthroplasty
Numeric Rating Scale
10
8
6
4
2
0
1
2
3
4
5
6
Postoperative day


Shoulder arthroscopy
Numeric Rating Scale
10
8
6
4
2
0
1
2
3
Postoperative day

Somatic and Psychologic Predictors of Long-term Unfavorable Outcome After Surgical Intervention

Madelon L. Peters, PhD, Micha Sommer, MD,† Janneke M. de Rijke, PhD,†*

ANNALS OF SURGERY

TABLE 2. The Association of Step 3 and 4 Predictor Variables With Outcome Variables Increased Pain at 6-Month Follow-up, Increased Functional Limitations at 6-Month Follow-up and Poor Global Recovery

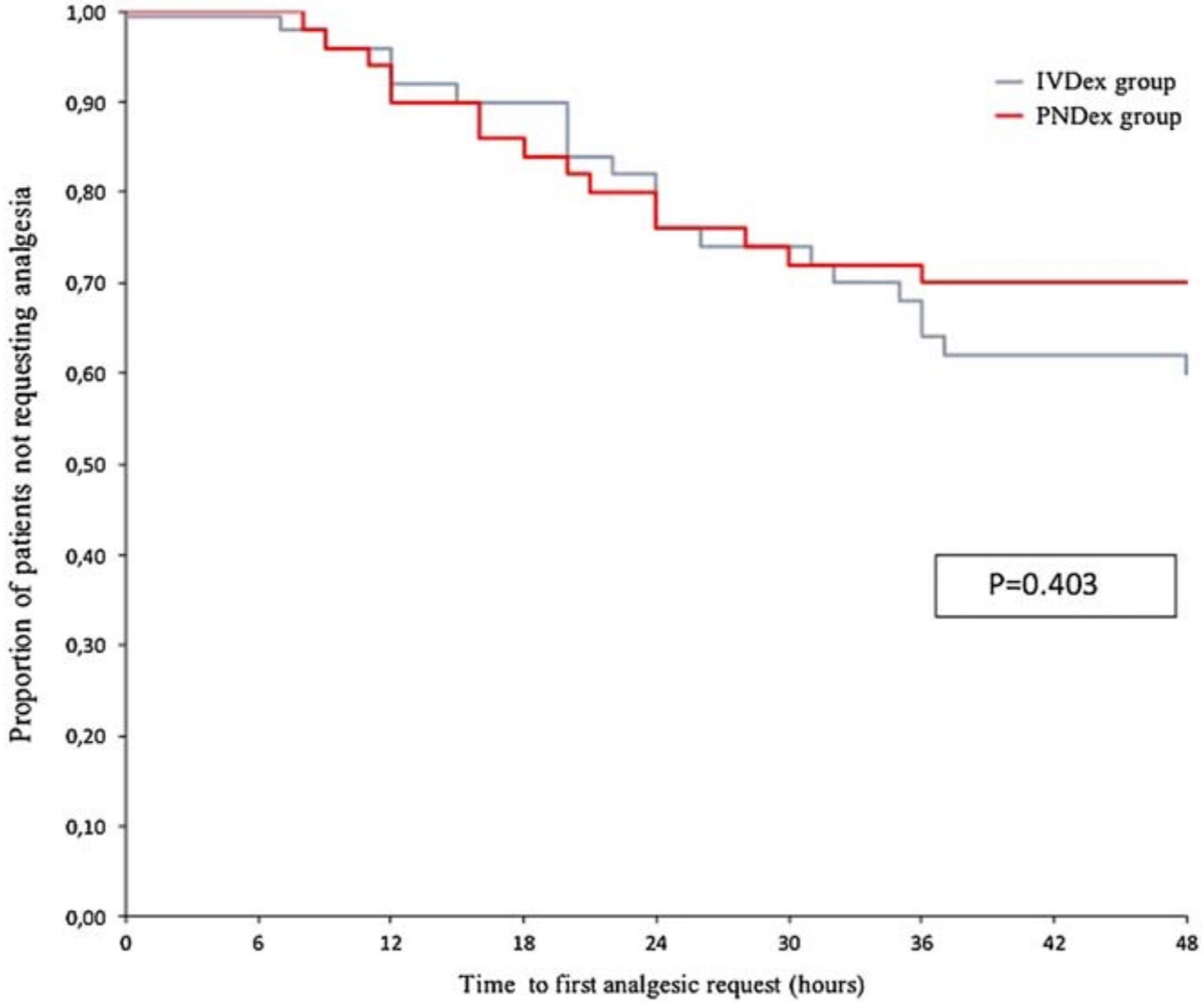
		Increased Pain at Follow-up		Increased Functional Limitations at Follow-up		Poor Global Recovery	
Independent Variable	**n**	**OR (95% CI)**	***P***	**OR (95% CI)**	***P***	**OR (95% CI)**	***P***
Preop. pain							
No	274	1.00		1.00		1.00	
Yes	351	0.32 (0.17–0.60)	0.001	NE		1.90 (1.21–2.97)	0.01
Duration of surgery							
<3 hr	545	1.00		1.00		1.00	
≥3 hr	80	2.00 (1.01–3.97)	0.05	4.24 (2.33–7.71)	0.001	2.45 (1.37–4.39)	0.01
Pain on day 4							
Pain <40	551	1.00		1.00		1.00	
Pain ≥40	74	3.21 (1.64–6.30)	0.001	1.87 (1.02–3.41)	0.04	2.61 (1.47–4.62)	0.001
ASA status							
ASA grade I	262	1.00		1.00		1.00	
ASA grade II	274	NE		1.38 (0.80–2.38)	0.24	NE	
ASA grade III	89	NE		2.40 (1.17–4.90)	0.02	NE	
Long-term fear							
Low (<10)	304	1.00		1.00		1.00	
High (≥10)	321	1.90 (1.08–3.33)	0.03	NE		1.98 (1.34–2.94)	0.001
Optimism							
Low (<28)	292	1.00		1.00		1.00	
High (≥28)	333	NE		NE		0.60 (0.41–0.87)	0.01

Peters 2007

Perineural Versus Systemic Dexamethasone in Front-Foot Surgery Under Ankle Block: A Randomized Double-Blind Study

Regional Anesthesia & Pain Medicine

Philippe Marty, MD *, Olivier Rontes, MD *, Clément Chassery, MD *, Corine Vuillaume, MD *, Bertrand Basset, MD *



Marty 2018

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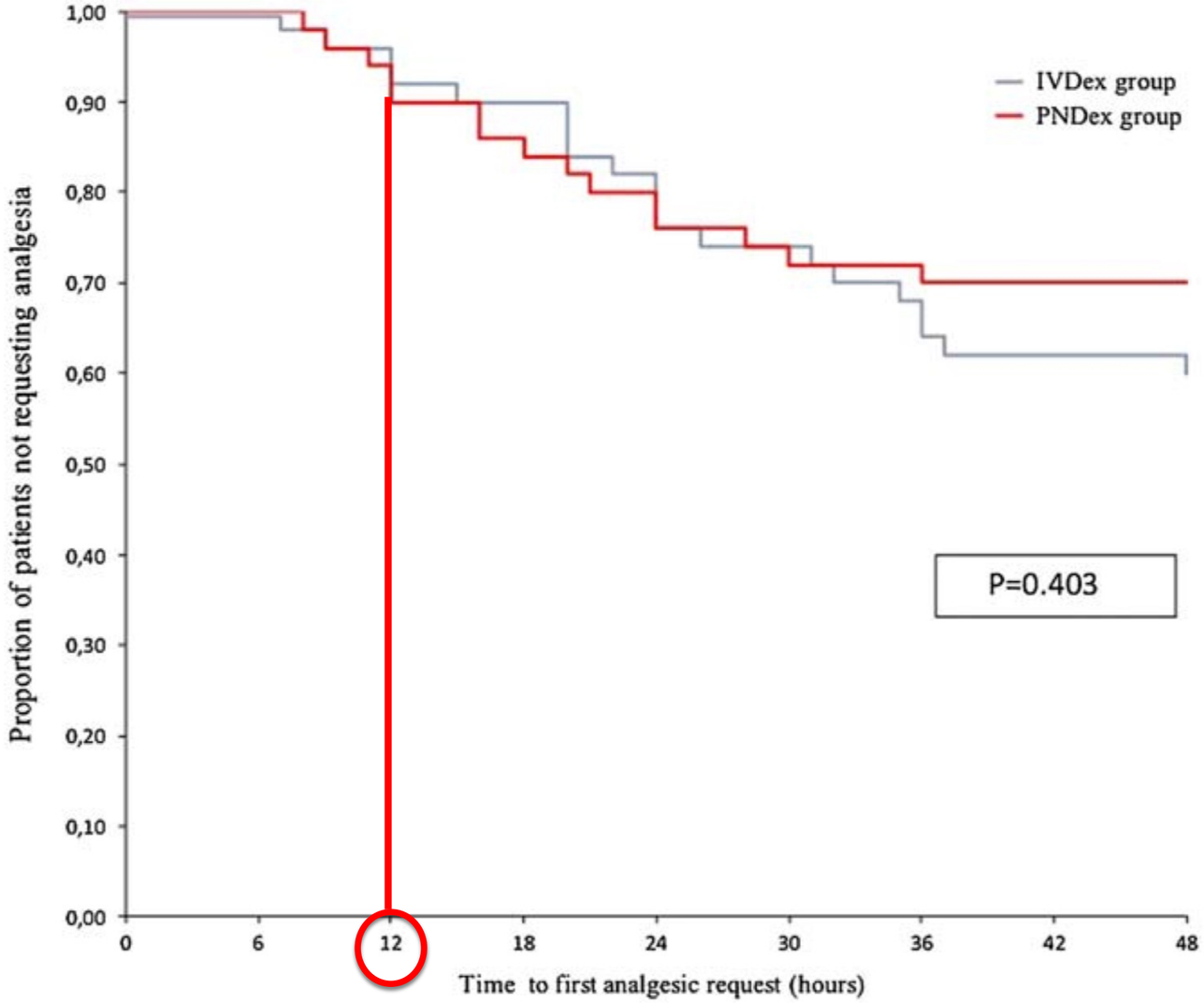
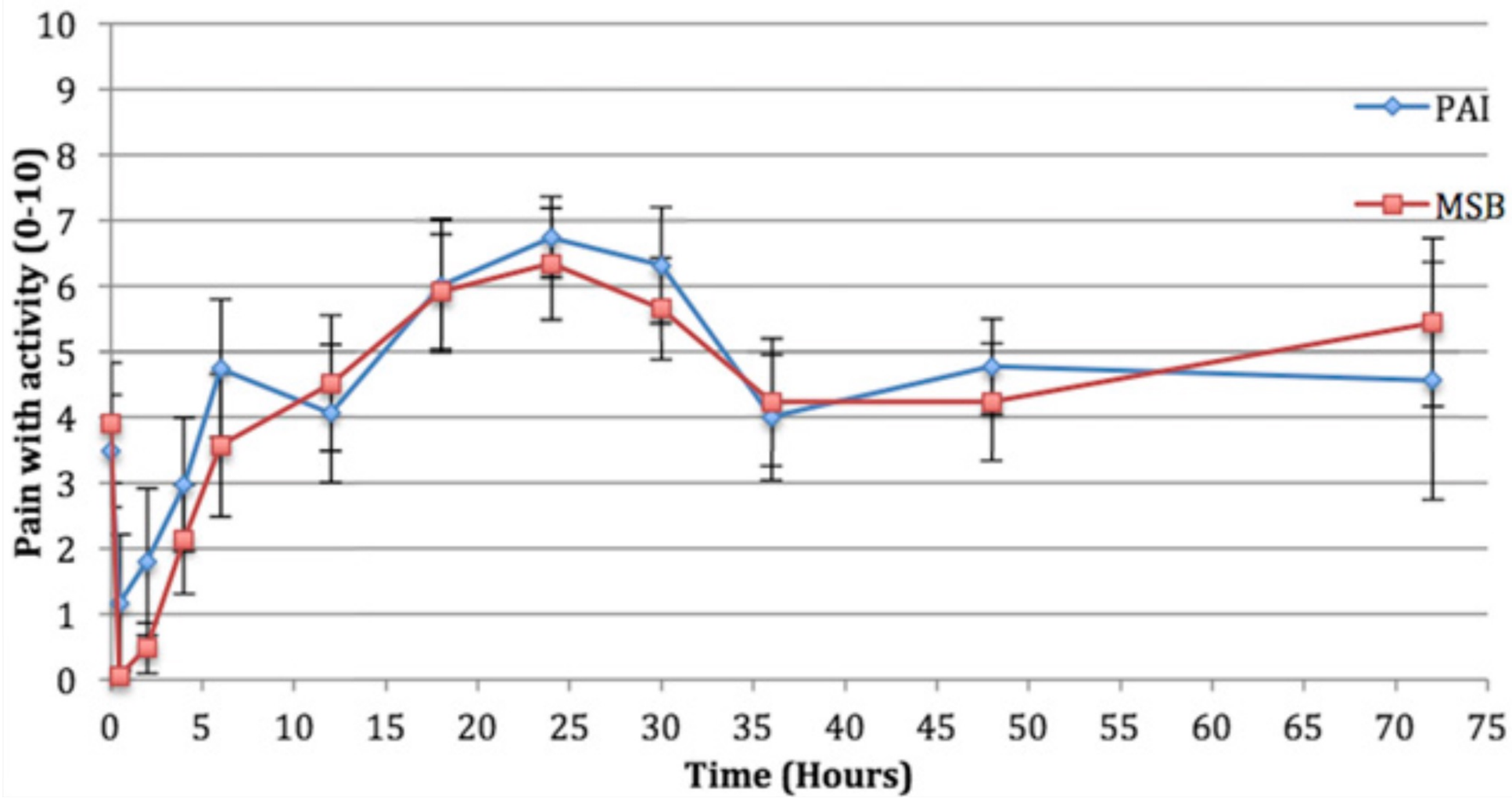


Marty 2018

Ultrasound-Guided Motor-Sparing Knee Blocks for Postoperative Analgesia Following Total Knee Arthroplasty

Olawale A. Sogbein, MES, MSc, Rakesh V. Sondekoppam, MBBS, MD, Dianne Bryant, PhD



Sogbein 2018

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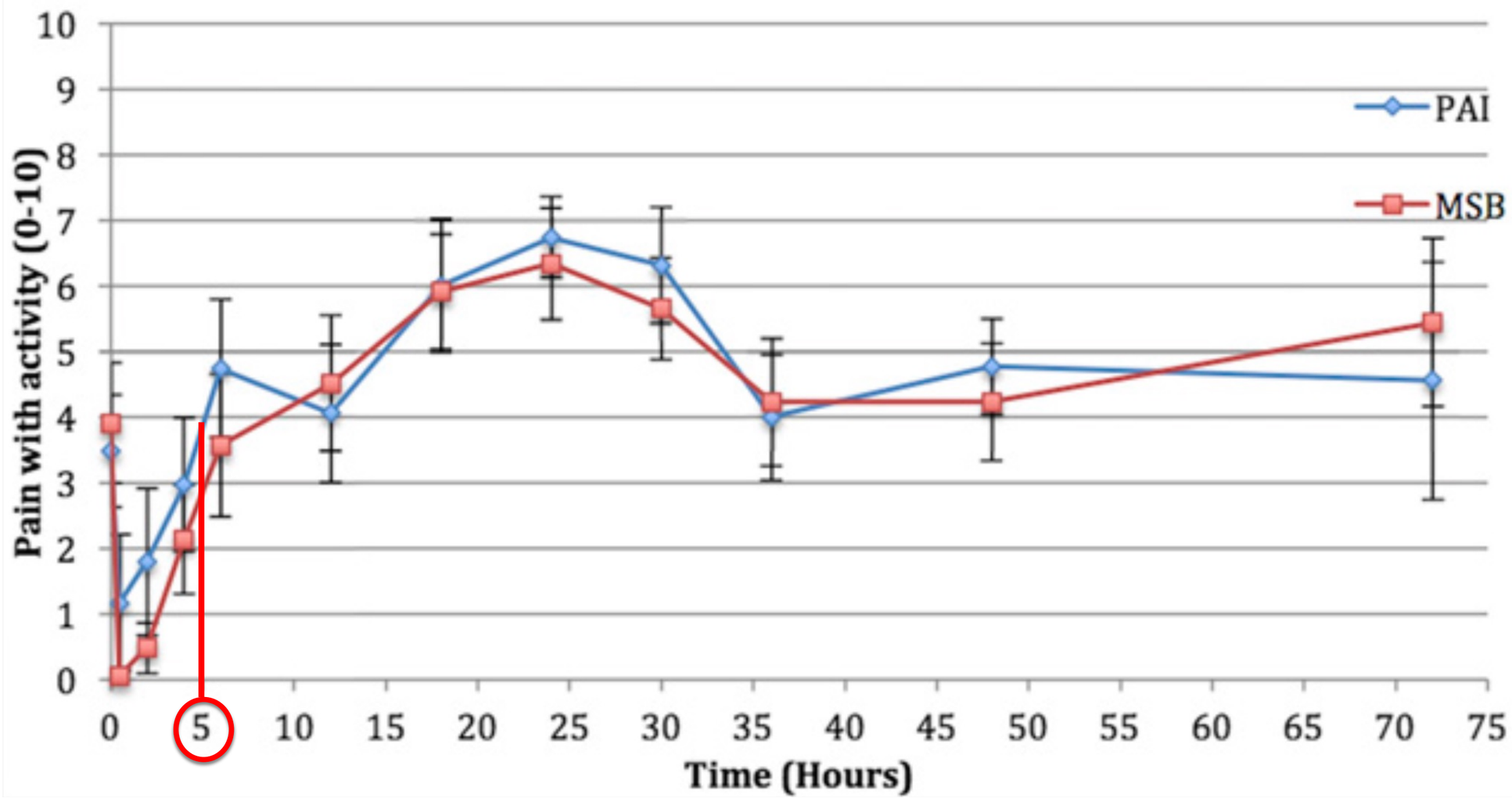
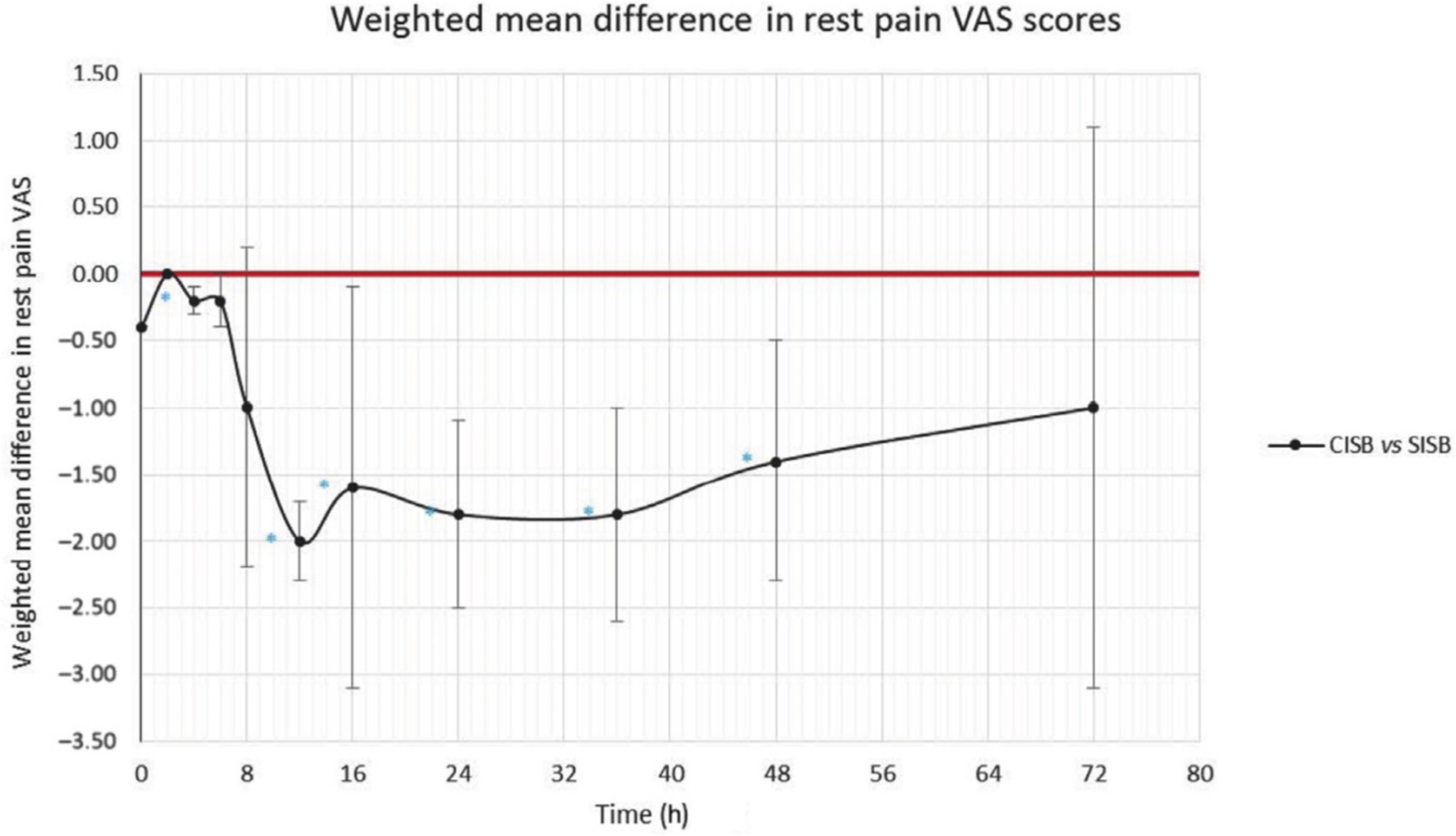


Sogbein 2018

Should continuous rather than single-injection interscalene block be routinely offered for major shoulder surgery? A meta-analysis of the analgesic and side-effects profiles

L. Vorobeichik[1], R. Brull[1,2], R. Bowry[1,3], J. G. Laffey[1,4,5,6] and F. W. Abdallah[1,4,5,7]*



Vorobechik 2018

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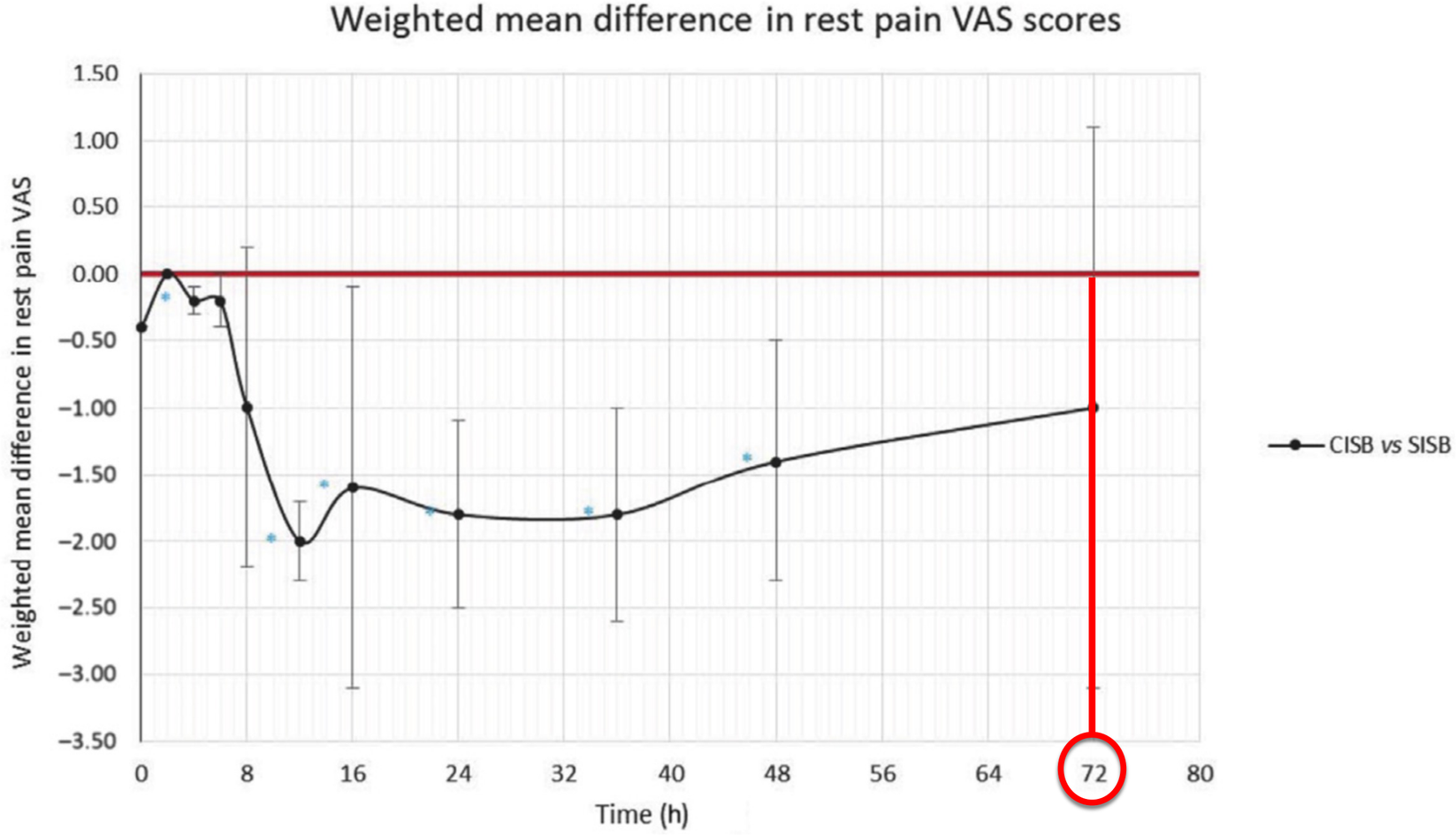
BJA

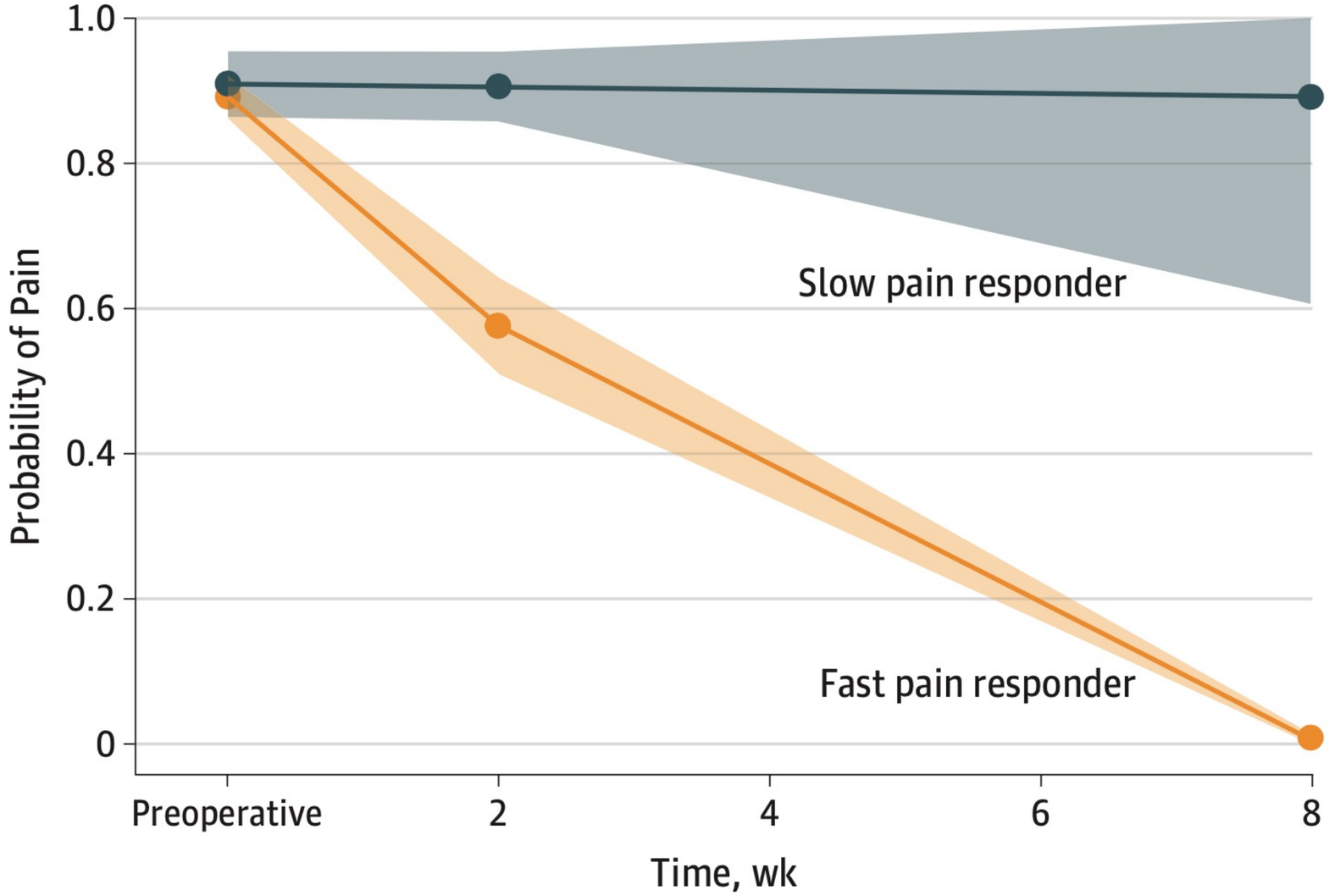


Vorobechik 2018

Association of Early Postoperative Pain Trajectories With Longer-term Pain Outcome After Primary Total Knee Arthroplasty

Jasvinder A. Singh, MBBS, MPH; Celeste A. Lemay, RN, MPH; Lisa Nobel, PhD; Wenyun Yang, MS; Norman Weissman, MD, MPH; Kenneth

JAMA Network | Open™



Singh 2019

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Table 2. Multivariable-Adjusted Logistic Regression Model Assessing Pre–Total Knee Arthroplasty (TKA) Factors Associated With the Slow Pain Responder Trajectory[a]

	Full Model[b]	
Variable	OR (95% CI)	*P* Value
Preoperative SF-36 MCS score, with 1-unit increase	0.98 (0.96-1.00)	.02
Preoperative KOOS activities of daily living score for surgical knee, with 1-unit increase	0.97 (0.95-0.99)	.007

Singh 2019

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Singh 2019

Patient and Procedural Determinants of Postoperative Pain Trajectories

ANESTHESIOLOGY

Terrie Vasilopoulos, Ph.D.; Richa Wardhan, M.D.; Parisa Rashidi, Ph.D.; Roger B. Fillingim, Ph.D.; Margaret R. Wallace, Ph.D.; Paul L. Crispen, M.D.; Hari K. Parvataneni, M.D.; Hernan A. Prieto, M.D.; Tiago N. Machuca, M.D., Ph.D.; Steven J. Hughes, M.D.

Patient Demographics	Odds Ratio (95% CI)		
	Moderate-to-Low Bootstrapped	Moderate-to-High Bootstrapped	High Bootstrapped
Age, yr	0.97 (0.93, 1.02)	0.96 (0.93, 1.00)	**0.94 (0.91, 0.99)**
Sex (Ref: male)			
Female	2.49 (0.91, 6.3)	**3.52 (1.40, 8.5)**	**6.4 (1.49, 15.6)**
Patient-Reported Outcomes Measurement Information System Anxiety	1.00 (0.95, 1.04)	1.02 (0.98, 1.08)	**1.08 (1.01, 1.14)**
Patient-Reported Outcomes Measurement Information System Pain Behavior	1.03 (0.98, 1.09)	1.04 (0.99, 1.08)	**1.10 (1.02, 1.18)**
Pain Catastrophizing Scale	1.00 (0.94, 1.06)	1.03 (0.98, 1.09)	1.01 (0.95, 1.08)
Intraoperative opioids (oral morphine milligram equivalents)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.01 (1.00, 1.01)
Intraoperative ketamine, mg	0.99 (0.97, 1.02)	1.01 (0.99, 1.02)	1.00 (0.98, 1.03)
Intraoperative lidocaine, mg	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	0.99 (0.98, 1.01)
Surgical service (Ref: colorectal and urology surgery)			
Orthopedics and spine	1.21 (0.318, 4.3)	1.30 (0.316, 4.8)	2.38 (0.46, 8.7)
Pancreas, biliary, and transplant	0.63 (0.171, 4.9)	1.80 (0.56, 8.7)	4.2 (0.91, 21.0)
Thoracic	1.55 (0.359, 5.5)	2.38 (0.71, 9.1)	1.96 (0.261, 9.0)

Vasilopoulos 2021

Patient and Procedural Determinants of Postoperative Pain Trajectories

ANESTHESIOLOGY

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Vasilopoulos 2021

Patients' pre-operative general and specific outcome expectations predict postoperative pain and function after total knee and total hip arthroplasties

Claire Tilbury*, Tsjitske M. Haanstra, Suzan H.M. Verdegaal, Rob G.H.H. Nelissen,

SCANDINAVIAN JOURNAL OF PAIN

Final prediction model for the outcome pain [general outcome expectations (CEQ)]

Variable	B	*p*-Value	95% CI
BMI	−1.00	0.00	−1.63; −0.38
Mental health	0.42	0.04	0.14; 0.71
Outcome expectations (CEQ expectancy)	0.80	0.09	−0.11; 1.72

R^2 for the final model: 0.170

Final prediction model for the outcome pain in which the general outcome expectations (CEQ) score was included

Variable	B	*p*-Value	95% CI
Baseline function (HOOS ADL)	0.33	0.00	0.172; 0.0477
Kellgren and Lawrence score	3.72	0.090	−0.592; 8.021
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VULNERABILITE A LA DOULEUR

Facteur chirurgical + Facteur patient

Réactualisation de la recommandation sur la douleur postopératoire☆

Frédéric Aubrun [1], Karine Nouette Gaulain [2], Dominique Fletcher [3], Anissa Belbachir [4], Hélène Beloeil [5], Michel Carles [6], Philippe Cuvillon [7], Christophe Dadure [8], Gilles Lebuffe [9], Emmanuel Marret [10], Valéria Martinez [3], Michel Olivier [11], Nadia Sabourdin [12], Paul Zetlaoui [13], Société française d'anesthésie et de réanimation

Toutefois, les données factuelles ne permettent pas de démontrer l'apport des cathéters périnerveux sur la chronicisation de la douleur.

Le risque de mobilisation du cathéter (5 à 25 %) réduit potentiellement le bénéfice analgésique. Le cathéter fémoral, par le bloc moteur induit et prolongé, peut favoriser les chutes, gêner la déambulation et la réhabilitation précoce après chirurgie prothétique du genou. Le cathéter interscalénique induit quant à lui une parésie diaphragmatique à prendre en compte en cas de pathologie respiratoire.

Réactualisation de la recommandation sur la douleur postopératoire☆

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Recommandations formalisées d'experts

Anesthésie locale et locorégionale postopératoire

Quelles indications et limites pour le cathétérisme périnerveux postopératoire ?

Absence de recommandation.

SFAR 2016

Réactualisation de la recommandation sur la douleur postopératoire☆

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Recommandations formalisées d'experts

- ✓ Analgésie prolongée
- ✓ Epargne opioïde
- ✓ Réduction des effets indésirables
- ✓ Amélioration du sommeil
- ✓ Satisfaction des patients

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Recommandations formalisées d'experts

- Mobilisation de cathéter ?
- Bloc moteur ?
- Chutes ?
- Réhabilitation ?
- Parésie phrénique ?

CATHETERS PERINERVEUX

- Mobilisation de cathéter ?
- Bloc moteur ?
- Chutes ?
- Réhabilitation ?
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CATHETERS PERINERVEUX

- Mobilisation de cathéter ?
- Bloc moteur ?
- Chutes ?
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- Parésie phrénique ?

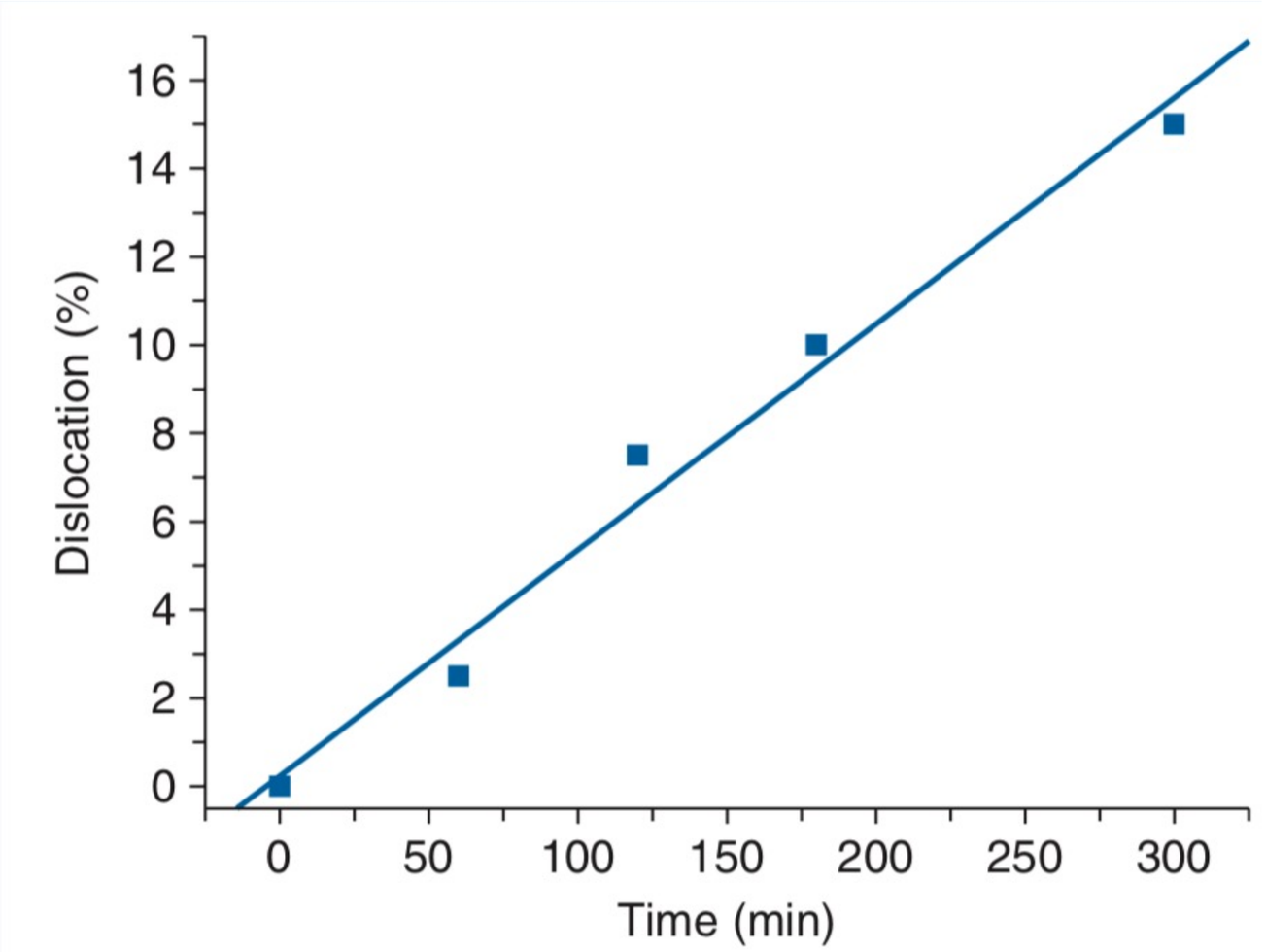
British Journal of Anaesthesia **111** (5): 800–6 (2013)
Advance Access publication 7 June 2013 · doi:10.1093/bja/aet198

BJA

REGIONAL ANAESTHESIA

Dislocation rates of perineural catheters: a volunteer study

D. Marhofer[1,2], P. Marhofer[3*], L. Triffterer[2], M. Leonhardt[4], M. Weber[1] and M. Zeitlinger[1]



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BJA

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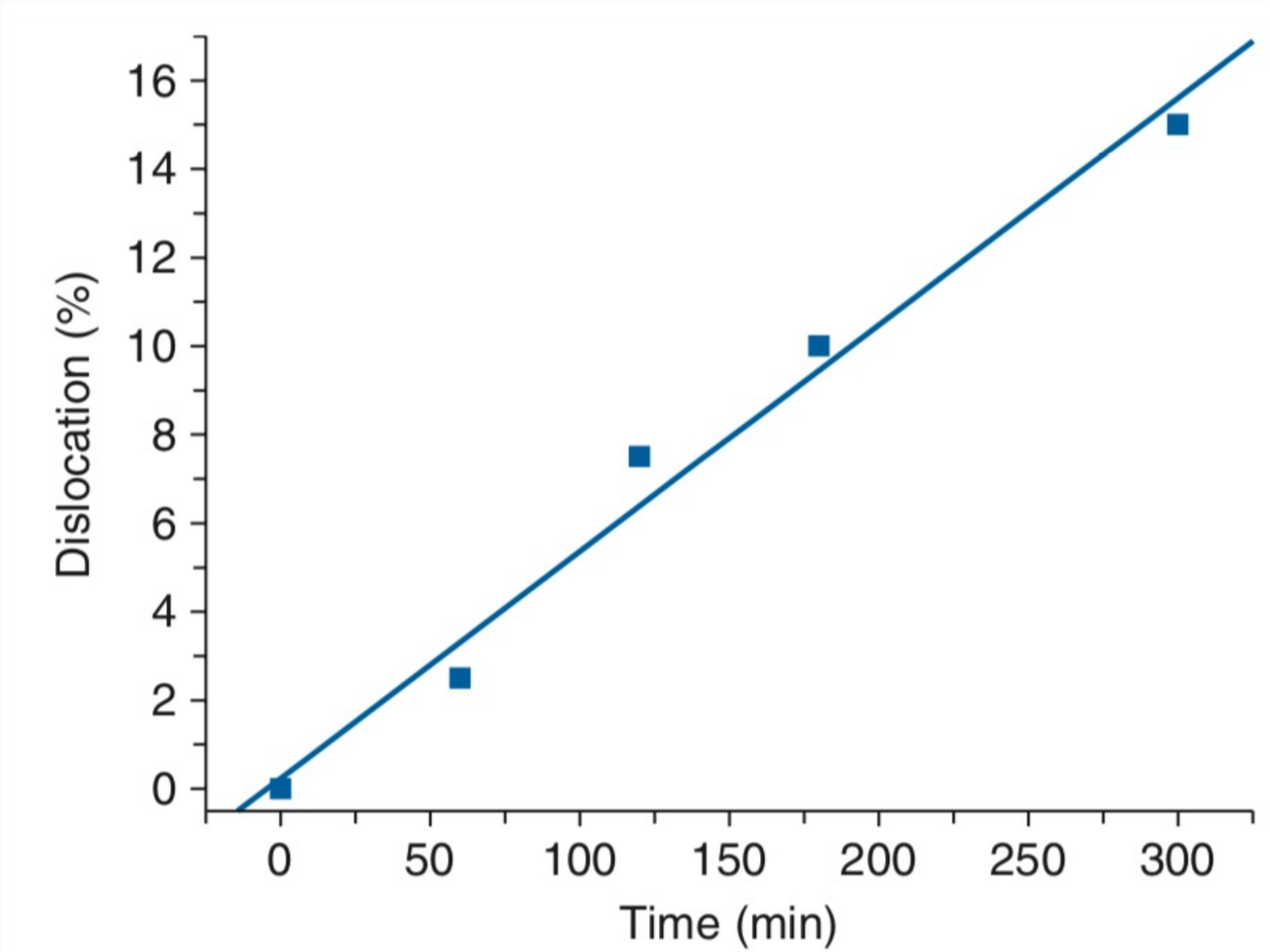

British Journal of Anaesthesia **111** (5): 800–6 (2013)
Advance Access publication 7 June 2013 · doi:10.1093/bja/aet198

BJA

REGIONAL ANAESTHESIA

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Standardized physical exercises and subsequent US investigations

The following standardized physical exercises were performed 60, 120, and 180 min after placement of both PNCs (all time points are relative to the placement and initial US confirmation of the catheters). Between the time points the volunteers had to lie down as still as possible.

- Twenty abductions of the arm up to 90°, 20 anteflexions of the arm up to 90°, and 20 retroflexions of the arm up to 30° (sitting position).
- Ten abductions of the leg with a 45° flexed hip up to 60°, 10 anteflexions of the leg up to 60° with parallel knee flexion (supine position).
- US investigation: administration of 5 ml saline through both catheters under direct US control (interscalene area and femoral nerve area) (supine position).

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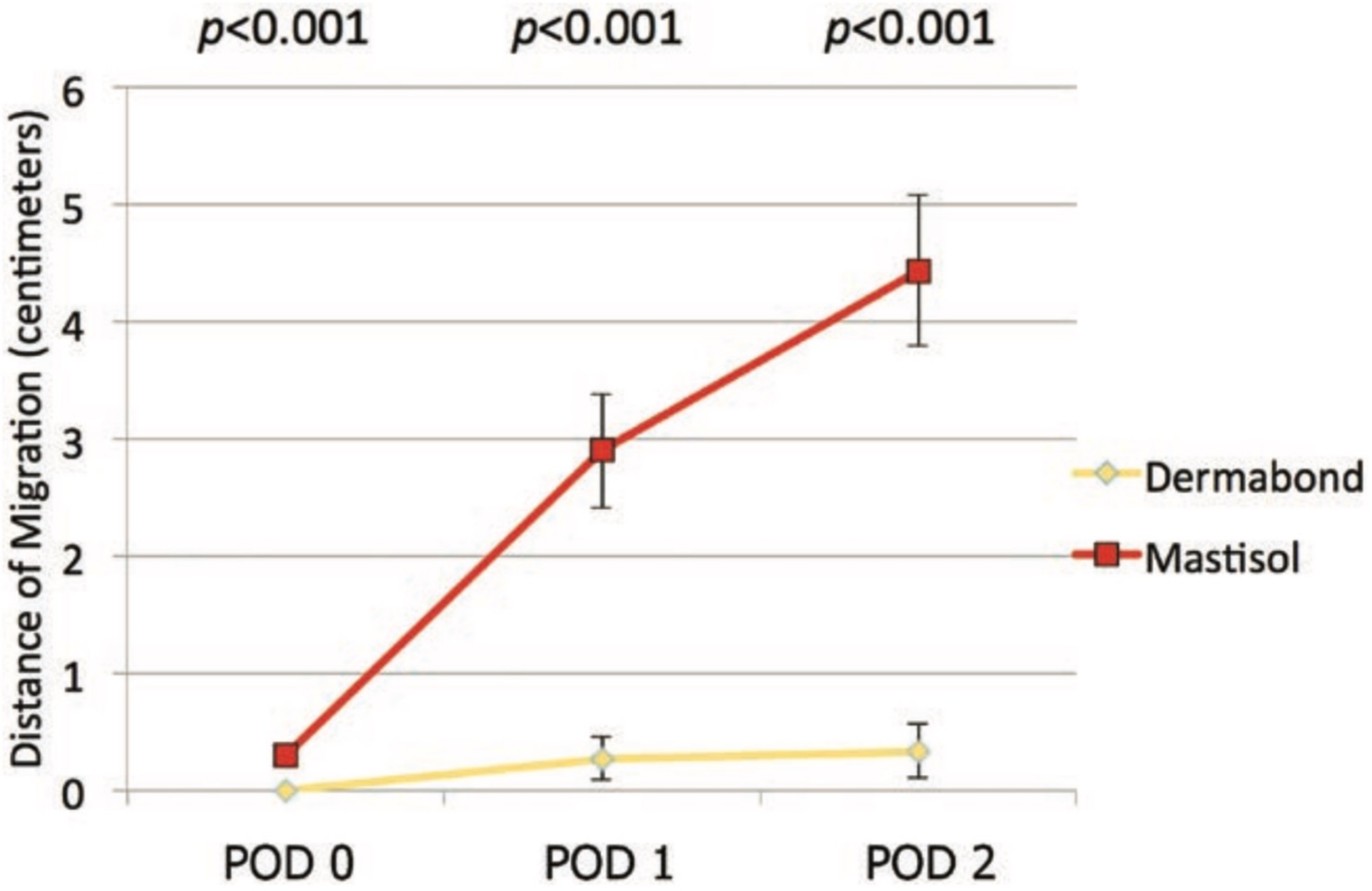
The Effect of Fixation Technique on Continuous Interscalene Nerve Block Catheter Success: A Randomized, Double-Blind Trial

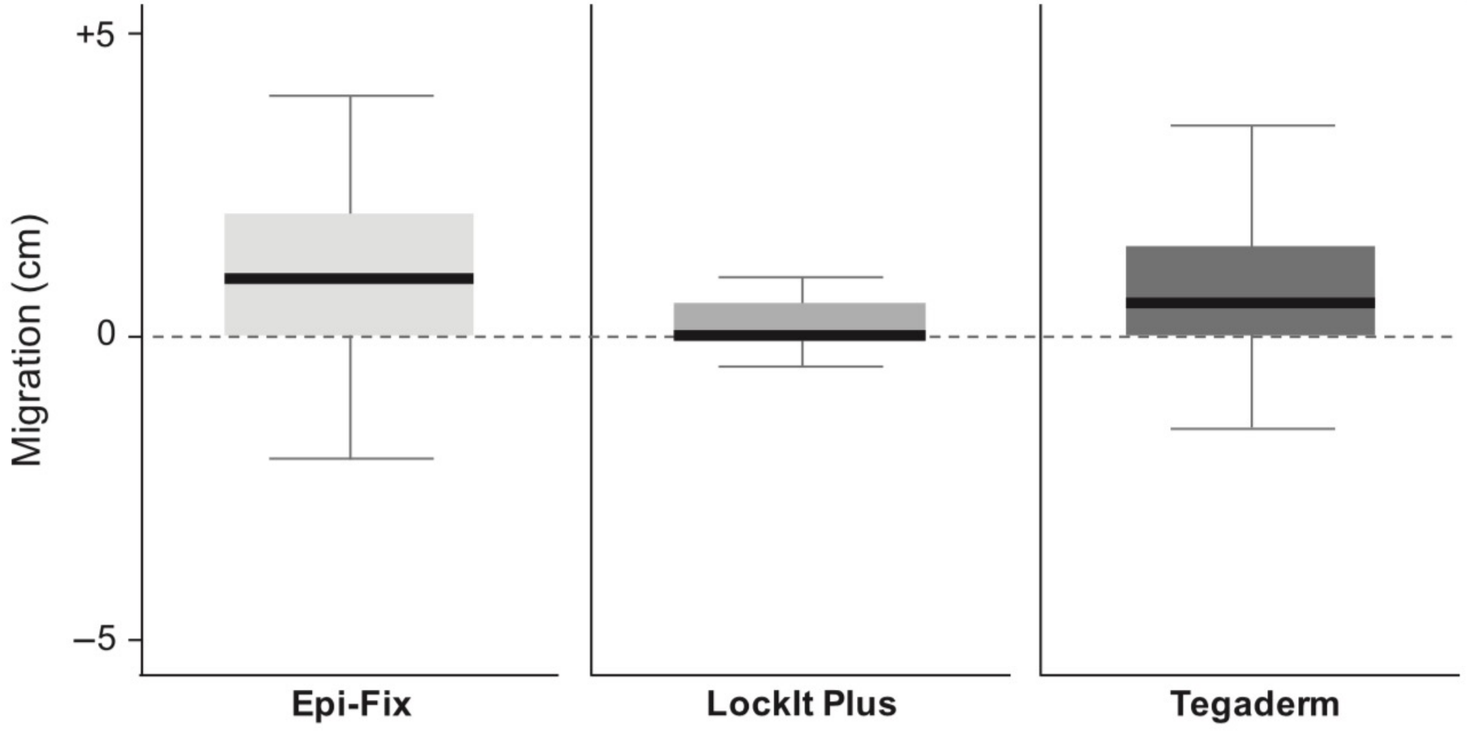
ANESTHESIA & ANALGESIA®

David B. Auyong, MD,* David Asher Cantor, MD,* Cynthia Green, PhD,† and Neil A. Hanson, MD*



Intrapartum epidural fixation methods: a randomised controlled trial of three different epidural catheter securement devices*

P. M. Odor,[1] S. Bampoe,[1] J. Hayward,[1] I. Chis Ster[2] and E. Evans[3]



An analysis of 1505 consecutive patients receiving continuous interscalene analgesia at home: a multicentre prospective safety study

Anaesthesia

Association of Anaesthetists

M. J. Fredrickson,[1,2] P. Leightley,[2] A. Wong,[2] M. Chaddock,[2] A. Abeysekera[2] and C. Frampton[3]

Table 3 Early outcomes of patients included in the study (n = 1458). Values are number (proportion) or median (IQR [range]).

Catheter dislodgement	22 (1.5%)
Postoperative day of catheter removal	
1	6 (0.4%)
2	100 (7%)
3	763 (53%)
4	437 (30%)
> 4	137 (9%)

Frederickson 2016

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Frederickson 2016

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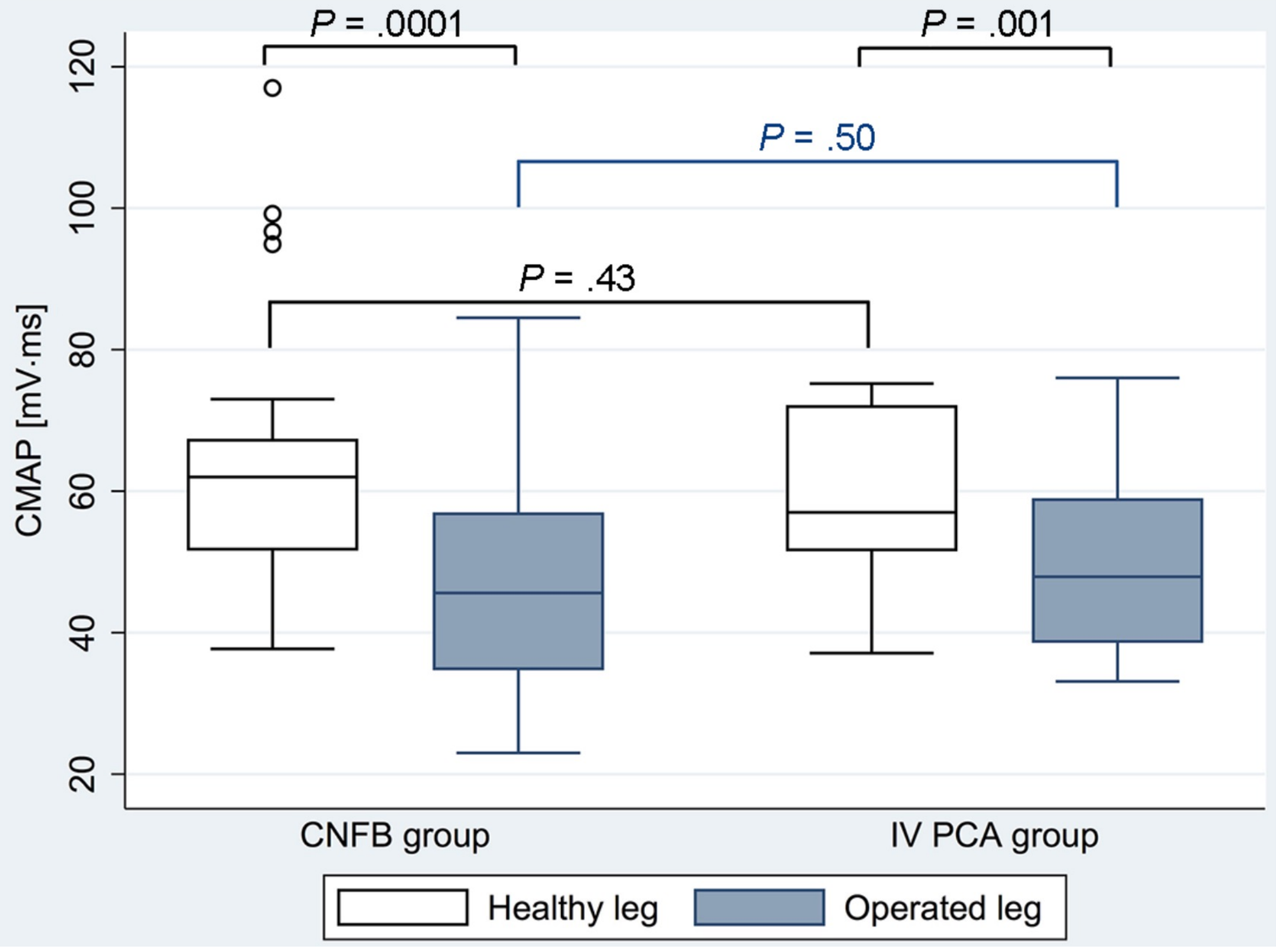
Electrophysiological Study of Femoral Nerve Function After a Continuous Femoral Nerve Block for Anterior Cruciate Ligament Reconstruction



Stebler 2016

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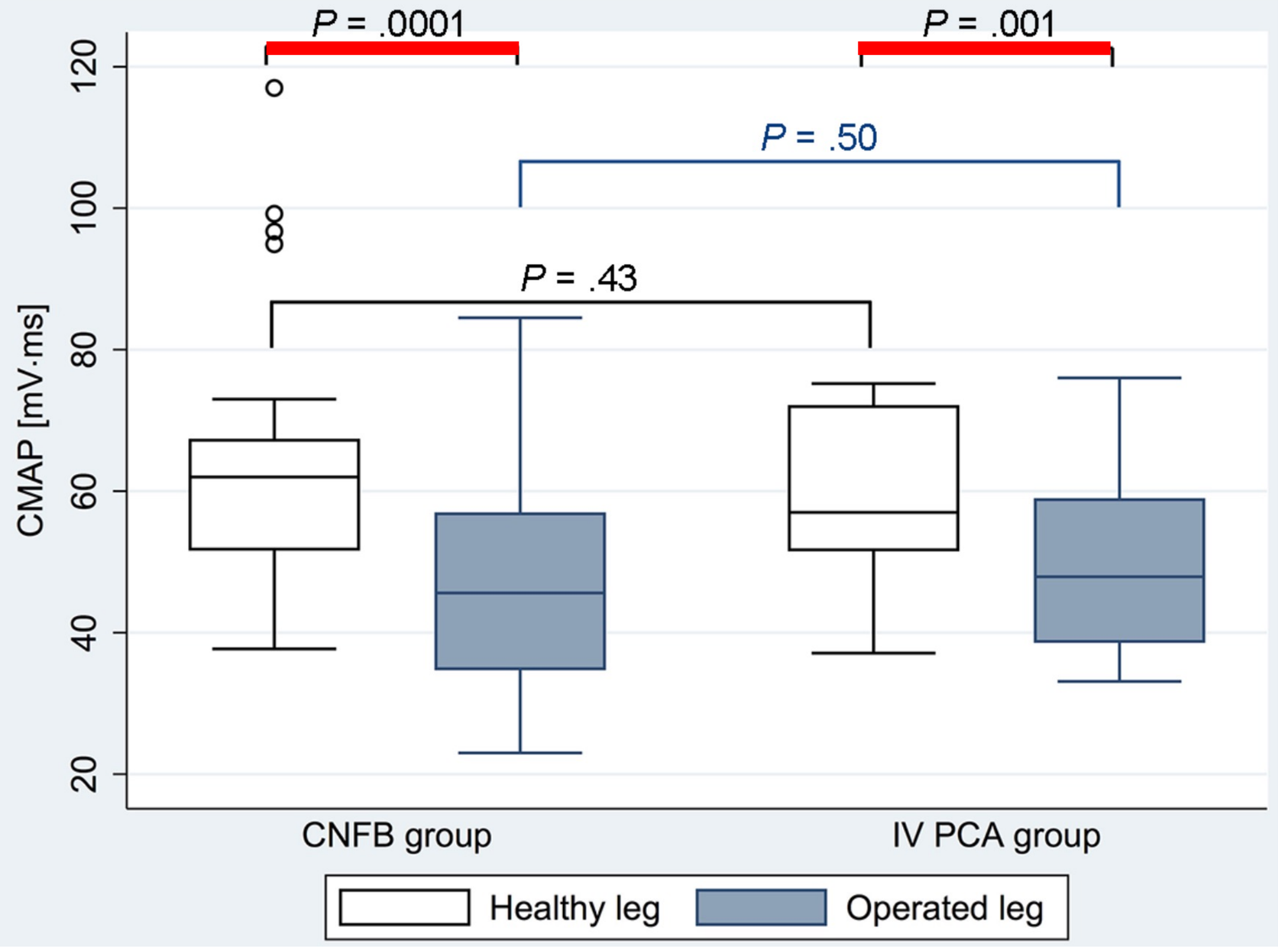

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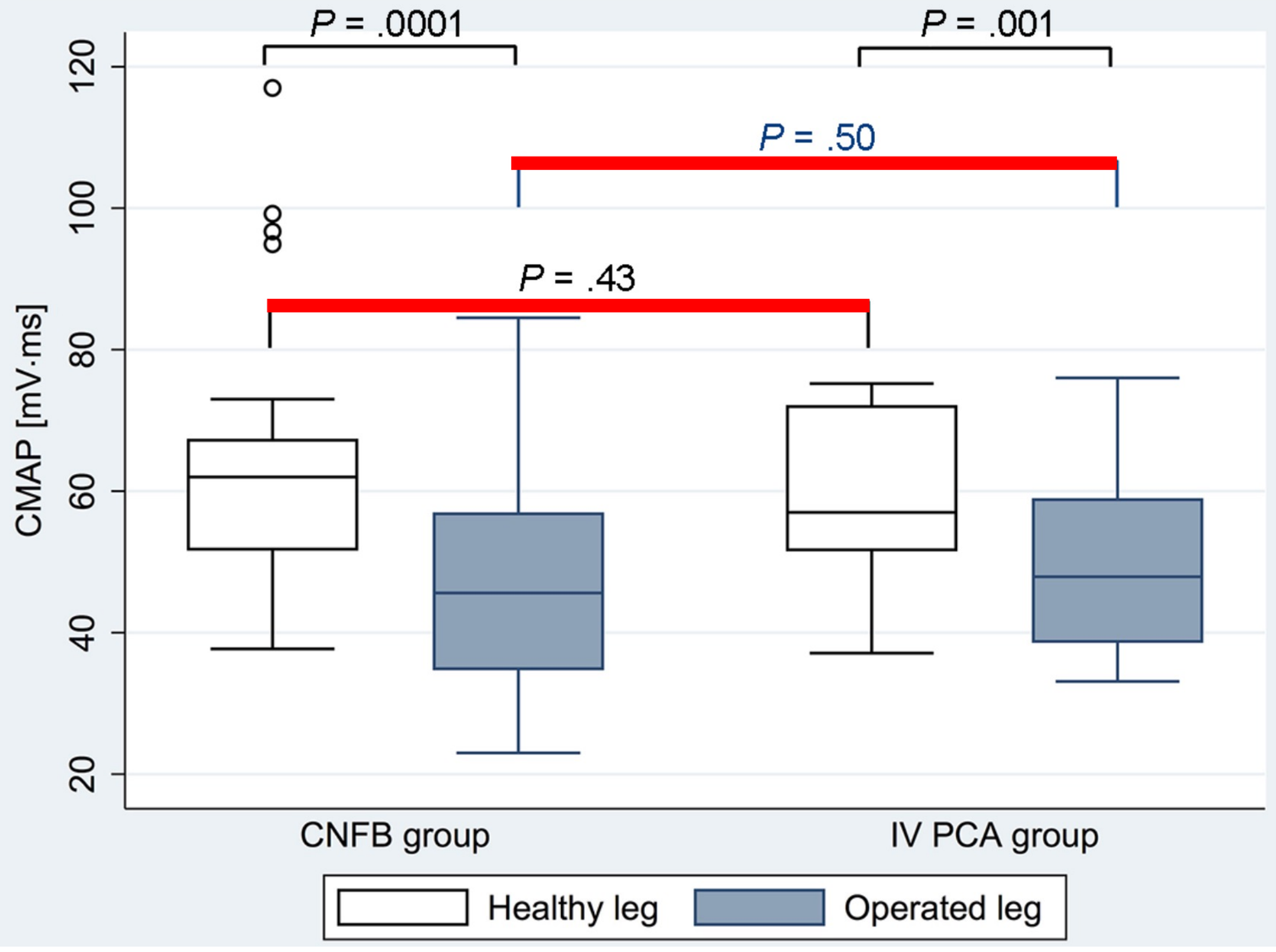
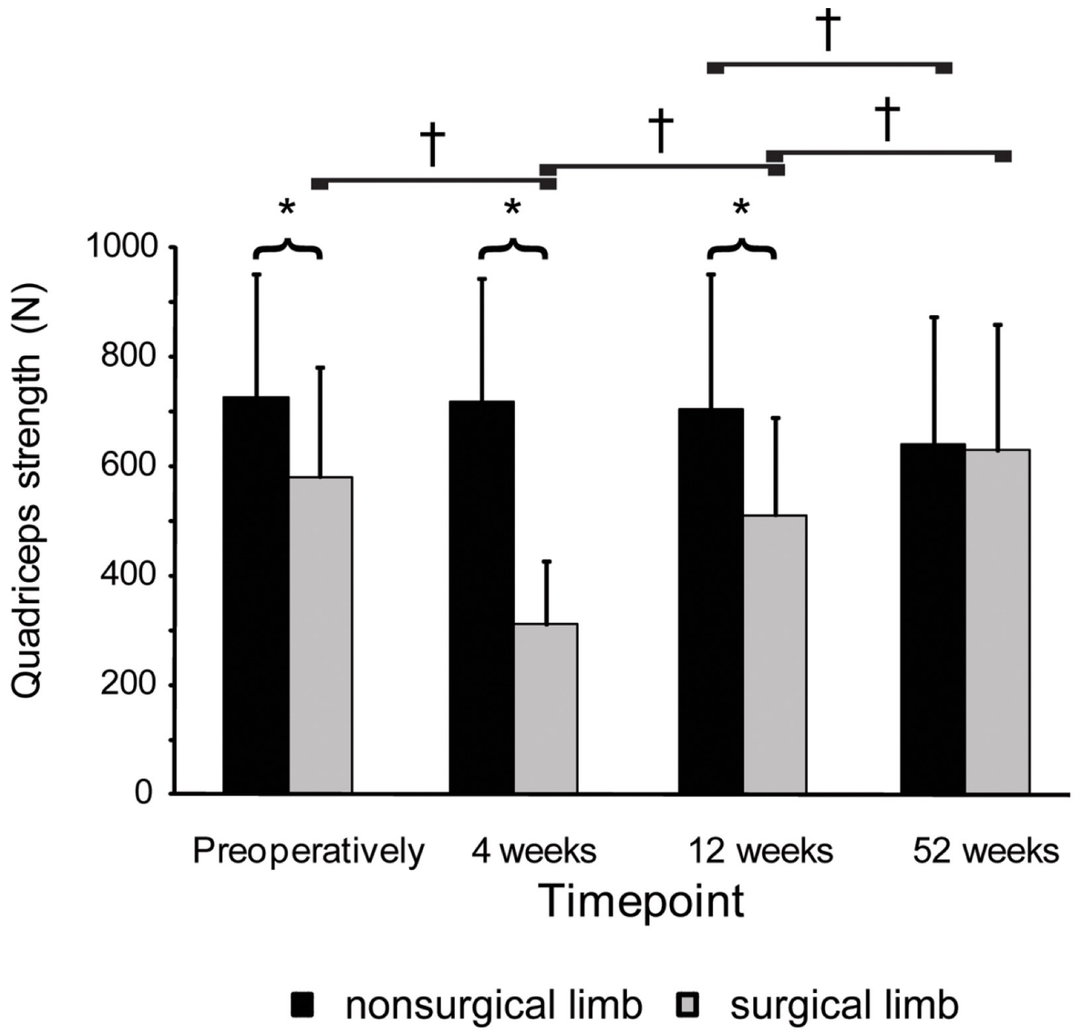


Stebler 2016

Time Course of Quad Strength, Area and Activation after Knee Arthroplasty and Strength Training

Medicine & Science IN Sports & Exercise

SC Petterson[1], **P Barrance**[2], **AR Marmon**[1], **T Handling**[1], **TS Buchanan**[3], and **L Snyder-Mackler**[1]



Petterson 2011

Electrophysiological Study of Femoral Nerve Function After a Continuous Femoral Nerve Block for Anterior Cruciate Ligament Reconstruction

American Orthopaedic Society for Sports Medicine

Functional Outcomes[a]

	CFNB Group	IV PCA Group	*P* Value
Quadriceps muscle strength (1-5), median (IQR)			
POD 1	2 (2-3)	3 (2-3)	.05
POD 2	3 (2-3)	3 (3-3)	.22
Active flexion, deg			
POD 1	67 ± 20	57 ± 18	.06
POD 2	75 ± 15	72 ± 15	.49
Distance walked, m			
POD 1	47 ± 29	55 ± 37	.42
POD 2	76 ± 35	65 ± 30	.32

Stebler 2016

Electrophysiological Study of Femoral Nerve Function After a Continuous Femoral Nerve Block for Anterior Cruciate Ligament Reconstruction

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The analgesic efficacy of local infiltration analgesia *vs* femoral nerve block after total knee arthroplasty: a systematic review and meta-analysis

E. Albrecht[1,*], O. Guyen[2], A. Jacot-Guillarmod[3] and K. R. Kirkham[4]

BJA

Outcome	Reference	Group						Mean difference [95% CI]	I^2 (%)	*P* value
		Local infiltration analgesia			Femoral nerve block					
		Mean or n	SD	N	Mean or n	SD	N			
Quadriceps muscle strength (pounds)										
Postoperative day one	Ng 2012[45]	2.0	0.4	16	2.2	0.2	16	–0.1 [–0.4, 0.1]	-	0.19
Postoperative day two	Ng 2012[45]	2.6	0.5	16	2.7	0.2	16	–0.2 [–0.4, 0.1]	-	0.23
Postoperative day three	Ng 2012[45]	2.8	0.2	16	2.8	0.2	16	0.0 [–0.2, 0.2]	-	1.00

Albrecht 2016

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BJA

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Albrecht 2016

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Inpatient Falls after Total Knee Arthroplasty

The Role of Anesthesia Type and Peripheral Nerve Blocks

Stavros G. Memtsoudis, M.D., Ph.D., F.C.C.P., Thomas Danninger, M.D.,

Table 1. Patient Demographics, Healthcare-related, Procedure-related, and Comorbidity Measure Variables for Patients Subgrouped by Fall/No Fall

	Fall (N = 3,042)		No Fall (N = 188,528)		
	N*	%*	N*	%*	*P* Value†
Procedure related					
Type of anesthesia					
Neuraxial	280	9.2	20,705	11.0	0.002
General	2,393	78.7	143,493	76.1	
Combined	369	12.1	24,330	12.9	
Peripheral nerve block					
No block	2,666	87.6	165,669	87.9	0.693
Block	376	12.4	22,859	12.1	

Memtsoudis 2014

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Memtsoudis 2014

Falls and major orthopaedic surgery with peripheral nerve blockade: a systematic review and meta-analysis

BJA

R. L. Johnson[1*], S. L. Kopp[1], J. R. Hebl[1], P. J. Erwin[2] and C. B. Mantilla[1]

Study or subgroup	Continuous Events	Total	Non-continuous/no block Events	Total	Weight	Peto odds ratio Peto, fixed, 95% CI
Feibel 2009	4	469	4	721	42.5%	1.56 [0.38, 6.48]
Ilfeld 2008a	1	23	0	25	5.6%	8.06 [0.16, 407.60]
Ilfeld 2008b	3	24	0	23	16.1%	7.75 [0.77, 78.41]
Ilfeld 2010b	3	39	0	38	16.4%	7.60 [0.77, 75.30]
Williams 2006	3	76	1	157	19.4%	7.05 [0.86, 57.83]
Total (95% CI)		631		964	100.0%	3.85 [1.52, 9.72]
Total events	14		5			

Heterogeneity: $\chi^2 = 2.69$, df = 4 ($P = 0.61$); $I^2 = 0\%$
Test for overall effect: $Z = 2.85$ ($P = 0.004$)

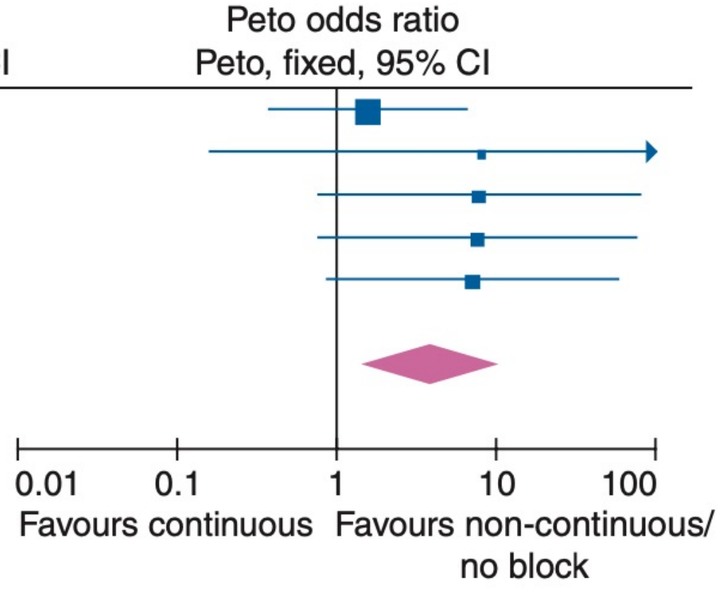

Fig 2 Forest plot comparison of continuous lumbar plexus blockade *vs* non-continuous blockade or no block.

Johnson 2013

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BJA

Outcome	Reference	Group				Relative risk [95% CI]	I^2 (%)	*P* value
		Local infiltration analgesia		Femoral nerve block				
		n	N	n	N			
Neurologic events	Chaumeron 2013[14]	1	29	1	30	0.7 [0.1, 4.0]	0	0.67
	Moghtadaei 2014[38]	1	18	2	18			
	Uesugi 2014[40]	0	100	0	100			
Cardiovascular events	Affas 2011[41]	0	20	0	20	3.8 [0.4, 33.0]	0	0.23
	Carli 2010[13]	1	20	0	20			
	Toftdahl 2007[47]	2	40	0	37			
Falls	Chaumeron 2013[14]	0	29	1	30	0.2 [0.0, 1.8]	0	0.16
	Spangehl 2014[46]	0	81	3	79			

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Albrecht 2016

The Risk of Falls After Total Knee Arthroplasty with the Use of a Femoral Nerve Block Versus an Adductor Canal Block: A Double-Blinded Randomized Controlled Study

Nabil M. Elkassabany, MD, MSCE,* Sean Antosh, MD,* Moustafa Ahmed, MD,* Charles Nelson, MD,†

ANESTHESIA & ANALGESIA

IARS
International Anesthesia Research Society

Table 2. Physical Therapy Endpoint Assessment at 24 and 48 h

	ACB	FNB	*P* value
Tinetti score at 24 h	15 (13–19)	14 (11–16)	0.13
Tinetti score at 48 h	22 (18–23)	18 (14–22)	0.17
Risk of falls at 24 h	21/31 (68%)	24/31 (77%)	0.7
Risk of falls at 48 h	7/31 (22%)	14/31 (45%)	0.06
TUG at 24 h (s)	65 (41–90)	75 (43–93)	0.7
TUG at 48 h (s)	43 (26–69)	45 (27–66)	0.9
Average ambulation distance at 24 h (feet)	20 (15–38)	15 (12.5–20)	0.08
Average ambulation distance at 48 h (feet)	60 (27.5–90)	47.5 (30–66.5)	0.5
MMT (24 h) extension	3 (3–3)	3 (2–3)	0.001*
MMT (48 h) extension	3 (3–3)	3 (3–3)	1

Elkassabany 2016

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Effectiveness of continuous versus single injection femoral nerve block for total knee arthroplasty: A double blinded, randomized trial

Varun Dixit [a,*,1], Samreen Fathima [b], Stephen M. Walsh [c,d], Alexandru Seviciu [a],

The Knee

	cFNB (n = 44)	sFNB (n = 41)	*P* value
Therapy delayed (%)	11% (5)	7% (3)	0.766
Unable to ambulate	9.2% (4)	2.4% (1)	–
Weakness/dizziness	2.3% (1)	4.8% (2)	
Distance-walked (m) (M ± *SD*)			
0 m at 1st session	16% (n = 7)	15% (n = 6)	–
At 1st PT session	109 ± 97	103 ± 84	–
At 2nd PT session	201 ± 180	210 ± 139	–
Assistive device			
Used at 1st session (%)	93% (40/41)	93% (37/38)	–
Knee immobilizer discharged at hospital	77.3% (34/44)	75.6% (31/41)	0.903
Time with knee immobilizer hours (M ± *SD*)	36 ± 12 (n = 38)	30 ± 11.7 (n = 38)	0.021*
Independent at 2nd session	43.2% (19/43)	65.9% (27/40)	0.036¥
Hospital stay (M ± *SD*) (days)	2.2 ± 0.5	2.1 ± 0.4	0.517
Discharged to rehab (%) (n/N)	18.2% (8/44)	4.9% (2/41)	0.057

Dixit 2018

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Dixit 2018

Postoperative continuous adductor canal block for total knee arthroplasty improves pain and functional recovery: A randomized controlled clinical trial

Patrick Leung, MD[a], David M. Dickerson, MD[b], Sahitya K. Denduluri, MD[a],

Journal of Clinical Anesthesia

Inpatient functional outcomes

	Control	cACB[a]	*P*-value
Length of stay (days)	2.42 (0.86)	2.67 (1.1)	0.28
ROM[c]			
POD 1 ROM (°)	51.4 (17)	40.6 (14)	0.006
POD 0–1 percent increase in ROM	35.5 (91)	22.4 (52)	0.58
POD 2 ROM (°)	71.3 (19)	62.5 (21)	0.09
POD 1–2 percent increase in ROM	35.9 (89)	61.1 (72)	0.24
Ambulation distance			
POD 1 ambulation distance (m)	13.8 (15.6)	17.6 (21)	0.39
POD 0–1 increase in ambulation distance (m)	12.6 (15.9)	15.7 (19.8)	0.5
POD 2 ambulation distance (m)	32.5 (26.2)	39.4 (31.8)	0.35
POD 1–2 increase in ambulation distance (m)	16.7 (20.8)	14.1 (33.6)	0.71

Leung 2018

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Journal of Clinical Anesthesia

Knee range of motion at 3 and 6 weeks follow-up

	Control	cACB[a]	*P*-value
Preoperative ROM[b] (°)	102 (18)	92.7 (26)	0.10
ROM[b] At 3 weeks (°)	98.2 (11.5)	94.3 (13.0)	0.21
ROM[b] At 6 weeks (°)	109 (14.0)	105 (10.2)	0.24
Paired outcome: Baseline → 3-week ROM[b] improvement	$P = 0.34$	$P = 0.76$	–
Paired outcome: Baseline → 6-week ROM[b] improvement	$P = 0.06$	$P = 0.01$	–

Leung 2018

Postoperative continuous adductor canal block for total knee arthroplasty improves pain and functional recovery: A randomized controlled clinical trial

Patrick Leung, MD[a], David M. Dickerson, MD[b], Sahitya K. Denduluri, MD[a],

Journal of Clinical Anesthesia

WOMAC scores at 3 and 6 weeks follow-up

	Control	cACB[a]	*P*-value	Mean difference (CI[b])
Preoperative WOMAC[c] score (n = 70)	50.1 (13)	53.8 (20)	0.37	–
WOMAC[c] score at 3 weeks	37.8 (13)	29.1 (15)	0.04	−8.72 (−17.3 to −0.11)
WOMAC[c] score at 6 weeks	32.9 (14)	27.9 (17)	0.4	–
Paired outcome: Baseline → 3-week WOMAC[c] score improvement	$P = 0.002$	$P = 0.0001$	–	–
Paired outcome: Baseline → 6-week WOMAC[c] score improvement	$P = 0.0002$	$P = 0.0002$	–	–

Leung 2018

CATHETERS PERINERVEUX

- Mobilisation de cathéter ?
- Bloc moteur ?
- Chutes ?
- Réhabilitation ?
- Parésie phrénique ?

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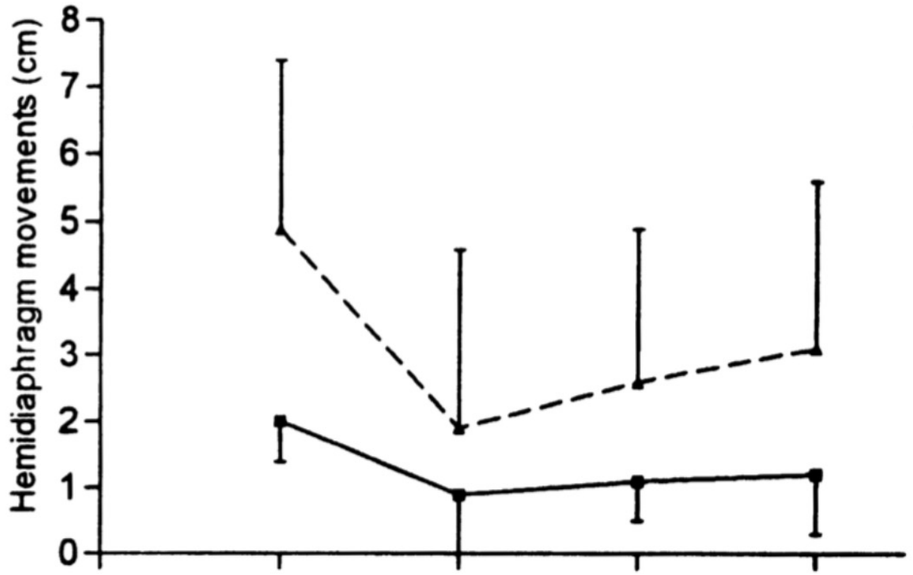
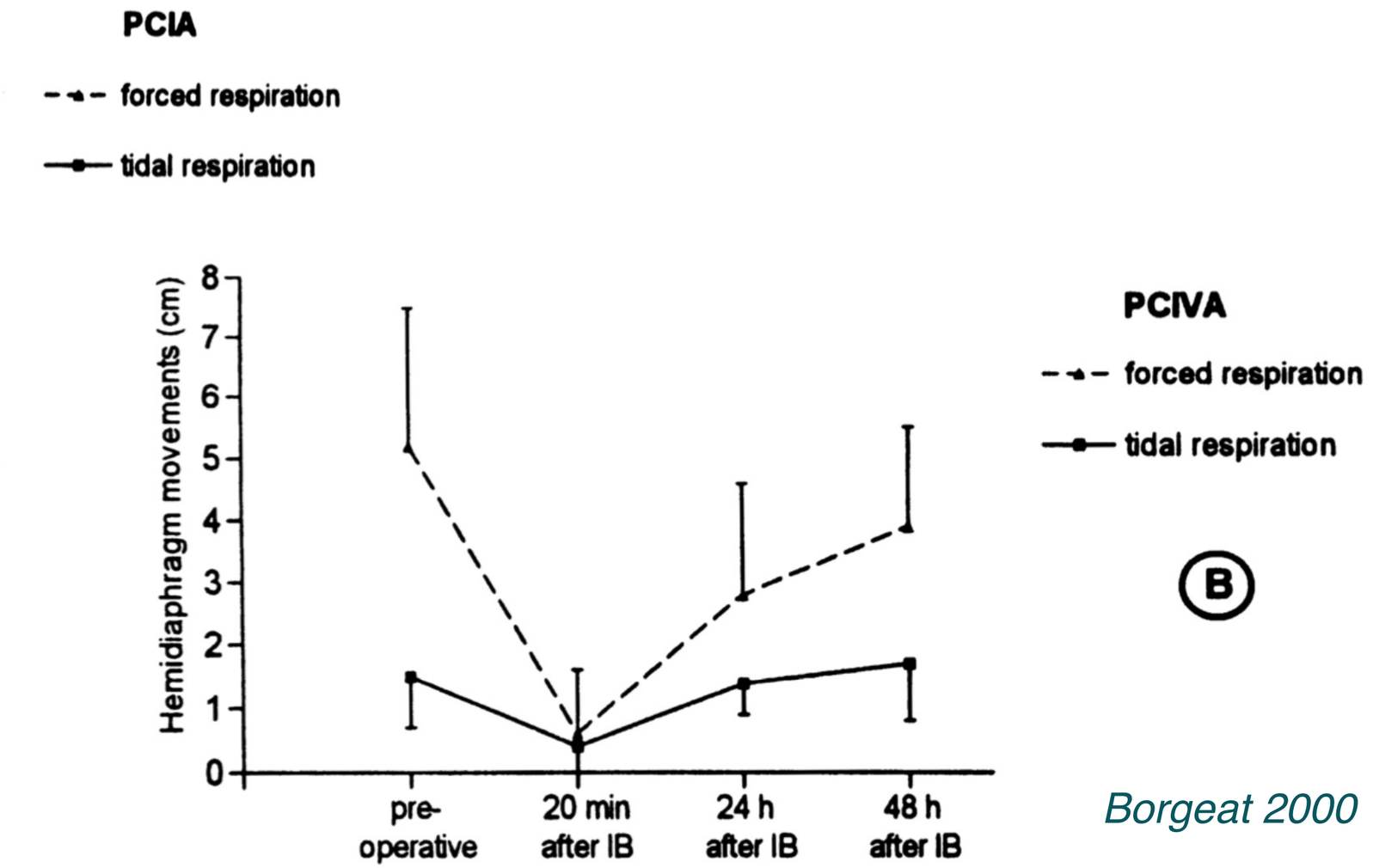
Patient-controlled Interscalene Analgesia with Ropivacaine 0.2% Versus *Patient-controlled Intravenous Analgesia after Major Shoulder Surgery*

ANESTHESIOLOGY
The Journal of the American Society of Anesthesiologists, Inc.

Effects on Diaphragmatic and Respiratory Function

Alain Borgeat, M.D., Henry Perschak, M.D.,† Patricia Bird, M.D.,‡ Juerg Hodler, M.D.,§ Christian Gerber, M.D.‖*





Borgeat 2000

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Table 2. Mean Spirometry Values in the PCIA and PCIVA Groups

	PCIA Group	PCIVA Group
VC (l)		
0	3.7 ± 1.5	3.8 ± 1.7
1	2.4 ± 1.1	2.6 ± 1.4
2	2.6 ± 1.2	3.1 ± 1.6
3	2.9 ± 1.7	3.3 ± 1.6
FEV_1 (l)		
0	2.9 ± 1.0	3.0 ± 1.2
1	1.8 ± 0.9	2.1 ± 1.1
2	2.0 ± 0.9	2.4 ± 1.1
3	2.3 ± 1.2	2.6 ± 1.2
PEFR (l/min)		
0	7.0 ± 2.7	6.7 ± 2.9
1	4.6 ± 2.1	5.1 ± 2.4
2	5.1 ± 2.3	5.7 ± 2.5
3	5.6 ± 2.5	6.0 ± 2.4

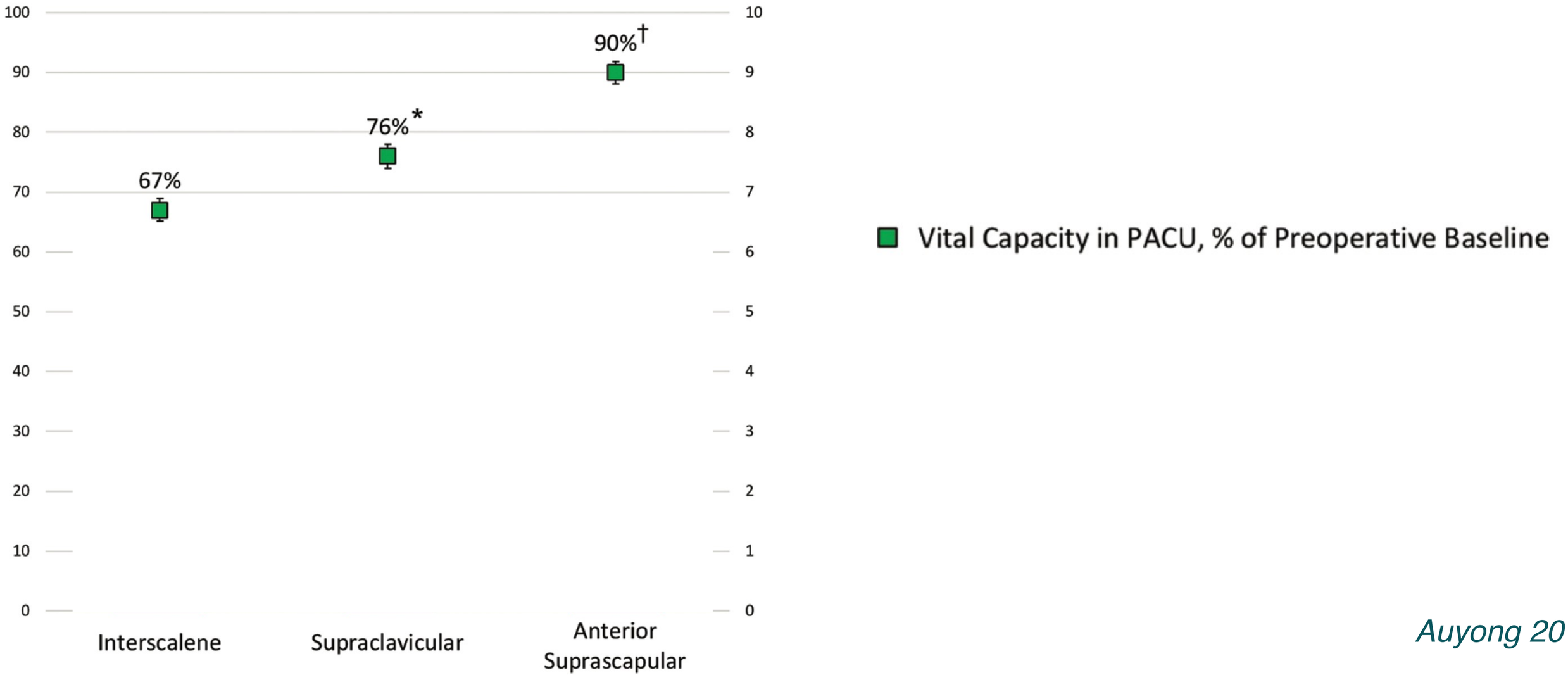
NS

Borgeat 2000

Comparison of Anterior Suprascapular, Supraclavicular, and Interscalene Nerve Block Approaches for Major Outpatient Arthroscopic Shoulder Surgery

ANESTHESIOLOGY

David B. Auyong, M.D., Neil A. Hanson, M.D., Raymond S. Joseph, M.D., Brian E. Schmidt, M.D.,



Auyong 2018

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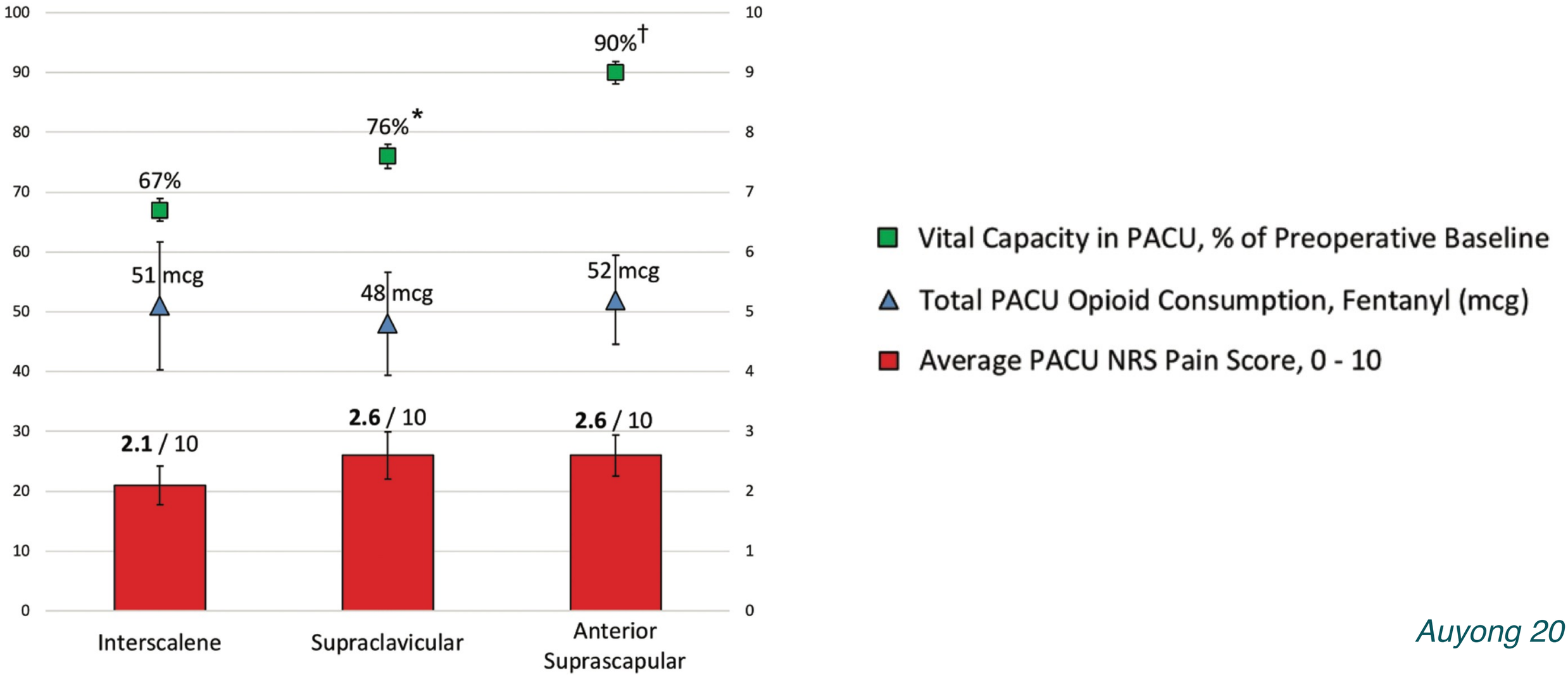

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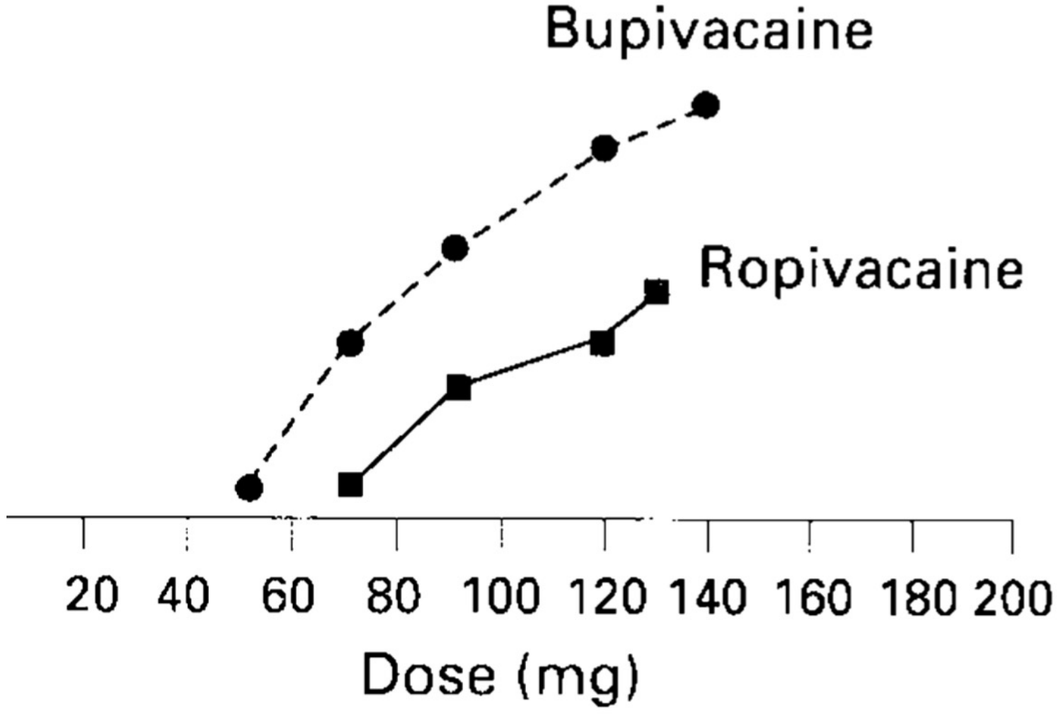
- Bonus Track: Ils sont toxiques !

Central nervous and cardiovascular effects of i.v. infusions of ropivacaine, bupivacaine and placebo in volunteers†

K. KNUDSEN, M. BECKMAN SUURKÜLA, S. BLOMBERG, J. SJÖVALL AND N. EDVARDSSON

BJA British Journal of Anaesthesia

Subject No.	Age (yr)	Weight (kg)	Height (cm)	Dose Rop. (mg)	Dose Bup. (mg)
1	23	83	194	90	70
2	28	85	191	90	125
3	33	91	182	120	90
4	29	85	185	110	95
5	27	90	184	130	165
6	29	82	186	160	120
7	29	75	177	150	135
8	28	82	184	85	70
9	29	81	183	150	85
10	28	90	190	70	100
11	27	81	187	120	100
12	28	74	176	105	85
Mean	28	83	185	115	103
SD	2.2	5.4	5.3	29	30
Min.	23	74	176	85	70
Max.	33	91	194	160	165



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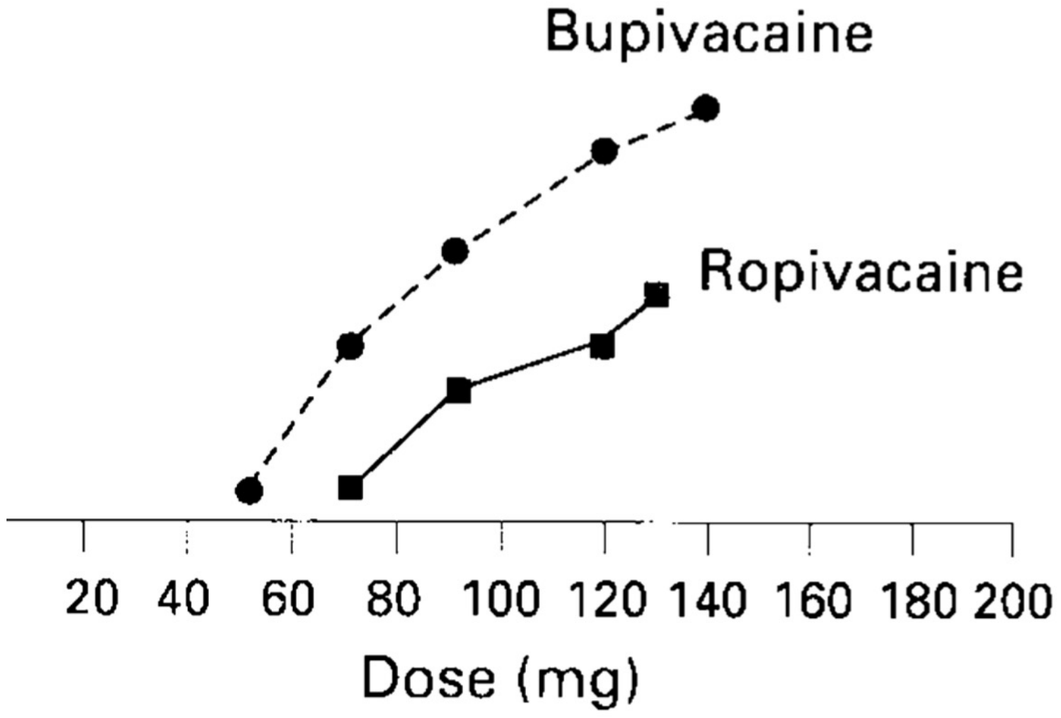
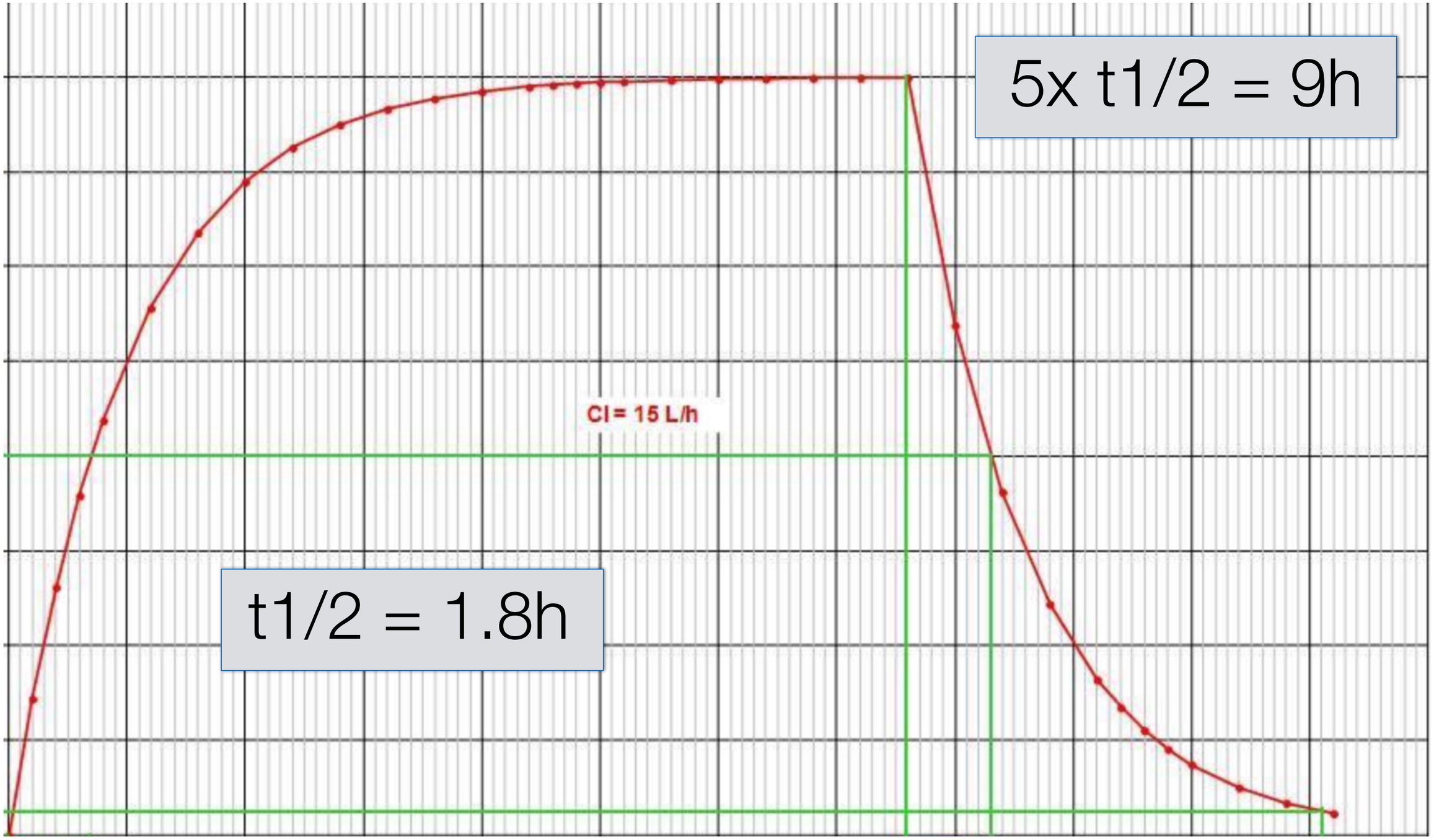
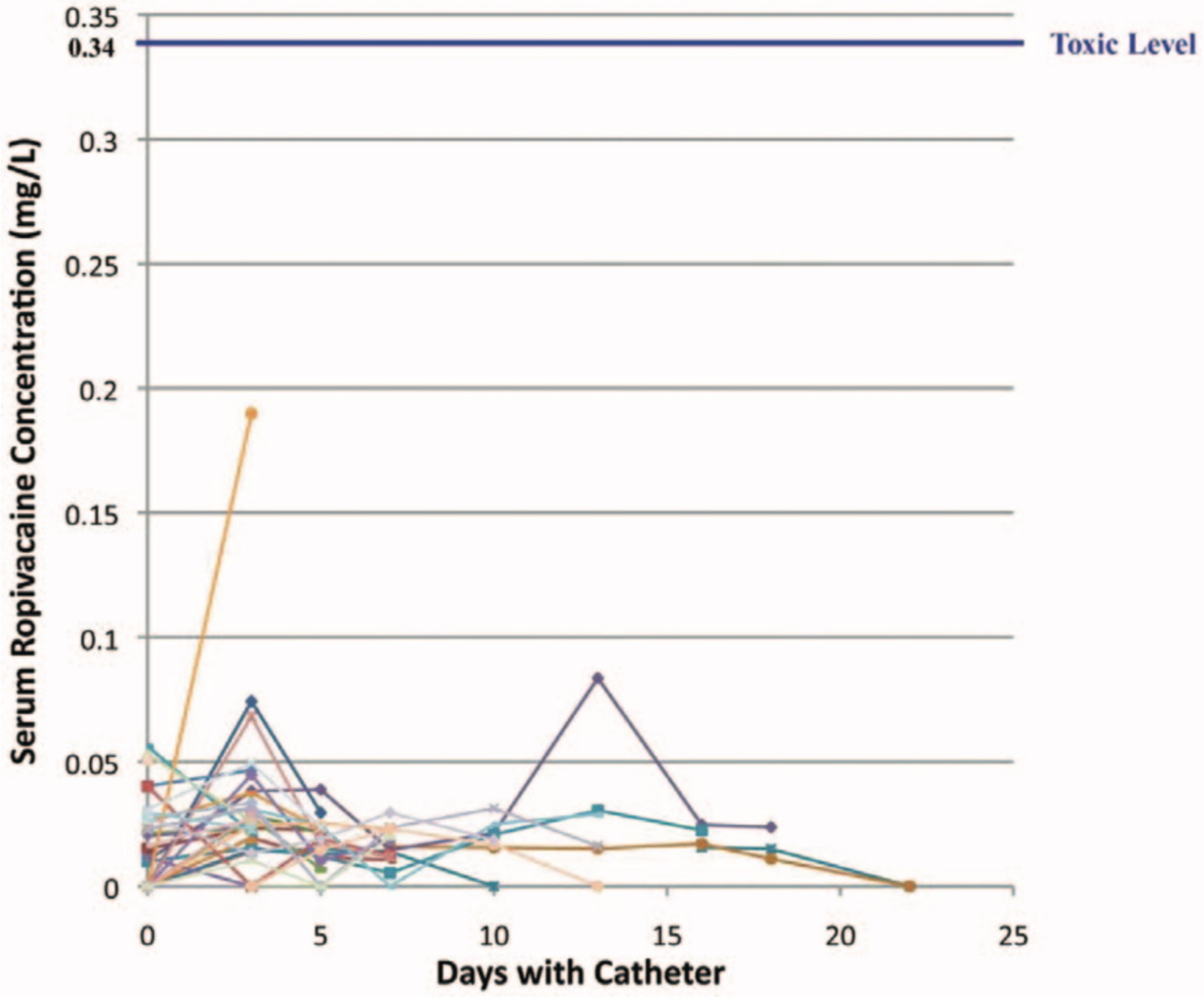



5x t1/2 = 9h
Cl = 15 L/h
t1/2 = 1.8h

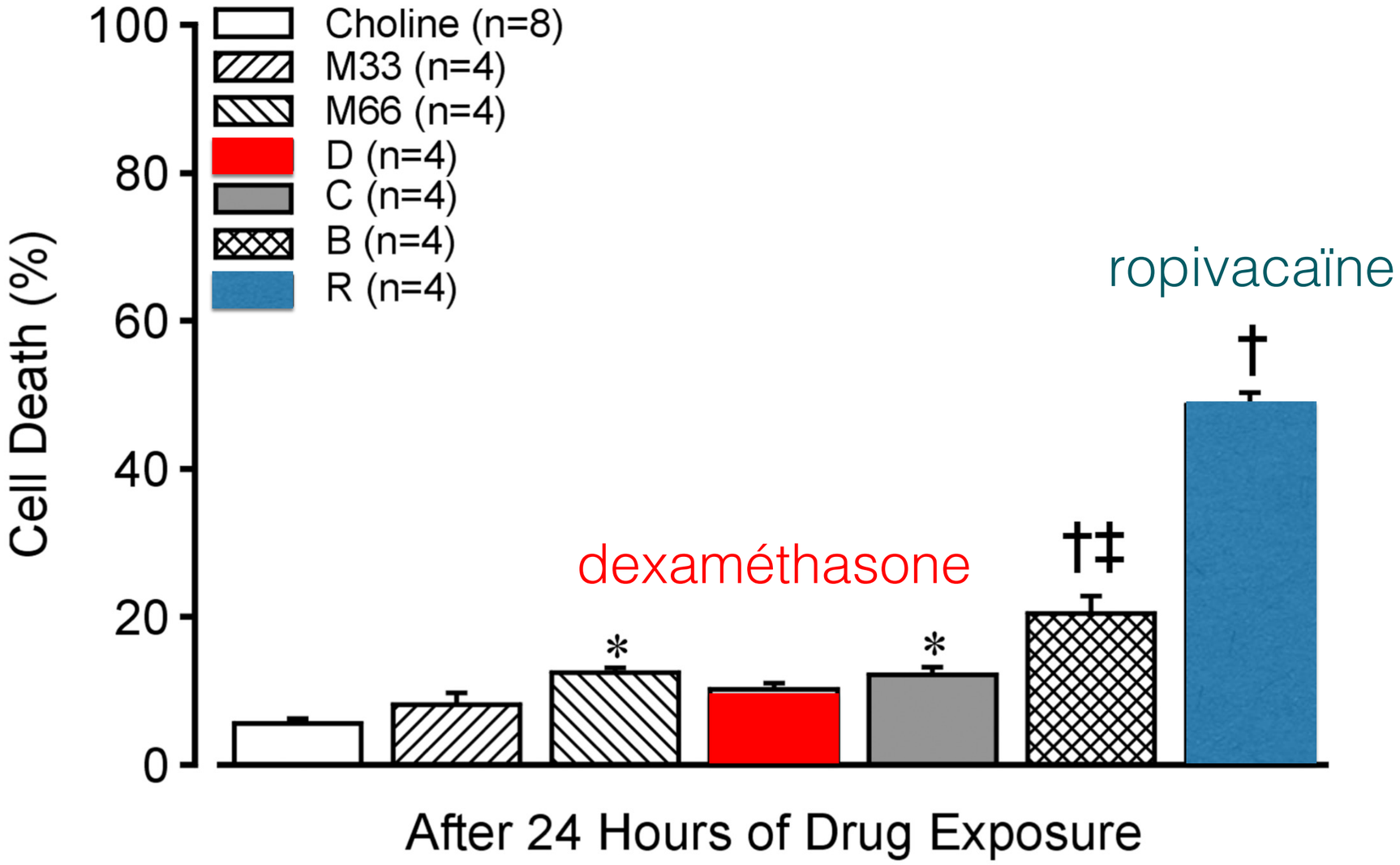


Bleckner 2014

Neurotoxicity of Adjuvants used in Perineural Anesthesia and Analgesia in Comparison with Ropivacaine

Brian A. Williams, MD, MBA*,†,‡, Karen A. Hough, AS, CVT, RLAT*,†, Becky Y. K. Tsui, MPH,

BMJ Journals



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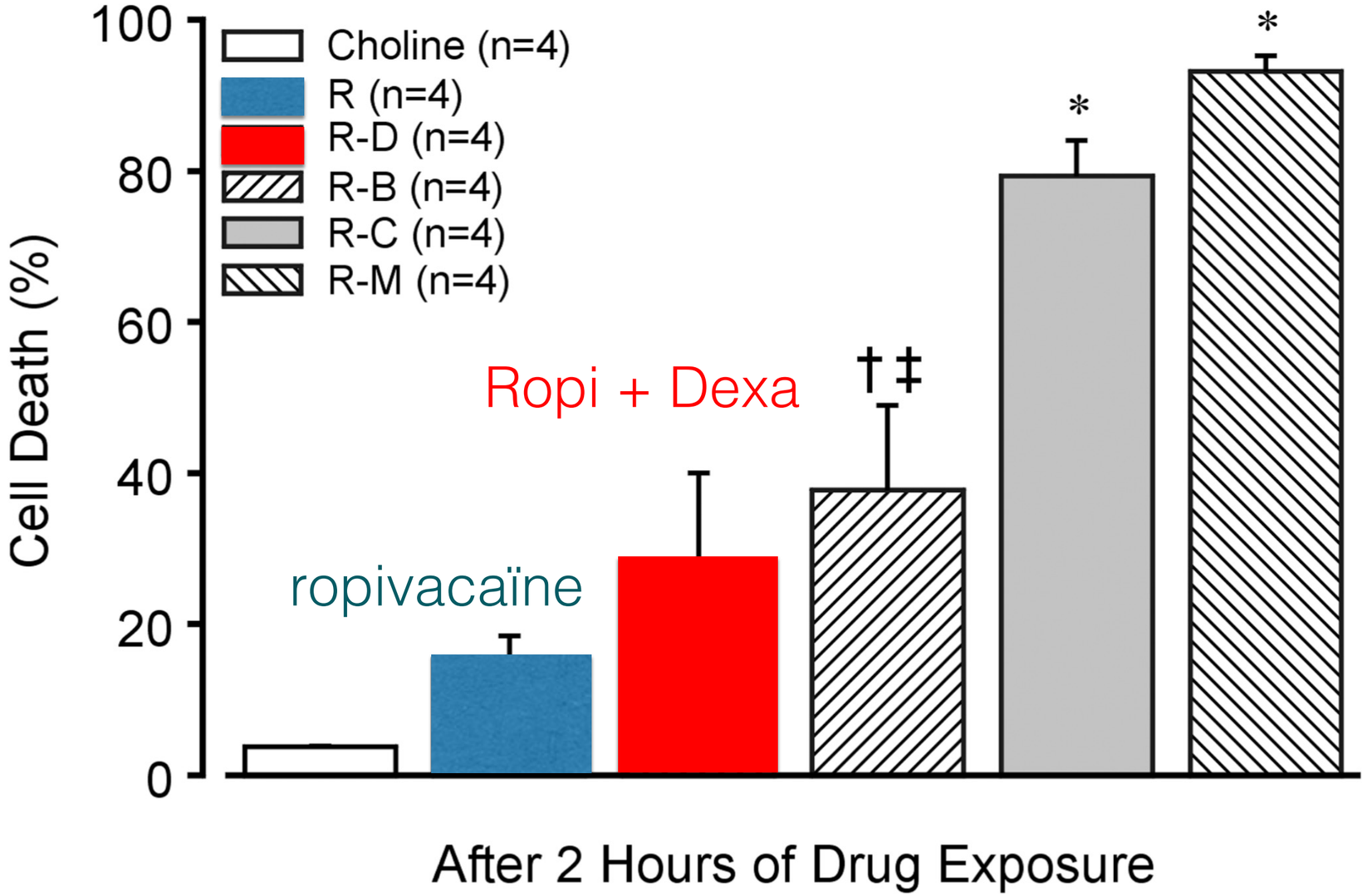
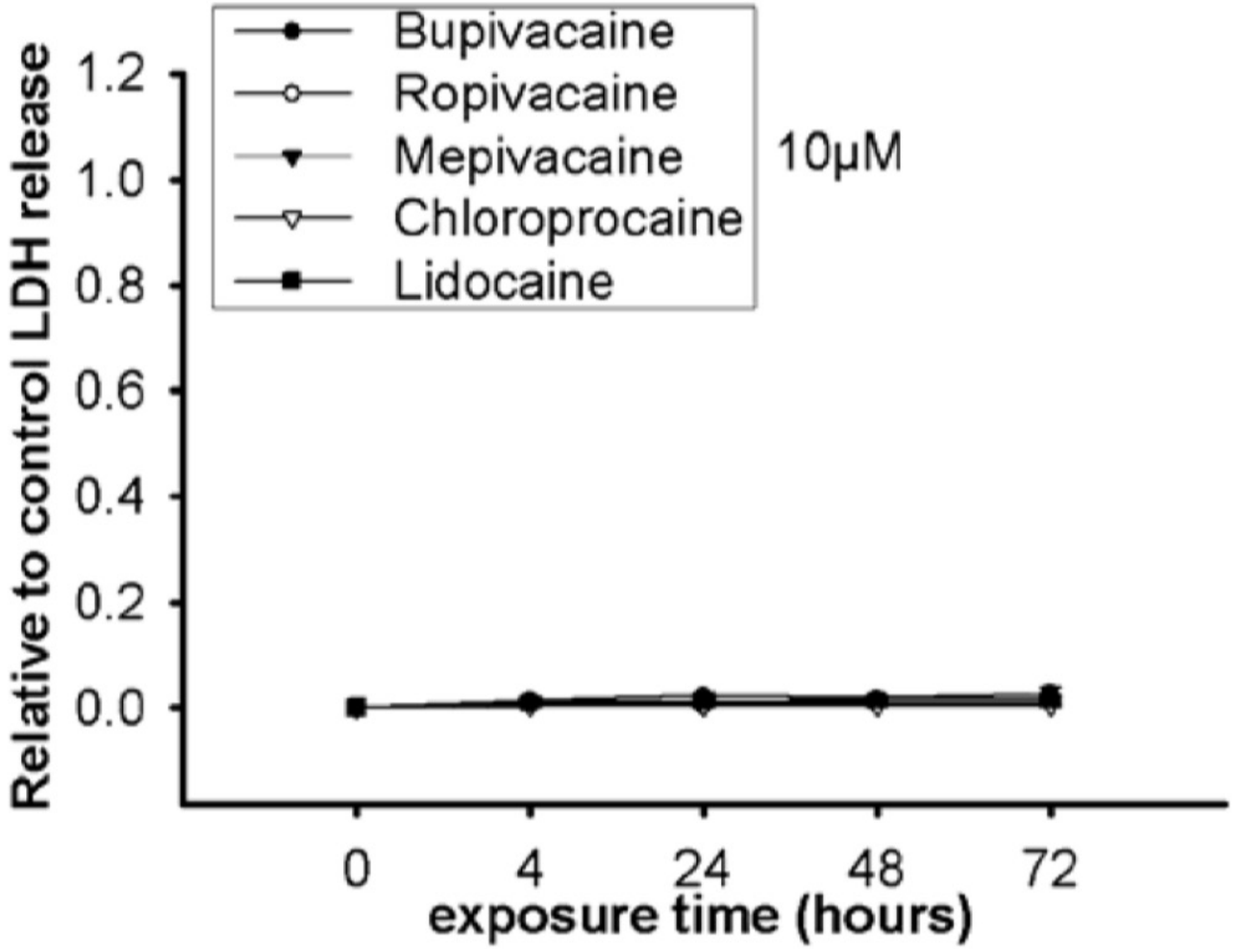


Local Anesthetic Schwann Cell Toxicity is Time and Concentration-Dependent

regional anesthesia & pain medicine

Sufang Yang, MD

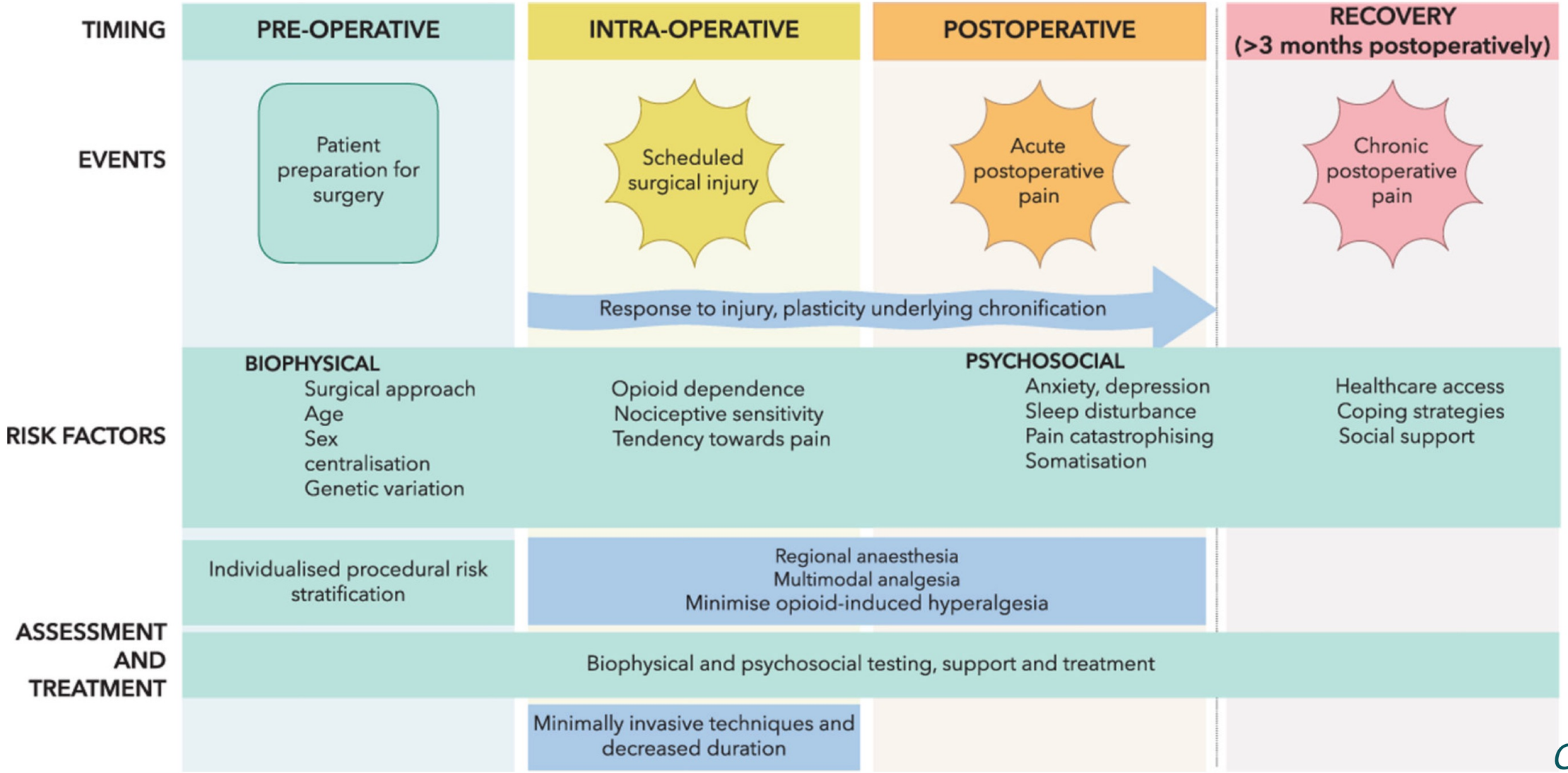


The role of regional anaesthesia and multimodal analgesia in the prevention of chronic postoperative pain: a narrative review

Anaesthesia

Association of Anaesthetists

Y.-Y.K. Chen[1], K.A. Boden[2], K.L. Schreiber[3] [Assistant Professor]



Chen 2021

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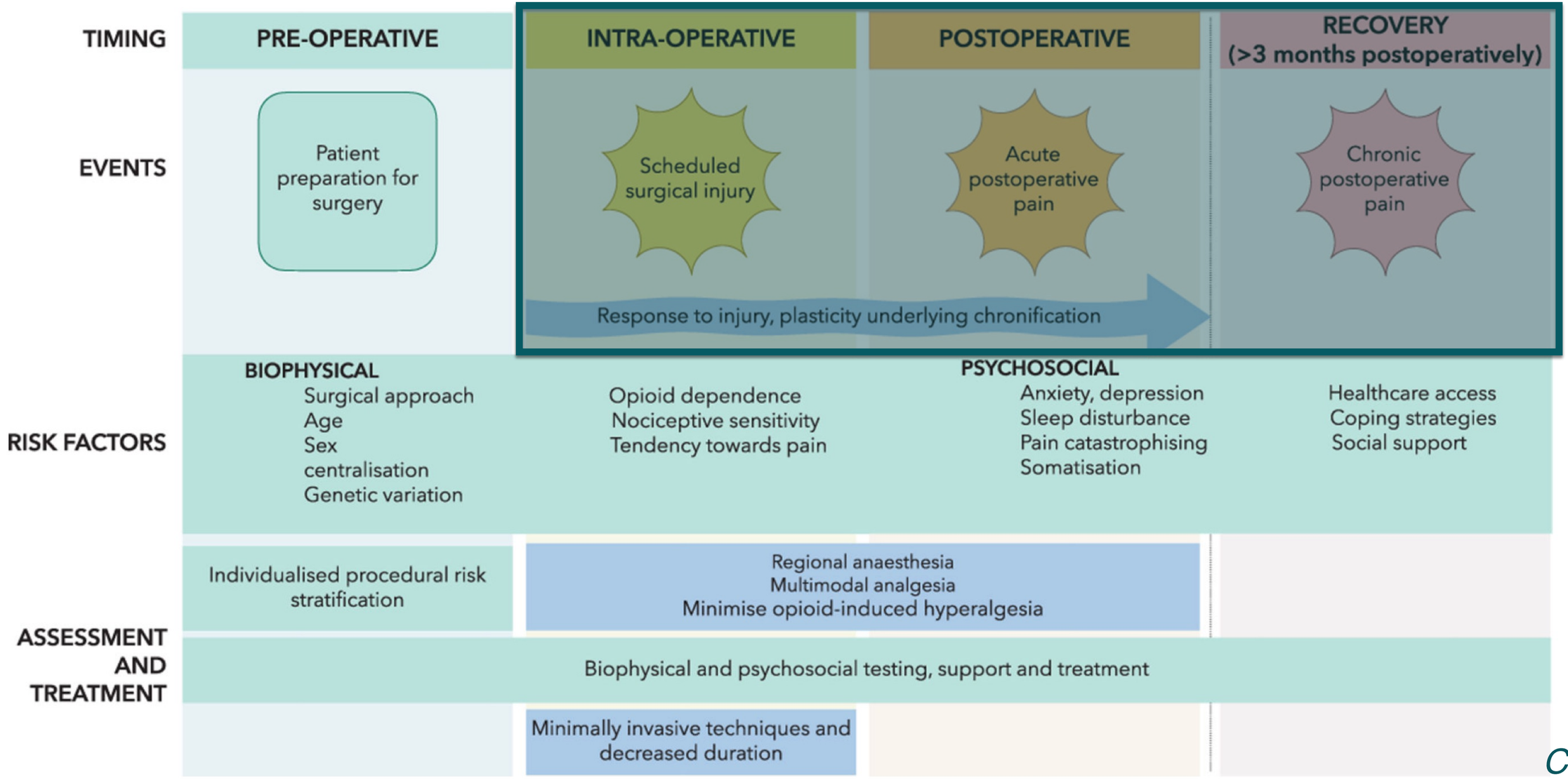

Chen 2021

CONCLUSION

- Cathéter périnerveux = toujours le gold standard
- Identifier les patients à risque de douleur mal contrôlée
  - Femme; âge jeune; surpoids
  - Profil anxieux; attentes élevées
  - Comportement inadapté à la douleur
  - Atteinte fonctionnelle préopératoire importante
  - Qualité de vie dégradée