

# Comparing lidocaine versus mepivacaine in obturator nerve block for transurethral resection of the bladder

Pascal Viktorin-Baier<sup>1</sup>, Isabelle Keller<sup>1</sup>, Barbara Jung<sup>2</sup>, Michael Ganter<sup>2</sup>, Hubert John<sup>1</sup>  
 Department of Urology<sup>1</sup> and Anesthesiology<sup>2</sup>, Kantonsspital Winterthur, Switzerland

AUA 2018  
 Poster MP 08 - 18-2737

## Introduction & Objectives

During transurethral resection of the bladder (TURB) adductor muscle contraction can occur due to obturator nerve stimulation (1). Obturator nerve blockade (ONB) is a accepted method to decrease the risk of obturator nerve reflex (ONR) during TURB (2). Insufficient ONB and subsequent leg jerking lead to bladder perforation, increased bleeding and early tumor relapse (3). The effect of two types of local anesthetics (LA / lidocaine vs. mepivacaine) on the success rate of ONB was tested.

## Material & Methods

In a non randomized, non blinded prospective trial the occurrence of ONR was investigated in dependence of the LA. An ONB was performed with Lidocaine in period 1 and mepivacaine in period 2 in a single institution. Further parameters such as ONB techniques, TURB techniques (monopolar vs. bipolar), training level (residents vs. specialists) of surgeons/anesthesiologists and others were measured. Any kind of ONR was recorded as ONB failure. Pearson chi square test, t-test or Mann Whitney U test were used for statistical analyses with a p-value <0.05 for statistical significance.

	Successful Block	Block-Failure	p
<b>BMI, median (IQR) [kg/m<sup>2</sup>]</b>	26.3 (5.25)	24 (9.6)	0.079
<b>Age, median (IQR) [years]</b>	73 (15)	70 (15)	0.912
<b>Sex</b>			0.732
male, n/n (%)	166/202 (82.2)	12/15 (80)	
female, n/n (%)	36/202 (17.8)	3/15 (20)	
<b>Local Anaesthetic Type</b>			0.005
Lidocaine, n/n (%)	120/138 (87.0)	18/138 (13.0)	
Mepivacaine, n/n (%)	134/139 (96.4)	5/139 (3.6)	
<b>Local Anaesthetic Dose, median (IQR) [mg]</b>	100.0 (50)	100.0 (0)	0.098
<b>Approach</b>			0.028
Conventional (classic), n/n (%)	122/139 (87.8)	17/139 (12.2)	
Ultrasound Guided, n/n (%)	132/138 (95.6)	6/138 (4.4)	
<b>Training Level Anesthesiologist</b>			0.005
Minor, n/n (%)	90/139 (64.7)	15/105 (14.3)	
Major, n/n (%)	163/171 (95.3)	8/171 (4.7)	
<b>Training Level Surgeon</b>			0.630
Minor, n/n (%)	72/77 (93.5)	5/77 (6.5)	
Major, n/n (%)	181/199 (90.9)	18/199 (9.1)	
<b>Distance Resection to Ureteral Orifice, median (IQR) [cm]</b>	1.0 (2.0)	1.0 (2.0)	0.590
<b>Resection Technique</b>			0.258
Monopolar, n/n (%)	23/27 (85.2)	4/27 (14.8)	

Table 1: Success of the obturatorius blockade depending on various factors. Significant differences can be found for the local anaesthetic, the approach and for training level of the anaesthesiologist. IQR = interquartile Range. BMI = Body Mass Index

	Block-Failure	p	OR	95% CI
<b>Local Anaesthetic Type</b>				
Lidocaine, n/n (%)	18/138 (13.0)	0.020	0.288	0.101 -0.823
Mepivacaine, n/n (%)	5/139 (3.6)			
<b>Approach</b>				
Conventional, n/n (%)	17/139 (12.2)	0.032	0.334	0.123 -0.911
Ultrasound guided, n/n (%)	6/138 (4.4)			
<b>Training Level Anesthesiologist</b>				
Minor, n/n (%)	15/105 (14.3)	0.005	0.264	0.105 - 0.664
Major, n/n (%)	8/171 (4.7)			

Table 2: Logistic regression analysis for the three regression coefficients local anesthetic Type, approach and traininglevel of the anesthesiologist. p = z-test, OR = odds ratio, 95%-CI = 95% confidence interval

## Results

In 277 ONB with following TURB in our institution, performed between 06/2014 and 07/2017, an overall success rate of 254/277 (91.7%) was found. In the lidocaine-group an ONB-failure occurred in 18/138 (13.0%) in 5/139 (3.6%) in the mepivacaine-group (p=0.005). Grouped by the training level of the performing anesthesiologist, 15/105 (14.3%) failures occurred in the residents-group and 8/171 (4.7%) in the specialist-group (p=0.005). In the US-guided ONB-technique 6/138 (4.4%) failures occurred and 17/139 (12.2%) in the classic pubic approach (p=0.028). Other parameters did not show any significant difference, Table 1.

The parameters were tested in a logistic regression analysis. The odds ratio (OR) for the LA was 0.288 (CI = 95%-confidence interval 0.101-0.823). The OR for the ONB technique was 0.334 (95%-CI 0.123 - 0.911). The OR for the training level was 0.264 (95%-CI 0.105 - 0.664), Table 2.

## Conclusions

The use of mepivacaine instead of lidocaine for ONB in TURB reduces the risk of an ONB-failure with 71.2%. While the effects and side effects of the two LA are comparable, based on the results of our study we suggest the use of mepivacaine guided by ultrasound. In accordance to other studies (4), the US-based technique showed less failures than the landmark-based technique. In our study, a risk reduction of 66.6% was found when the US-based technique was used. Finally, an advanced training level of the anesthesiologist showed a significant reduction in the failure rate of 73.6%.

### Literature

1. ZhaoC et al. J Endourol. 2016;30(1):5-12.
2. Chen WM et al. Urology. 2008;72(3):667-8.
3. Tekgul ZT et al. Urol J. 2014;11(1):1248-52.
4. Yoshida T et al. Biomed Res Int. 2017;2017:7023750.

