



# More Comfort to the Patient with Transradial Procedure with Topical Anesthesia

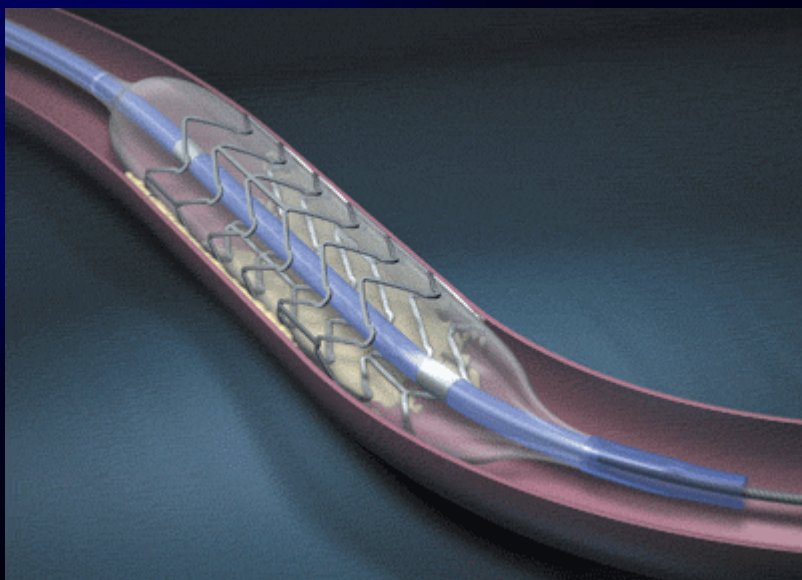
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# Anxiety...

**Intervention cardiologist**



**Disease itself, device, ...**

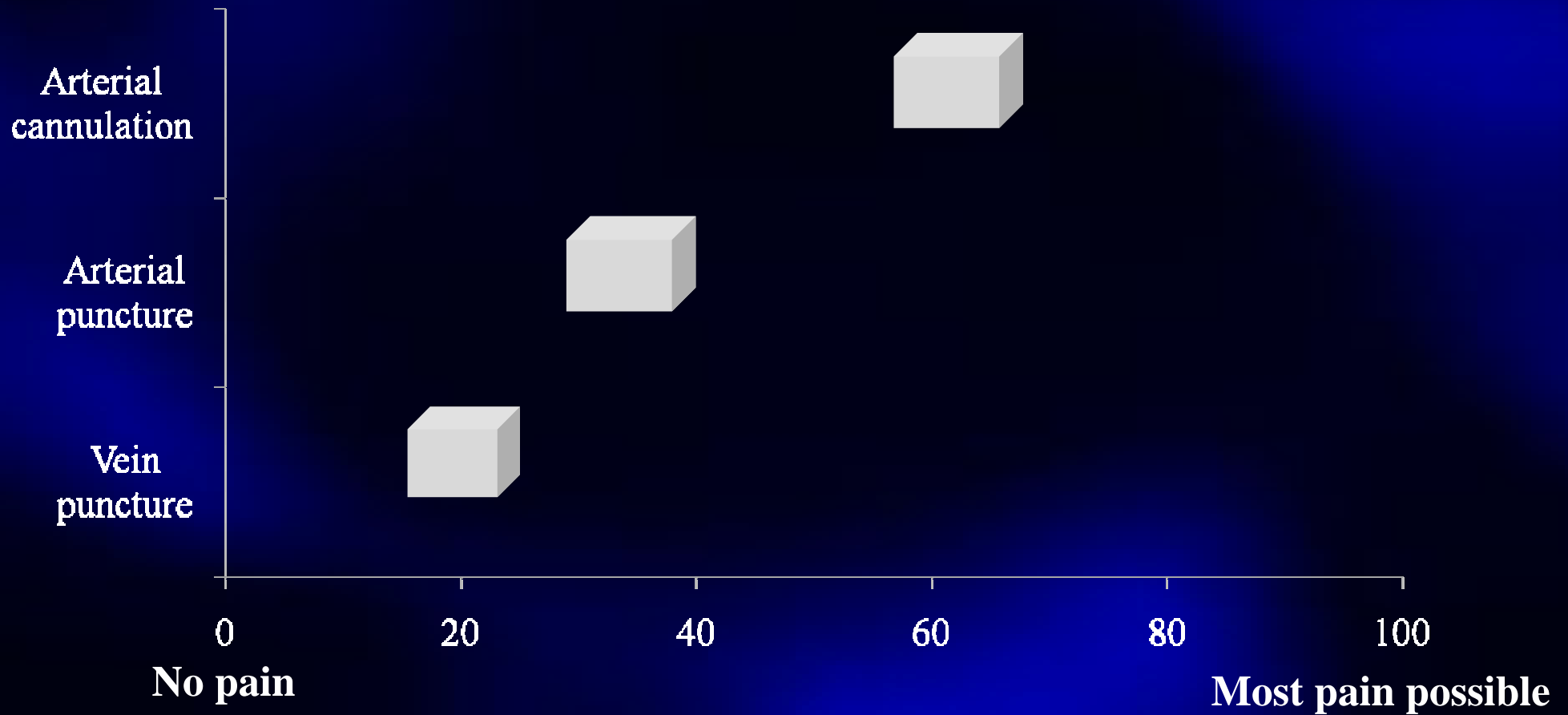
**Patient**



**Pain : “needle phobia**



# “The major complain during TR procedure”

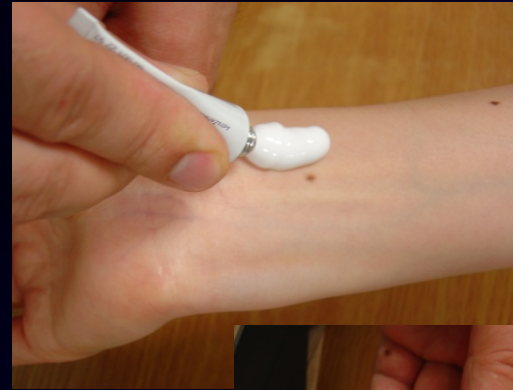


Harris et al. Emer Med J 2001, Biro et al. European J of Pain 1997



# Topical anesthetics for pain relief

Eutectic mixture of local anesthetic (EMLA) cream (Astra, MA), composed of lidocaine 2.5% and prilocaine 2.5%, is known to be an effective topical anesthetic agent.



It is used for a variety of painful cutaneous procedures



# The Effect of a Eutectic Mixture of Local Anesthetic Cream on Wrist Pain during Transradial Coronary Procedures

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**ABSTRACT: Objective.** We sought to evaluate the effects and optimal application time of a eutectic mixture of local anesthetic cream (EMLA-C) in relieving wrist pain during transradial coronary procedures (TRCP). **Methods.** The Phase I study enrolled 147 patients to evaluate the efficacy and safety of the EMLA-C during TRCP. The Phase II study was designed to evaluate the optimal preprocedure application time frame of EMLA-C for wrist pain reduction in 400 patients. The EMLA or placebo cream was applied at the puncture site from 2 to 4 hours before the procedure in Phase I, and randomized to 5 time groups according to the time of drug application in Phase II. We evaluated wrist pain by the visual analogue scale (VAS) or verbal rating scale (VRS-4), and evaluated complications as well. **Results.** EMLA-C demonstrated greater pain relief by VAS (control:  $49 \pm 24$ , EMLA:  $19 \pm 22$ ;  $p = 0.001$ ) and VRS-4 (control:  $2.3 \pm 0.5$ , EMLA:  $1.5 \pm 0.6$ ;  $p = 0.001$ ), and there was a negative correlation ( $r = -0.476$ ;  $p = 0.001$ ) between VAS and the preprocedure application time of EMLA-C. In Phase II, there was a significant difference in pain levels between the control and 1- to 2-hour groups by VAS (control:  $49 \pm 29$ , EMLA1-2 hours:  $32 \pm 24$ ;  $p = 0.001$ ) and VRS-4 (control:  $2.4 \pm 0.6$ , EMLA1-2 hours:  $1.9 \pm 0.6$ ;  $p = 0.001$ ). Drug-induced local erythema frequently occurred in the 3- to 4-hour group (6.6%) and > 4 hours group (11.9%). **Conclusions.** EMLA-C can be effective in reducing wrist pain during TRCP without any significant drug-related complications when the application time is 1 to 3 hours before the procedure.

J INVASIVE CARDIOL 2007;19:6-9

variety of painful cutaneous procedures on intact skin, including phlebotomy, intravenous catheterization, arterial cannulation and lumbar puncture.<sup>3-5</sup> Despite the usefulness of EMLA cream, it is not widely used in standard clinical practice because the optimal preprocedure application time frame is unknown, and differing results are reported in terms of efficacy depending on the procedure for which it is used.

We hypothesized that applying EMLA cream would effectively reduce wrist pain without adverse drug reactions during transradial coronary procedures and evaluated the optimal time range for preprocedure application of EMLA cream.

## Patients and Methods

**Patients.** From October 2003 to March 2004, 400 consecutive patients scheduled for elective coronary angiography or percutaneous coronary intervention via the radial artery were included. Patients were excluded if they presented with a negative Allen's test on both wrists, chronic renal failure requiring current dialysis, chronic renal failure that would require dialysis in the future and any known allergy to contrast medium or local anesthetics. Written, informed consent was obtained from the patient or family member(s) before the procedure.



# Objective

We hypothesized that

**applying EMLA cream would effectively reduce wrist pain** without adverse drug reactions during transradial coronary procedures

evaluated the **optimal time range for preprocedure application** of EMLA cream.



# Methods

## - Study Patients -

- **Consecutive 400 patients scheduled for trans-radial elective coronary angiogram or PCI**
- **Exclusion criteria**
  - a negative Allen's test on both wrists
  - chronic renal failure requiring dialysis
  - known allergy to contrast medium or local anesthetics.



# Methods

## Application and randomization







# Methods

## Procedure and outcome measure



**The blinded investigator rated the subject degree of pain as visual analogue scale (VAS) and four-category verbal rating scale (VRS-4).**

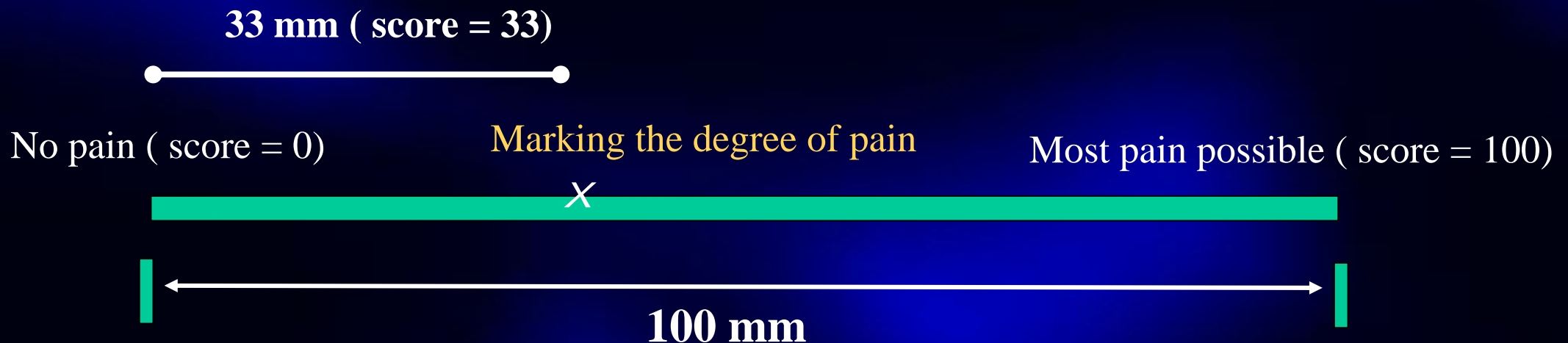


# Methods

( visual analogue scale, VAS)

Patients indicated their pain intensity by making a mark on a 10-cm long line that included descriptors labeled at each end of the line of pain intensity (*e.g.*, from “no pain” to “most pain possible”).

**Ann Emerg Med 1996;27:485-489**





# Method

## Four-category verbal rating scale (VRS-4)

The blinded investigator also rated the degree of pain after the procedure

Score 1 : “ no pain ”

2 : “ a little pain ”

3 : “ painful, but tolerable ”

4 : “ Most pain possible ”



# Results

- Phase I :  
to evaluate the **efficacy and safety of the EMLA cream** during transradial coronary procedure
- Phase II:  
to evaluated **optimal duration of EMLA application time** for proper reducing wrist pain



## Results (Phase I): Efficacy and safety

	Control (n=73)	EMLA (n=69)	p
Age (yr)	61±11	60±10	0.72
Sex (male %)	41 (56)	37 (54)	0.52
Diagnosis (%)			0.71
Stable angina	25 (34)	24 (34)	
Unstable angina	21 (29)	19 (27)	
AMI	6 (8)	5 (7)	
Puncture site			0.82
Right arm	29(40)	28(41)	
Left arm	44(60)	41(59)	
Puncture failure (%)	3 (4)	0 (0)	0.11



## Results (Phase I): Efficacy and safety

	Control (n=73)	EMLA (n=69)	p
% change of pain in RP	135±45	60±41	0.01
Adverse drug reaction	0	2	0.60
VAS	49±24	19±22	0.00
VRS-4	2.3±0.5	1.5±0.6	0.00

RP: repeated procedure, VAS: visual analogue scale,  
VRS-4: four-category verbal rating scale

**There was significantly negative correlation between VAS and the duration of EMLA application ( $r = -0.476$   $p=0.001$ ).**

# Result (phage 2): Optimal duration of application time

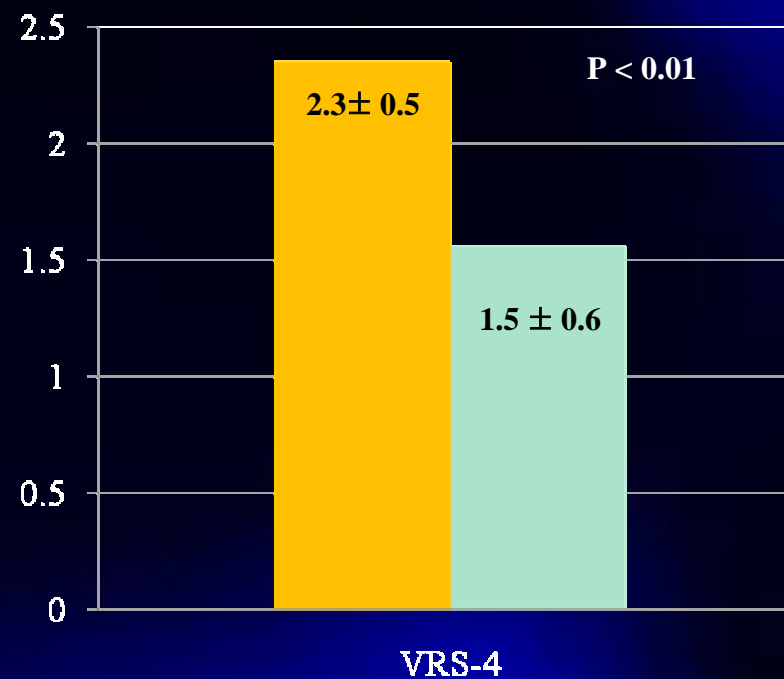
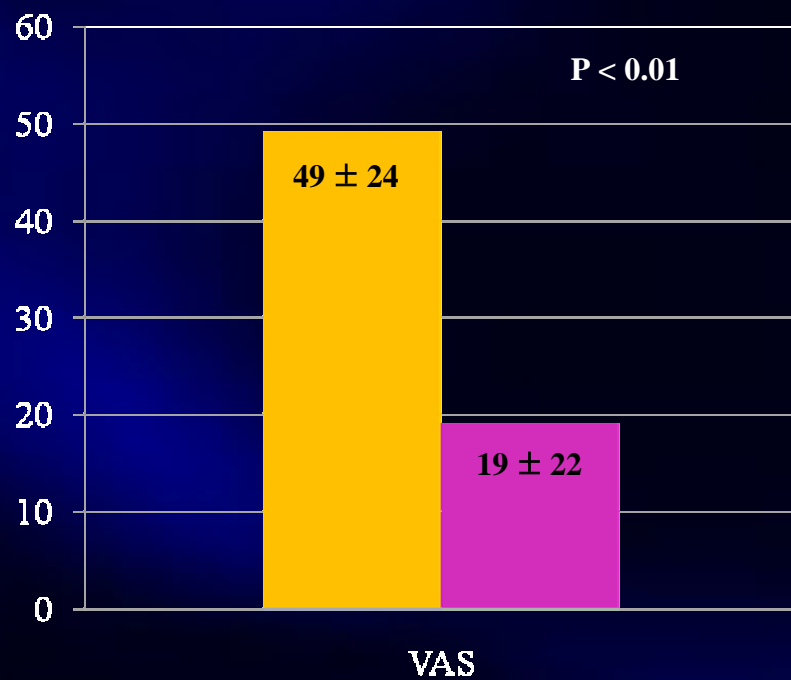
	VAS	VRS-4	ADR (%)
Control ( n = 73)	49 ± 24	2.2 ± 0.6	0(0)
EMLA 0-1 hour ( n = 48)	39 ± 27	2.0 ± 0.6	0(0)
EMLA 1-2 hour ( n = 73)	32 ± 24*	1.9±0.6 *	1(1.4)
EMLA 2-3 hour ( n = 72)	25 ± 23 *	1.8±0.5 *	1(1.4)
EMLA 3-4 hour ( n = 45)	19 ± 19*	1.6±0.5 *	3(6.6) *
EMLA > 4 hour ( n = 59)	14 ± 18* +	1.5±0.5 *	<b>7(11.9) *</b>

VAS: visual analogue scale, VRS-4 : four-category verbal rating scale

\* P value < 0.01 compare to control, + : P value < 0.01 compare to EMLA 1-2 hour



# Summary :( Phase 1: efficacy )



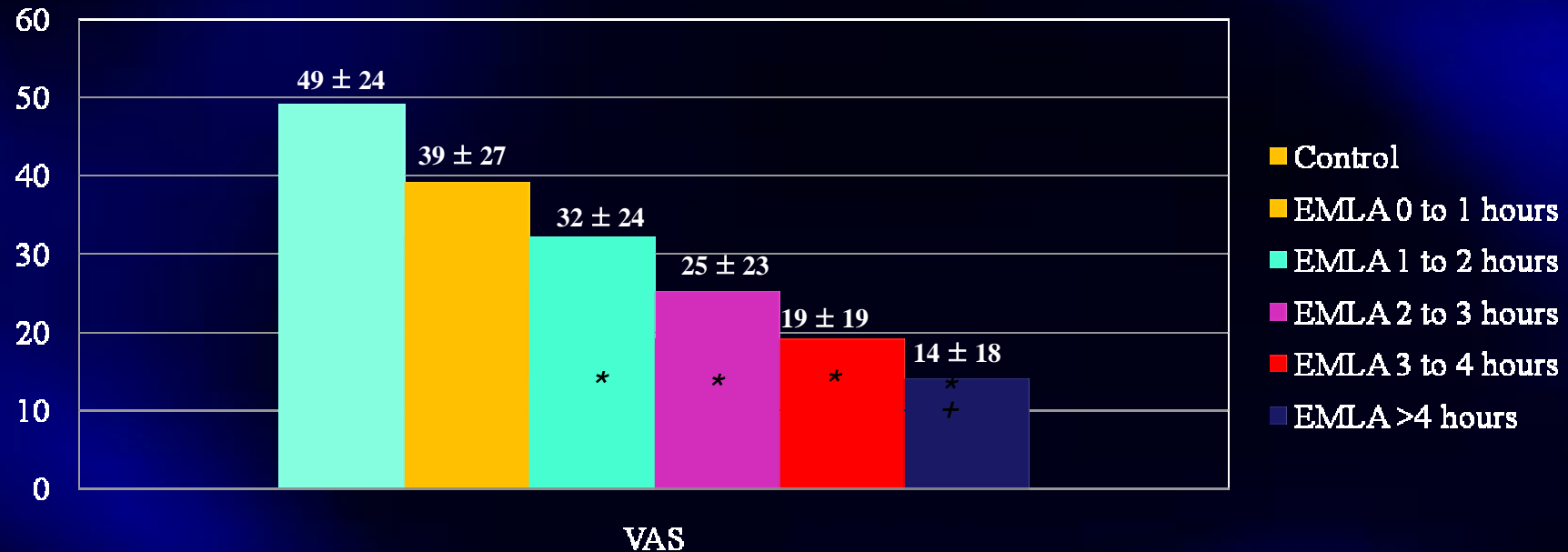
 EMLA

 Placebo





## Summary :( Phase 2: Optimal duration of application )



Drug induce local erythema occurred in 12 cases (3.5%) which was frequent in the group of EMLA 3-4 hour (6.6 %) and EMLA > 4 hour (11.9%).



# Conclusion

**EMLA-C can be effective in reducing wrist pain during transradial coronary procedures without any significant drug-related complications when the application time is 1 to 3 hours before the procedure.**



**EMLA is More Comfort to the Patient with Transradial Procedure during arterial puncture or cannulation.**



**T**rainning  
**R**esearch  
**I**nformative

**Thank you for your attention !**

# Patient Discomfort and Radial Spasm

