

## COMPARISON OF TWO EUTECTIC MIXTURE OF LOCAL ANAESTHETICS FOR REDUCING PAIN DURING MICRO-NEEDLING: A HEMIFACE, CROSS-OVER ANALYSIS OF A FEW CASES

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Sir,

The use of micro-needling in minimally invasive dermatologic and aesthetic procedures are widespread. Although the procedure is very superficial, it is associated with pain and discomfort to the patients. Local anesthetics are commonly used in many cosmetic procedures, and they have been used in the dermatological procedure too. They act through voltage-gated sodium channel and block the conductance of the pain impulse to the higher center through the nerve. Topical anesthesia is one of such anesthetic technique used in dermatology and aesthetic surgeries. A few numbers of local anesthetics are available in clinical practice. However, the choice of the local anesthetic depends on multiple factors, i.e., effectiveness, cost, easy availability, etc. <sup>(1)</sup> A eutectic mixture of local anesthetic is capable of melting at the below room temperature into an oil base, which helps in penetrating the skin and mucosa <sup>(2)</sup>. This retrospective evaluation of prospectively collected database was aimed to analyze the efficacy in terms of controlling pain and safety in terms of complications of two eutectic mixture of local anesthetics for micro-needling of the face.

Data were collected from young adult patients of both sexes, who attended our outpatient department for the micro-needling procedure only for acne scar. Patients received a eutectic mixture of local anesthetics (EMLA) is non-random, hemiface, and cross-over manner. The EMLA used were Asthesia (Unichem Laboratories Ltd., Mumbai, India) a combination of Lignocaine 2.5% and Prilocaine 2.5%, and Viveta (Ajanta Pharma Ltd., Mumbai, India), a combination of Lignocaine 7% and Tetracaine 7% w/w. All patients were subjected to topical application skin test for both the EMLA applied over the post-auricular region and inspected for a reaction after 30 minutes, and suspected/reactive patients were excluded. The procedure was part of the treatment, and no separate consent for this was taken but, informed consent for the data collection and possible publication/presentation were taken. All the patients were introduced to the numerical rating scale from 0 to 10 with a visual depiction, where, 0 indicated no pain at all and 10 indicated the worst possible pain imaginable. The face was cleaned using an alcohol-based antiseptic and allowed to dry spontaneously. Subsequently, Asthesia was applied in one half of the face, and Viveta was applied on the other half, and the patient was asked to wait for 45 minutes. The patient was asked about any adverse symptoms and also face was inspected for any

adverse effects, and the findings were noted. After 45 minutes, micro-needling (1.5 mm) was started. A total of 4 reading for each side of the face was taken; one at the beginning, one at the end and two readings in between. The patient was asked to attend for the second session when the patient wants, preferably within three months. In the second session, again hemiface application of the drugs was made, but the site was switched. The pain data were collected in the same manner again. Data were entered in the Microsoft Excel, and complications were expressed in number and percentage scale. The reported pain score was categorized as the highest, lowest, and the average (of four readings) pain scores. The pain data were then analyzed using INSTAT software (Graphpad Prism Software Inc., La Jolla, CA, United States). The pain scores of Asthesia and Viveta were compared using the unpaired t-test, and the pain scores of first and second sessions in the respective drug group were analyzed using the paired t-test. Pain data are presented as median, mean, and standard deviation (SD) and a  $P < 0.05$  was considered significant.

A total of 12 patients; 8 (66.67%) male and 4 (33.33%) female, underwent a total of 20 sittings (8 patients underwent twice) of micro-needling. Entire patients were cases of acne scar. All were adults with age ranged between 18 – 40 years; mean + SD 24.4 + 4.3 years.

The highest self-reported pain in the NRS scale experienced by the cohort after Asthesia application ranged from 2 – 8 while in the Viveta group it ranged from 2 – 7. The median, mean, and standard deviation of the highest pain, lowest pain score and average pain scores were statistically indifferent; lowest  $P$  0.09 (Table 1). However, a statistically significant lower pain was reported during second sitting by the patient after application of Asthesia, but, although the highest, lowest, and the average pain reported during second sitting by the patient after application of Viveta was lower than first sitting, it was not statistically significant (Table 2).

Erythema was the most common complications in both the group and both during the first and second sitting. Although the Asthesia group has relatively lower erythema as compared to Viveta group (40% versus 55%), the difference was not statistically significant;  $P$  0.52. Similarly, no difference in the wheel formation was noted between the groups (Table 3).

Results of this analysis indicate that both the eutectic mixtures

i.e., Asthesia (Lignocaine 2.5% plus Prilocaine 2.5%) and Viveta (Lignocaine 37% plus Tetracaine 7%) are well tolerated. A meta-analysis of pooled data of trials in terms of safety and adequacy of cutaneous anesthesia indicated that the lidocaine/tetracaine medicated patch or peel is an effective, safe, and well-accepted method for minor dermatologic procedures<sup>(3)</sup>. Despite having erythema in nearly half of the patients in our cohort, none of the patients were intolerant to the adverse effects and the adverse symptoms and signs subsided by itself without needing any further medication or intervention. However, the pain scores in both the group were very much variable, and a good number of patients reported the highest pain > 4. This indicates that pain control was not adequate.

**Table 1:** Comparison of pain scores reported during all sittings analyzed using the unpaired t-test.

Pain Category	Asthesia		Viveta		Two-tailed P-value
	Median	Mean±SD	Median	Mean ± SD	
Highest Pain	5	5±1.85	5	4.47±1.64	0.410
Lowest Pain	2	2.53±1.68	2	1.8±1.21	0.181
Average Pain	3.5	3.87±1.66	2.78	3.34±1.47	0.355

The variation of the pain intensity in our cohort may be explained by the interpersonal variation of pain thresholds. Moreover, although the micro-needling was done after a minimum of 45 minutes of application of the local anesthetic mixtures, the time

**Table 2:** Comparison of pain scores reported during first and second sittings for each drug analyzed using the paired t-test

Drug and pain category	First sitting		Second sitting		Two-tailed P-value
	Median	Mean±SD	Median	Mean±SD	
Asthesia					
Highest Pain	6	6±0.71	3	3.6±1.34	0.051
Lowest Pain	3	3.2±1.30	2	1.6±0.55	0.099
Average Pain	5.25	4.7±0.89	2.75	2.8±0.94	0.069
Viveta					
Highest Pain	5	5±1.58	3	3.4±1.52	0.294
Lowest Pain	2	1.6±0.55	1	1.4±1.14	0.778
Average Pain	3.5	3.7±1.17	2.75	2.8±0.94	0.345

to start actually varied between 45 minutes to 60 minutes. Study indicates that topical lignocaine typically takes 60 minutes to anesthetize the skin surface<sup>(4)</sup>. Pre-treatment with fractional micro-needling has been found to effective in the shortening of the onset time. A study found automated fractional skin micro-needling of 0.5 mm depth followed by topical anesthetic cream application was more effective in reducing pain as compared to topical anesthesia alone for full-face fractional micro-needling treatment of 2.5 mm depth<sup>(5)</sup>. Furthermore, according to the results of the reported study, triple anesthesia involving of a combination of a painkiller drug, EMLA cream, and infraorbital nerve block was proved as the most effective method of

**Table 3:** Comparison of complications noted during all sittings analyzed using Fisher's exact test.

Complications	Yes / No	Yes / No	Two-tailed P-value
	Asthesia	Viveta	
Erythema	8 (40%) / 12 (60%)	11 (55%) / 9 (45%)	0.527
Wheal	0 / 20 (100%)	02 (10%) / 18 (90%)	0.487
	Asthesia 1st	Asthesia 2nd	
Erythema	3 (37.5%) / 5 (62.5%)	4 (50%) / 4 (50%)	1.000
Wheal	0 / 8 (100%)	0 / 8 (100%)	1.000
	Viveta 1st	Viveta 2nd	
Erythema	5 (62.5%) / 3 (37.5%)	5 (62.5%) / 3 (37.5%)	1.000
Wheal	1 (12.5%) / 7 (87.5%)	1 (12.5%) / 7 (87.5%)	1.000

anesthesia<sup>(6)</sup>. Infraorbital nerve block, although, is relatively more straightforward, is probably not widely practiced by the dermatologists and aesthetic surgeons.

Both the eutectic mixtures are well available and relative less costly. Our experience with hemiface and switch-over method showed that both the mixtures are equally effective, but for better results and pain control, multi-modal approach, at least by adding an oral or injectable painkiller might be better.

Our results and observations are, however, limited by the fact that we have observed only a few cases and the allocation was non-randomized. Future studies with larger samples and employing both single and multi-modal approach will give better evidence.

### Conclusion

Both Asthesia and Viveta are well-tolerated, but the anesthetic efficacy in terms of analgesic effect for facial micro-needling surgery is not adequate.

### How to cite this article:

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