

## Radiofrequency ablation Vs Trichloroacetic acid in the treatment of Xanthelasma Palpebrarum: An open label study

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### ABSTRACT

**Background:** Xanthelasma Palpebrarum is a common benign disorder manifesting as yellowish plaques on eyelids. The lesions are not considered sight threatening, but cause cosmetic concerns, which may lead patient to seek its removal. Radiofrequency ablation (RFA) and trichloroacetic acid (TCA) applications have been listed among the procedures for xanthelasma palpebrarum but comparative studies are not available.

**Aim:** To compare the efficacy of Radiofrequency ablation and Trichloroacetic acid in the treatment of Xanthelasma Palpebrarum.

**Materials and methods:** 50 patients conforming to the inclusion criteria were included in the study. Patients were given an option to choose between the two modalities of treatment and first 25 patients opting for each mode of treatment were included in the study.

**Results:** In group A: Patients received TCA sittings, 52% patients showed good improvement (50-75% clearing) after second sitting, while 62% patients showed good improvement after third sitting and 28% showed excellent improvement (>75% clearing) after the last sitting. In group B: Patients received RFA sittings, 44% patients showed good improvement after second sitting, 64% patients showed good improvement after third sitting and 8% patients showed excellent results after the last sitting. However, differences were not statistically significant.

**Conclusion:** Both, RFA and TCA are equally efficacious modalities for the treatment of Xanthelasma palpebrarum. However, in TCA requirement of local anaesthesia was less as compared to RFA.

KEY WORDS: Xanthelasma palpebrarum, Trichloroacetic acid, Radiofrequency, lipid profile

### INTRODUCTION

Xanthelasma palpebrarum is a common benign disorder manifesting as yellowish plaques on the eyelids, resulting from the deposition of cholesterol laden crystals.<sup>1</sup> The prevalence is roughly 1.1% in women and 0.3% in men, and increases with age.<sup>2</sup> The lesion occurs clinically as a yellow plaque most commonly in the medial area of the eyelids and may extend laterally, with a higher preference for the upper lids. Although,

the lesion is not considered sight threatening unless it obstructs the visual axis, it does cause cosmetic concerns which may lead the patient to seek its removal.<sup>3</sup>

Xanthelasma may be an important marker of underlying disease. Hyperlipidemia is reported to occur in approximately 50 percent of patients with xanthelasma.<sup>2,4</sup>

Many diverse treatments can be chosen for xanthelasma palpebrarum such as surgical excision,

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laser ablation using a variety of lasers like carbon dioxide, argon, erbium doped yttrium aluminum garnet (Er:YAG) and pulsed dye laser, chemical cauterization using trichloroacetic acid (TCA), cryosurgery<sup>2,5,6</sup> and radiofrequency ablation.<sup>8</sup> In this study, we chose two commonly available, easy to use and cosmetically acceptable outpatient treatment options, that is Radiofrequency and chemical ablation and found out their efficacy individually and in comparison to each other, so that we can add evidence based knowledge to the existing literature of xanthelasma palpebrarum.

## MATERIALS AND METHODS

Fifty patients visiting the outpatient department of Dermatology of Dayanand Medical College and Hospital, Ludhiana constituted the study material and source of data. Patients were given an option to choose between two modalities of treatment i.e. Trichloroacetic acid and Radiofrequency ablation and patients were treated accordingly. First 25 patients opting for each mode of treatment were included in the study. In each group informed consent was taken and photographic documentation was done.

A detailed history of each patient was taken along with complete cutaneous examination, including the number, site, size, surface and morphology of xanthelasma palpebrarum lesions. All patients were categorized into three groups viz. 1(mild), 2(moderate) and 3(severe) using a scoring system of severity of xanthelasma palpebrarum based on a combined score of four parameters namely number, size, depth and laterality of lesions.<sup>42</sup> Based on the scores, patients were grouped as mild (score 4-5), moderate (6-7), severe (8-10). [Refer to table 1]

**Table 1** Scoring system used in our study

Score for each parameter	No of lesions	Average size-length (mm)	Depth of lesion	Distribution
1	<3	<5	Flat	Unilateral
2	3-5	5-10	Raised	Bilateral
3	>5	>10		

(Max score 10; Min score 4)

**Table 2** Comparison between TCA and RFA based on objective grading after each sitting

Objective Grading	RFA		TCA		t	p-value	95% Confidence Interval of the difference	
	Mean	SD	Mean	SD			Lower	Upper
(1st sitting)	1.92	0.95	2.00	1.08	0.278	0.783	-0.499	0.659
2nd sitting	2.28	0.98	2.52	1.08	-0.821	0.416	-0.828	0.348
3rd sitting	2.48	1.05	2.72	0.98	-0.837	0.406	-0.816	0.336
Last sitting	2.72	1.06	3.04	1.02	-1.087	0.282	-0.912	0.272

## GROUP A

Patients were treated by 100% Trichloroacetic acid as an OPD procedure with the following steps given below:

1. Local anaesthesia with 1% xylocaine was given to the lesions, if required.
2. The acid was carefully applied with a pointed wooden applicator stick to the lesion. Less than 0.01 ml was used in each sitting.
3. Care was taken to avoid contact with the nearby uninvolved skin or accidental instillation into the eye.
4. Patients were warned that they might experience a mild stinging sensation following application lasting upto 48 hours.
5. Patients were followed up after 2 weeks and further sitting of trichloroacetic acid was given if required. Maximum 3 sittings were given.

## GROUP B

The patients were treated by Radio frequency ablation of xanthelasma palpebrarum using Mega Surg (High Frequency Radio Surg Unit) by 'dermaindia'. It was done as an OPD procedure using the following steps:

1. Savlon solution was applied to the lesions.
2. Local anaesthesia with 1% xylocaine was given to the lesions, if required.
3. Radio frequency ablation was done with monopolar electrode.
4. Ground plate was kept in contact with the patient.
5. Current was given in short bursts of 2-4 seconds each and electrodesiccation of xanthelasma palpebrarum was done.

Patients were followed up after 2 weeks and further sitting of RFA was given if required. Maximum 3 sittings were given.

In both the groups, after the procedure patients were observed for 10-15 mins for immediate complications. Topical/systemic antibiotics and analgesics as necessary were advised.

Patients in both the groups were evaluated for improvement after each sitting and one month after the last sitting. Improvement at each visit was graded using a five point scale:-

- 0 = no results
- 1 = mild results (<25% clearing)
- 2 = moderate results (25-50% clearing)
- 3 = good results (50-75% clearing)
- 4 = excellent results (>75% clearing)<sup>7,8</sup>

In addition, patients were asked about subjective improvement one month after last sitting which was graded as no improvement, moderate improvement and complete cure. Results were analysed and put to statistical analysis by chi-square test.

## RESULTS

Middle age group was the most commonly affected by xanthelasma palpebrarum. The mean age in both the groups was comparable, i.e., 45.84 years in Group A and 41.48 years in Group B. Women were affected more commonly than men. There were 40 females and 10 males in our study. Majority of the patients in both the groups i.e. 36% patients in Group A and 32% patients in Group B had xanthelasma palpebrarum for a duration of 1-2 years. Eighty four percent patients in both the groups had xanthelasma palpebrarum on bilateral eyelids. Out of 50 patients, 23 patients had xanthelasma palpebrarum on both eyelids, 21 patients had xanthelasma palpebrarum on upper eyelids and only 6 patients had xanthelasma palpebrarum on lower eyelids. Both in Group A and B, majority of the patients had xanthelasma palpebrarum between 5-10 mm in largest horizontal diameter (48% in group A and 56% in group B). Ninety six percent patients in both the groups had no family history of xanthelasma palpebrarum. Seventy two percent patients in group A and 76% patients in group B had normal serum lipid profile. The requirement of local anaesthesia was more in the RFA group, with 84% patients requiring local anaesthesia prior to RFA as compared to only 20% patients requiring local anaesthesia before TCA.

## SIDE EFFECTS

In group A, the most common side effect was burning sensation, which was typically post procedural and not associated with any discomfort after the procedure. Only 20% patients required local anaesthesia prior to the application of Trichloroacetic acid in group A.

In group B, the most common side effect was

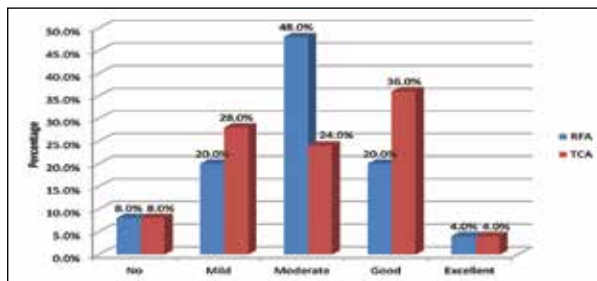
pain during the procedure and post inflammatory hyperpigmentation. RFA required more local anesthesia as compared to TCA before the procedure.



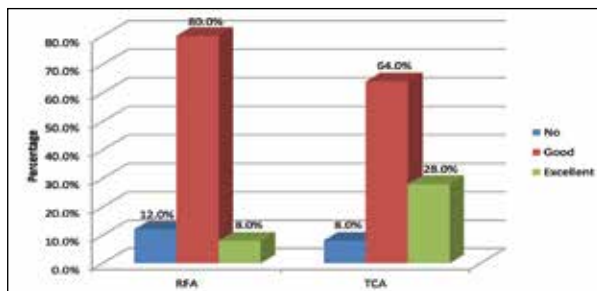
**Fig. 1** Response to trichloroacetic acid in xanthelasma palpebrarum.



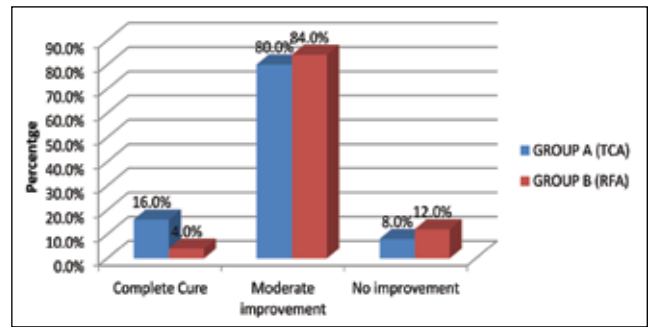
**Fig. 2** Response to Radiofrequency ablation in xanthelasma palpebrarum.



**Fig. 3** Distribution of subjects according to objective grading after first sitting.



**Fig. 4** Distribution of subjects according to objective grading after last sitting.



**Fig. 5** Distribution of subjects according to subjective grading of the patients.

## DISCUSSION

Xanthelasma palpebrarum is the most frequently encountered xanthoma. It is most commonly seen in middle aged and older individuals. The mean age in Group A was 45.84 years and the mean age in Group B was 41.48 years. Women are affected more commonly than men. This can be attributed to xanthelasma palpebrarum being a cosmetic problem and more females seeking its removal. In the present study, 74% patients had a normal serum lipid profile. According to Bergman et al, although xanthelasma is a type of xanthoma, 25% to 70% patients are normolipidemic.<sup>9</sup>

In group A patients who received TCA sittings, 8% patients showed no improvement in all 4 sittings. Twenty eight percent patients showed mild improvement i.e. <25% clearing after first sitting and 2 % patients showed <25% clearing after second sitting. Twenty four percent patients showed 25-50% clearing in the first sitting followed by 20% patients in second sitting, followed by 16% patients in third sitting. Maximum number of patients (64% patients) had good improvement i.e. 50-75% clearing after the last sitting. Twenty eight percent patients showed excellent improvement i.e. >75% clearing after the last sitting. Radiofrequency ablation showed maximum results during second sitting i.e. 8% patients

showed <25% clearing, 36% patients showed 25-50% clearing, 44% patients showed good improvement i.e. 50-75% clearing and 4% patients showed excellent response i.e. >75% clearing. Sixty four percent patients showed good improvement i.e. 50-75% clearing after the third sitting and 80% patients showed good improvement after the last sitting. Excellent results were obtained i.e. >75% clearing in 4% and 8% patients after third and fourth sitting respectively. Maximum patients showed subjective improvement after the second sitting. Nine patients (33.3%) with length between 0-5 mm showed subjective improvement after second sitting, 12 patients (44.4%) with length between 5-10 mm showed subjective improvement after second sitting with 6 patients (22.2%) with length more than 10 mm showed subjective improvement after second sitting. This data clearly states that subjective improvement noticed by the patient was more with RFA as compared to TCA.

## CONCLUSION

To conclude, both Trichloroacetic acid and Radiofrequency ablation are effective modalities of treatment for xanthelasma palpebrarum. However, Trichloroacetic acid seems to have an edge over Radiofrequency ablation because requirement of local anaesthesia is less. It is cost effective and does not require any special equipment. However, Radiofrequency ablation produces early subjective benefits as compared to Trichloroacetic acid.

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