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Dermoscopy-Guided Versus Conventional Radiofrequency Ablation for Facial Verruca Vulgaris: A Prospective Observational Study

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Abstract: ***Facial verruca vulgaris are common cutaneous viral infections that often cause major cosmetic concern to patients. Radiofrequency (RF) ablation is a standard treatment for their removal. Dermatoscopy may help in precise removal by identifying satellite lesions and residual components. This prospective observational study compared recurrence, cosmetic outcomes, and adverse events of facial verruca vulgaris treated with RF ablation performed with versus without dermoscopic guidance in 100 immunocompetent patients with facial verruca vulgaris. Follow-up visits occurred at 1 and 6 months. No recurrence was seen in the dermatoscopy-guided group, compared with 8% (4/50) recurrence in the conventional group at 6 months. Cosmetic outcomes were rated more acceptable in the dermatoscopy-guided cohort, as limited, targeted ablation minimized tissue damage. Adverse events were mild and comparable between both groups. Dermatoscopy-guided RF ablation resulted in better cosmetic outcomes and lower recurrence without increasing adverse events, supporting its routine integration into wart management.***

Keywords: facial warts, dermatoscopy-guided treatment, radiofrequency ablation, cosmetic outcomes, recurrence prevention

1. Introduction

Cutaneous verrucae are a common benign epidermal outgrowth following infection with Human Papilloma virus infection (HPV). Facial verruca vulgaris causes significant cosmetic and psychosocial distress. While RF ablation is an effective modality, incomplete clearance leads to recurrence and extensive removal causes scarring. Dermatoscopy provides enhanced visualization of inconspicuous marginal and satellite lesions enabling more precise ablation. Few prospective studies have compared conventional versus dermoscopy-guided RF ablation (1). This study aims to evaluate recurrence post ablation in dermatoscopic guided vs conventional group for better therapeutic outcomes as well cost effectiveness to the patient. This study also aims to explore cosmetic outcomes, and adverse events with these two approaches.

2. Methods

This was a prospective observational study in the outpatient department of Rama Medical College Hospital and Research Centre, Hapur. Patients aged (≥18 years) with clinically diagnosed facial verruca vulgaris who were: non-diabetic, negative retroviral serology, and not on immunosuppressive medication were included. Patients who were pregnant, lactating, active local infection, prior treatment to the same lesion within 8 weeks, and history of keloidal tendency were excluded.

3. Study Size

A convenience sample of 100 patients was included, with 50 in each treatment cohort. No formal sample size calculation was performed, as this was an exploratory study. An informed consent was taken. Clinical examination was done and dermoscopic evaluation was performed using Heine Delta 20 T dermatoscope (polarized mode, without interface) and photographs were captured by Apple Iphone 12. Demographic and clinical details were noted. All lesion were examined dermatoscopically and in dermatoscopy group removal of all lesions was done under its guidance. Polyvinyl chloride food wrap (plastic wrap) was applied on the lesions before placing the dermoscope to prevent cross infections. Warts were identified by standard dermatoscopic features such as vascular structures, black dots, papillae, and haloes on a background of brown pigmentation[(1)].

Procedure protocol:

- Group A (Conventional group) (n=50): RF ablation performed by clinical visualization only.
- Group B (Dermoscopy group) (n=50): Lesion margins were mapped before ablation; intra-procedural checks ensured complete clearance; post-ablation dermoscopy confirmed absence of wart-specific structures and vascular dots.

Consecutive patient inclusion minimized selection bias. Allocation was based on clinic schedule, avoiding operator preference. Outcome assessors at follow-up were blinded to the intervention cohort. Patients were reviewed at 1 month and 6 months post-treatment. Patient satisfaction was assessed using Patient global assessment scale [(2)] from 0-5; 0- complete resolution to 5- completely dissatisfied (annexure 1). Interim visits were allowed if recurrence was suspected. Descriptive statistics (mean ± SD, percentages) were used. As recurrence events were few, no formal hypothesis testing was performed.

4. Results

A total of 100 patients with facial verruca vulgaris were included, group A comprising of 50 patients treated by conventional RF ablation and group B having 50 patients treated with dermatoscopy-guided ablation. The mean age of patients was 28.4 ± 9.6 years (range 18–52), with no significant difference between groups. The male-to-female ratio was approximately 1:1.1 (47 males, 53 females). Both

groups were comparable in the duration and number of warts (Table 1).

At 1 month post-treatment, the mean lesion count was 0 in both groups, confirming complete clearance. However, by 6 months, recurrence occurred in the conventional group, with a mean lesion count of 1.4 ± 1.9 (range 1–7), whereas the dermoscopy-guided group maintained a mean lesion count of 0 (Table 2).

Patient satisfaction was measured using the Patient Global Assessment (PGA) scale (0–5). At baseline, score was poor in both groups (4.6 vs 4.8). At 1 month, scores improved in both cohorts but were significantly lower in the dermoscopy group (2.9 vs 1.9). At 6 months, PGA score remained low in the dermoscopy group (1.8 vs 0.6) reflecting better cosmetic outcomes and absence of recurrence (Table 3).

Table 1: Demographic and Baseline Characteristics of Patients

Characteristic	RF without Dermoscopy (n=50)	RF with Dermoscopy (n=50)
Mean Age (years, ±SD)	28.7 ± 9.4	28.1 ± 9.8
Male: Female	24:26	23:27
Mean Duration of Warts (months)	18.6 ± 16.2	18.0 ± 15.8
Baseline Lesion Count (range)	1–28	1–30

Table 2: Mean Lesion Count Pre- and Post-Treatment (N=100)

Time Point	RF without Dermoscopy (n=50)	RF with Dermoscopy (n=50)	P value
Pre-treatment	8.5 ± 6.1	8.7 ± 6.7	0.08
1 month post-treatment	0	0	<0.05
6 months post-treatment	1.4 ± 1.9	0	<0.05

Table 3: Mean Patient Global Assessment (N=100)

Time Point	RF without Dermoscopy (n=50)	RF with Dermoscopy (n=50)	P value
Pre-treatment	4.6 ± 0.5	4.8 ± 0.7	0.160
1 month post-treatment	2.9 ± 0.7	1.9 ± 0.7	0.001
6 months post-treatment	1.8 ± 0.6	0.6 ± 0.5	0.001

5. Discussion

Cutaneous warts are common epidermal outgrowths with a population prevalence of 1.3-1.6% in those aged 21-35 years[3]. They often go unnoticed due to their benign nature and lack of symptoms; lesions on face present earlier to clinics for consultation and treatment. Verruca vulgaris are morphologically small, flesh coloured dome shaped, hard, rough surfaced papules or rarely plaques on mainly exposed sites such as face and limbs [4,5] .

Papules on face can often be misdiagnosed as other lesions such as seborrheic keratoses, dermatosis papulosa nigra or actinic keratoses. Dermatoscopy helps in differentiation of these lesions from warts. General dermoscopic features are presence of a vascular component reflecting the dilated and thrombosed vessel within the papillary dermis over red to hyperpigmented background[1]. Verruca vulgaris occasionally show densely packed papillae with central red dot/loop surrounded by whitish haloes[6].

Patients with a prior history of failed treatment and/or a longer duration of illness had a higher level of dissatisfaction[7]. They often present for treatment due to cosmetic disfigurement related social stigma. Radiofrequency ablation is a cosmetically acceptable, destructive modality mostly requiring one treatment session, less healing time and can be used in all type of warts with good patient satisfaction[1,4]. Lipke et al combined curettage with cautery for wart removal, reporting a success rates of 65–85%, but scarring and recurrence occured in up to 30% of patients[5] To the best of our knowledge, there are no published RCTs for this treatment.

In another study RF cautery has shown superior results with 96% clearance rates after single session and no recurrence after 1 year. The heat generated during procedure promotes release of cytokines that aid in regression of warts[8] . Agarwal et al studied the cure rates in dermoscopy assisted RFA of verruca vulgaris, verruca plana and palmoplantar warts with 51/55 showing complete clearance and recurrence after 6 months in 4 cases. This suggests beneficial role of dermoscopy in monitoring the lesion real time after any ablative procedure as it will help in reducing recurrences and repeated procedures[1].

A study by Chuh et al demonstrated superior clearance and lower scarring with dermatoscopy guided removal of lesions ≤ 4mm [9]. Our study demonstrates that dermoscopy-guided RF ablation yields superior cosmetic outcomes and zero recurrence at 6 months, compared with a 8% recurrence rate after conventional RF. Dermoscopy permits precise lesion mapping, reducing unnecessary tissue destruction, thereby minimizing scars and pigmentation changes [10].

Importantly, adverse events remained comparable, indicating that dermoscopy adds benefit without additional risk. These findings support integrating dermoscopy into routine wart management, especially in cosmetically sensitive facial areas. Strengths of the study include the prospective design, standardized eligibility criteria, and systematic follow-up. Limitations are the non-randomized cohort allocation, single-center setting, use of patient-reported cosmetic outcomes without objective scoring, and relatively short 6-month follow-up.

6. Conclusion

Dermoscopy-guided RF ablation of facial verruca vulgaris significantly improved cosmetic outcomes and eliminated recurrence at 6 months, without additional adverse events. Dermoscopy should be considered a valuable adjunct in RF ablation of facial warts.

References

[1] Agarwal M, Khunger N, Sharma S. A Dermoscopic Study of Cutaneous Warts and Its Utility in Monitoring Real-Time Wart Destruction by Radiofrequency

Ablation. *J Cutan Aesthet Surg*. 2021;14(2):166-171. doi:10.4103//J.CAS.JCAS_47_20

[2] Ryu HR, Jeong HR, Seon-Woo HS, Kim JS, Lee SK, Kim HJ, et al. Efficacy of a bleomycin microneedle patch for the treatment of warts. Drug Deliv Transl Res. 2018;8(1):273–80.

[3] Liu J, Li H, Yang F, Ren Y, Xia T, Zhao Z, et al. Epidemiology and Clinical Profile of Cutaneous Warts in Chinese College Students: A Cross-Sectional and Follow-Up Study. Sci Rep [Internet]. 2018;8(1):1–8.

[4] Sterling JC, Gibbs S, Haque Hussain SS, Mohd Mustapa MF, Handfield-Jones SE. British Association of Dermatologists' guidelines for the management of cutaneous warts 2014. Br J Dermatol. 2014;171(4):696–712.

[5] Lipke MM. An armamentarium of wart treatments. Clin Med Res. 2006;4(4):273–93.

[6] Vázquez-López F, Marghoob AA. Dermoscopic patterns of common warts. Arch Dermatol. 2004;140(6):731–6.

[7] Mohta A, Jain SK, Kushwaha RK, Singh A, Gautam U NA. Estimating the Impact of Extragenital Warts versus Genital Warts on Quality of Life in Immunocompetent Indian Adult Patients: A Comparative Cross-Sectional Study. Indian J Dermatol [Internet]. 2021;66(1):44–8.

[8] Khandelwal K, Bumb RA, Mehta RD, Ghiya BC, Satoskar AR. Long-term efficacy of radiofrequency ablation in treatment of common and palmo-plantar warts. Australas J Dermatol. 2013;54(4):307–9.

[9] Chuh A, Zawar V, Sciallis G, Fölster-Holst R. Outcomes of dermoscope-guided surgical procedures in primary care: case-control study. J Prim Health Care. 2019 Apr;11(1):54-63.

[10] Tosti A, Argenziano G, et al. Role of dermoscopy in monitoring treatment response of viral warts. J Am Acad Dermatol. 2004;50(6):969–73.

Images:

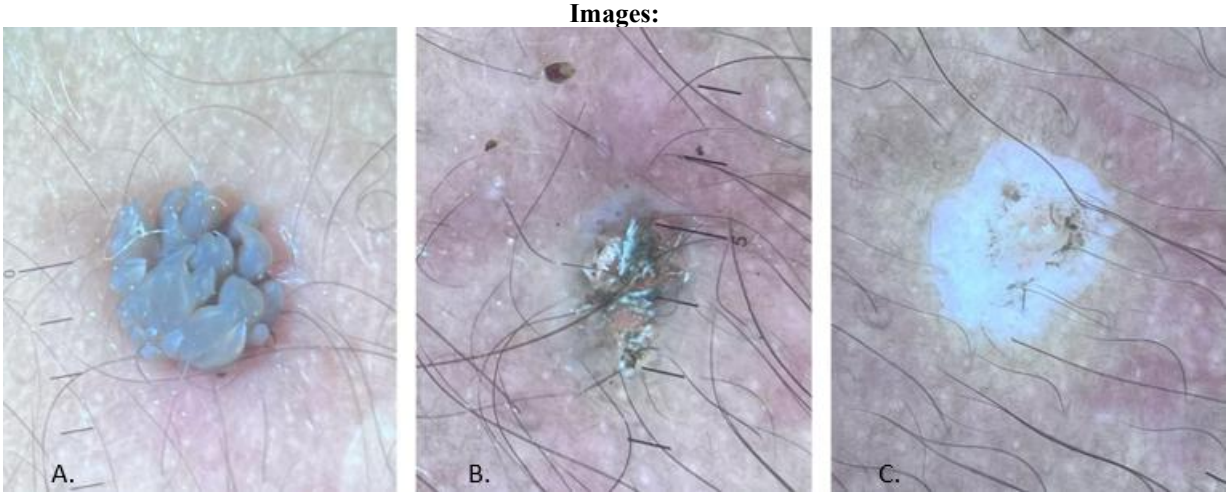

Figure 1:

A. Dermatoscopic view of Verruca vulgaris pre-treatment.
B. Dermatoscopic examination still displays lesion remnant after RF Ablation.
C. Dermatoscopy guided removal of remanant reveals clear white base without wart- like structures.