

# Microwave Therapy for Plantar Warts: A Chart Review



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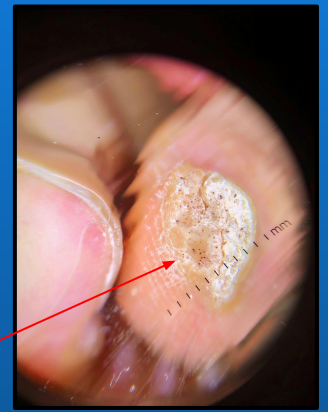


# Background

- Verrucae Plantaris/ Plantar warts are commonly caused by the human papillomavirus (HPV) types 1, 2, 4, 27, or 57<sup>1</sup>
- Existing treatment modalities with respective mean clearance rates: cantharidin (80%), salicylic acid (24%)<sup>4</sup>, cryotherapy (39%)<sup>4</sup>, injected bleomycin (92%)<sup>5</sup>, fluorouracil 5% (70%)<sup>5</sup>, and pulse-dye laser (66%)<sup>6</sup>.
- Microwave therapy: newest FDA approved agent for verruca treatment
  - Uses microwave energy, which are part of the of the electromagnetic spectrum, to cause water molecules to align and collide, creating friction, and subsequently rapid heating of the tissue into the hyperthermic range (41-45°C)<sup>1</sup>
  - Increase in localized tissue temperature results in a cascade of host immunomodulatory effects against the HPV infection itself<sup>1</sup>
  - Reported to also enhance the cross-presentation of keratinocyte dendritic cells that are key for the host immune defense against HPV<sup>2 3</sup>
- Current uses of microwave therapy in dermatology include: plantar warts, corns, fungal infections, actinic keratoses<sup>1</sup>
- Shown promising results in the clearance of recalcitrant plantar warts
- Our research is among the first to study the overall success of microwave therapy in plantar warts at such a scale

# Methods

- A retrospective, single center chart review of microwave therapy as treatment modality used for plantar warts
- Conducted at the Temple University Foot and Ankle Institute in Philadelphia, PA from 2019 to 2022
- A dermatoscope was used to confirm the disappearance of thrombosed capillaries and return of skin lines (dermatoglyphics)
- Patient Demographics:
  - 27 Male and 29 Female patients (56 total)
  - Average age: 38 years
  - Previous failed treatments included *salicylic acid*, *bleomycin injections*, *cantharone or cantharone plus*, *cryotherapy*, and *pulse dye lasers*
- Range: 4 watts to 10 watts, 2 seconds each, for 5 rounds per lesion
  - Energy dosing varies depending type of lesion, thickness of skin, and patient tolerance
- Descriptive statistic measures used to analyze the overall success of microwave therapy



Dermoscopic view of digital lesion at initial visit



Dermoscopic view of resolved digital lesion at final visit

# Results

- Most common wart location was rearfoot, followed by submetatarsal 1 and hallux
- 42 patients showed resolution of plantar warts
- 12 patients' warts were not resolved - patients continued treatment with *pulsed-dye laser*, *candida albicans*, *intra-dermal injections*, and *cantharidin*
- 2 patients were lost to follow-up
- Overall, there was 78% complete resolution of plantar warts

## Submetatarsal 1 Lesion



Initial visit- 1st Treatment



Month 1- 2nd Treatment



Month 2- Resolved

# Discussion

- Our findings show that microwave therapy for patients who have exhausted other treatment modalities has been successful in wart resolution
- Microwave therapy can be used as a first line treatment for new and recalcitrant plantar warts
- Future studies include a randomized, controlled study with a larger population size

## References

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