

## AUTOIMPLANTATION – A SIMPLE AND EFFECTIVE TREATMENT OF MULTIPLE AND RESISTANT WARTS

Dr. G BHARATHI<sup>1</sup>, Dr. G USHA<sup>2</sup>, Dr. A VIJAYA KUMARI<sup>3\*</sup>, Dr. K. SRIDEVI<sup>4</sup>

1. Assistant Professor, Department of Dermatology, Sri Venkateswara Medical College, Tirupathi, Andhra Pradesh, India

2. Associate Professor, Department of Dermatology, Sri Venkateswara Medical College, Tirupathi, Andhra Pradesh, India

3\*. Assistant Professor, Department of Dermatology, Government Medical College, Ananthapuram, Andhra Pradesh, India

4. Professor, Department of Dermatology, Sri Venkateswara Medical College, Tirupathi, Andhra Pradesh, India

Corresponding Author:

Dr. A. Vijaya Kumari

Email id: drvijayakabburam@gmail.com

### ABSTRACT:

**Background:** Treatment of multiple warts is one of the challenges dermatologists face because of their persistent and resistant nature. Patients with warts are treated with a variety of medical and surgical methods, but their resistance requires innovative treatment options to prevent recurrence. Auto-implantation is a simple procedure which is yielding good results after single treatment session.

**Aims and Objectives:** To determine the efficacy of subcutaneous auto-implantation of wart tissue for the treatment of viral warts and to ascertain whether auto-implantation therapy reduces the number, size, and recurrence of warts.

**Materials and Methods:** Between March 2021 and February 2022, 36 patients with persistent warts underwent homologous auto-implantation after harvesting full depth wart tissue. Patients were monitored for recurrence over a total period of six months.

**Results:** Verrucae occurred most frequently in individuals aged 18 to 27 years (72.22%). With a male-to-female ratio of 2.27:1, more males were affected than females were infected in the current investigation. In the current study, common warts were the most common type with 18 cases (50%), followed by periungual warts in 9 cases (25%), palmar and plantar warts were observed in 6 cases (16.67%). Three patients (8.33%) had planar warts. In our study, the earliest response to auto-implantation therapy was observed after four weeks and most patients were cured of their lesions after 12 weeks. In current study, the average auto-implantation cure rate was 69.3%.

**Conclusion:** Auto-implantation therapy is a safe, simple and effective treatment for resistant and multiple warts. Therefore multiple recalcitrant warts can be successfully treated with auto-implantation therapy.

Keywords: recalcitrant warts, auto-implantation, human papillomavirus, immunotherapy.

## **INTRODUCTION:**

Infection of basal keratinocytes with human papillomaviruses result in benign growths called skin warts or verrucae. Based on the complete characterization of 120 HPV genomes and extraction of additional partial DNA sequences, at least 200 different HPV genotypes have been identified [1]. Viral replication occurs only in keratinocytes that have achieved complete differentiation that results cell proliferation [2]. Most of the warts require treatment, but some regress on their own. Patients seek therapy for a variety of reasons, including their unattractive appearance, pain and discomfort. Optimal therapeutic goals in the treatment of warts are prevention of recurrence, scarless removal and induction of lifelong immunity [3].

Because of the potential for spread to nearby sites and contacts, as well as the risk of deformity and psychosocial effects there is a significant and ongoing need for a cure. Cryosurgery, laser, electrosurgery, curettage, and topical keratolytics are some of the currently available alternatives, but they are usually painful and have limitations due to recurrence [3]. Therefore, all dermatologists recognise the need for targeted immunotherapy aimed at distant warts (i.e., those that cannot be treated directly), especially in cases of multiple warts and warts in hard-to-reach locations [3]. Immunotherapy has been studied with diphenylcyclopropenone, squaric acid dibutyl squarate, imiquimod, tuberculin jelly, Candida antigen, and autologous immunization, but none have proven to be successful. Warts can be treated in a single session by homologous auto-implantation or auto-implantation by eliciting a strong cell-mediated immune response [4, 10]. A small portion of the wart tissue is excised and embedded under the skin in this procedure. With this in mind, we decided to conduct a study to determine the efficacy of auto-implantation therapy, an innovative approach to the treatment of numerous and recalcitrant warts.

## **MATERIAL AND METHODS:**

In Tirupathi, Andhra Pradesh, the Dermatology/DVL department of Sri Venkateswara Medical College DVL, conducted this study of 36 cases over the course of a year, from March 2021 to February 2022. The study included patients with recalcitrant warts, multiple recalcitrant warts and those with warts at difficult-to-treat sites. Patients who were not willing to participate and immunocompromised individuals were not enrolled in the study. All patients gave their prior written consent after being fully informed.

### **Procedure of auto-implantation:**

Wart tissue for auto-implantation was prepared under strict aseptic conditions by cutting the wart with an 11-inch blade and crushing it between two sterile glass slides to form a thin, film-like material. After local anaesthesia, an 18-gauge needle was used to create a subcutaneous pocket on the ventral surface of the non-dominant forearm. The inoculum was then implanted with fine curved forceps and the area was subsequently plastered. The patient was advised oral antibiotics for five days and was instructed to return one week later for a dressing change. Results were recorded and analyzed at four, eight, and twelve weeks. The patients were monitored for recurrences over a six month period.

**OBSERVATIONS/RESULTS:**

The study included a total of 36 cases.

**Table No. 1 Demographic data of patients in the study group**

		No. of patients	Percentage
<b>Age</b>	18 – 27 years	26	72.22%
	28 - 37 years	10	27.78%
<b>Gender</b>	Male	25	69.44%
	Female	11	30.56%
<b>Occupation</b>	Students	23	63.89%
	Agricultural labourers	8	22.22%
	House wives	5	13.89%

The higher incidence among student population may be attributed to close contact. A greater risk of suffering trauma that facilitates viral entry, may explain the higher prevalence among housewives and workers.

**Table 2: Duration of warts:**

S.No	Duration	Percentage of patients
1.	0 – 12 months	50%
2.	13 – 24 months	46.67%
3.	24 – 36 months	3.33%

**Table 3: Type of warts observed in patients**

S.No.	Type of warts	No. of patients	Percentage
1	Common warts	18	50%
2	Periungual warts	9	25%
3	Palmar and plantar warts	6	16.67%
4	Plane warts	3	3.33%
5	Total	36	100%

The earliest response was observed in the current study at the fourth week after auto-implantation. In our study, 10 patients had 100% clearance, while 7 had no response. The response rate in 4 patients ranged from 0 to 25%. The response rate in 6 patients ranged from 26 to 50%. In 3 patients the response rate ranged from 51 to 75%. The success rate was determined by the resolution of warts.

A cure rate of 75-100% was observed in patients in the 18-27 age group and a cure rate of 0-25% was observed in 28–37 age group. In males, the cure rate ranged from 75-100% when compared to females, which might be due to the higher number of males participating in the study. Periungual and common warts responded well to auto-implantation, while planar warts were relatively resistant. In the present study, warts of shorter duration responded better to

treatment. Warts on the extremities responded better to auto-implantation therapy. In all cleared cases, no recurrences were observed up to a follow-up period of six months.

Of 36 cases, no complications occurred in 26 cases or 73%, in the present study. Six patients developed postinflammatory hyperpigmentation at the inoculation site, which regressed spontaneously in the following months. One patient developed a secondary infection at the inoculation site.

**Fig 1. Periungual warts:**



**1a. Before therapy**



**1b. After 12 weeks of autoimplantation**

**Fig 2. Plantar warts**



**2a. Before therapy**



**2b. After 12 weeks of therapy**

**Fig 3. Multiple warts****3a. Before treatment****3b. After 12 weeks of autoimplantation treatment****DISCUSSION:**

Studies investigating the possibility of immunotherapy for warts are often open-label or nonrandomized, making it difficult to evaluate the results. For the same reason, a comprehensive study of wart treatment failed to confirm local immunotherapy [5]. Previous studies, have found that immunotherapy promotes the production of Th1 cytokines which down regulate HPV gene transcription and cause a strong induction of cell-mediated immunity [5].

A recent review recommended intralesional antigen immunotherapy (Candida, mumps skin test antigen, MMR vaccine) as initial treatment for persistent warts that have not healed despite destructive therapies, large warts, warts associated with distant lesions, warts on difficult sites (e.g. periungual warts), and numerous warts [6]. Three previous studies reported that 66-74% of patients responded to autoimplantation therapy [4,7,8]. Previous studies showed that virus-specific IgG and IgM antibodies and delayed viral hypersensitivity were increased after auto-implantation therapy [8].

The primary aim of the present study was to investigate the efficacy of auto-implantation therapy in the treatment of multiple warts as well as the numerous clinical-epidemiological characteristics of warts, including their frequency by age and sex, their duration, the sites of their occurrence, etc.

**Table 4: Comparison of previous studies based on the cure rate of autoimplantation**

S.No.	Study	Year	Cure rate (Percentage)
1	Present Study	2021	69.3%
2	Gulanikar et al. <sup>10</sup>	2018	88%
3	NR Lal et al. <sup>9</sup>	2014	62.5%
4	Srivastava <sup>7</sup>	2010	66.4%
5	V. Shiva Kumar <sup>4</sup>	2009	73.3%

Our study showed a cure rate of 69.3% similar to the 2010 study done by Srivastava et al. 66.4%. Further auto-implantation sessions in patients with partial improvement did not result in regression of warts in the study done by Srivastava et al. [7]. The majority of respondents (91%) in the study done by Siva Kumar et al. showed healing of warts within two months [4].

**CONCLUSION:** Our study reveals that homologous auto inoculation therapy is a minimally invasive, cost effective and day care procedure with better patient compliance and effective in treating recalcitrant and multiple warts especially periungual and difficult to reach warts with zero recurrence rate.

**Limitations:** Smaller sample size

**Conflicts of interest:** None

**Funding:** None

**Authors Contribution:**

All authors have contributed to the study conception, design and research. Research study was conducted by Dr. G. Bharathi, Dr. G. Usha and monitored by Dr. K. Sridevi. Material collection, data analysis and data interpretation was done by Dr. G. Bharathi, Dr. G.Usha and Dr. A. Vijaya Kumari. The initial manuscript was drafted by Dr. G. Bharathi and Dr. K. Sridevi performed the critical review. Final draft of manuscript was prepared by G. Bharathi, Dr. G. Usha and Dr. A. Vijaya Kumari. All authors read and approved the final manuscript before submission.

**REFERENCES:**

1. Gheit T. Mucosal and Cutaneous Human Papillomavirus Infections and Cancer Biology. *Front Oncol.* 2019 May 8;9:355. doi: 10.3389/fonc.2019.00355. PMID: 31134154; PMCID: PMC6517478
2. Gopal V, Shenoy MM, Pinto M. Common warts revisited: a clinical study. *Int J Res Dermatol.* 2017;3:261-6.
3. Sterling JC, Handfield-Jones S, Hudson PM; British Association of Dermatologists. Guidelines for the management of cutaneous warts. *Br J Dermatol.* 2001 Jan;144(1):4- 11. doi: 10.1046/j.1365-2133.2001.04066.x. PMID: 11167676.
4. Shivakumar V, Okade R, Rajkumar V. Autoimplantation therapy for multiple warts. *Indian J Dermatol Venereol Leprol.* 2009 Nov-Dec;75(6):593-5. doi: 10.4103/0378- 6323.57721. PMID: 19915240.
5. Gibbs S, Harvey I, Sterling J, Stark R. Local treatments for cutaneous warts: systematic review. *BMJ.* 2002 Aug 31;325(7362):461. PMID: 12202325; PMCID: PMC119440.

6. Nofal A, Salah E, Nofal E, Yosef A. Intralesional antigen immunotherapy for the treatment of warts: current concepts and future prospects. *Am J Clin Dermatol*. 2013 Aug;14(4):253-60. doi: 10.1007/s40257-013-0018-8. PMID: 23813361.
7. Srivastava PK, Bajaj AK. Autowart injection therapy for recalcitrant warts. *Indian J Dermatol*. 2010 Oct;55(4):367-9. doi: 10.4103/0019-5154.74548. PMID: 21430892; PMCID: PMC3051299.
8. Nischal KC, Sowmya CS, Swaroop MR, Agrawal DP, Basavaraj HB, Sathyanarayana BD. A novel modification of the autoimplantation therapy for the treatment of multiple, recalcitrant and palmoplantar warts. *J Cutan Aesthet Surg*. 2012 Jan;5(1):26-9. doi: 10.4103/0974-2077.94332. PMID: 22557852; PMCID: PMC3339124.
9. Lal NR, Sil A, Gayen T, Bandyopadhyay D, Das NK. Safety and effectiveness of autoimplantation therapy in cutaneous warts: a double-blind, randomized, placebo-controlled study. *Indian J Dermatol Venereol Leprol*. 2014 Nov-Dec;80(6):515-20. doi: 10.4103/0378-6323.144146. PMID: 25382508.
10. Gulanikar AD, Bhide DS, Pethe SA. Autoimplantation therapy for recalcitrant viral warts. *Clin Dermatol Rev* 2018;2:74-7.
10. Nischal KC, Sowmya CS, Swaroop MR, Agrawal DP, Basavaraj HB, Sathyanarayana BD. A novel modification of the autoimplantation therapy for the treatment of multiple, recurrent and palmoplantar warts. *J Cutan Aesthet Surg*. 2012 Jan;5(1):26-9. doi: 10.4103/0974-2077.94332. PMID: 22557852; PMCID: PMC3339124.