

# CYCLOIDAL VIBRATION THERAPY (VIBRO-PULSE®) A PATIENT CASE STUDY. TREATMENT OF VENOUS LEG ULCERATION AND CELLULITIS.

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### Summary:

- 91 year old female patient
  - Bilateral venous leg ulcer, duration 4 months plus, daily dressing changes due to exudate, develops cellulitis.
- Cycloidal Vibration therapy. (Vibro-Pulse®)**
- Week 2: Right leg - cellulitis healed, ulcer healed. Left leg - ulcer 48% reduction. cellulitis reduced.
  - Week 4: Right leg - healed. Left leg - cellulitis healed, ulcer 70% reduction.
  - Week 8: HEALED.

### Introduction

Cycloidal Vibration Therapy (Vibro-Pulse®) has been used to treat both Cellulitis and Venous leg ulceration in previous separate studies.

Cycloidal Vibration therapy (Vibro-Pulse®) does not apply a compressive force but it has been demonstrated to increase microcirculation / blood flow, lymphatic activity and fluid turnover in skin tissue (1). This has been shown to increase the healing rates of long term venous leg ulcers (2) and in a randomised controlled trial reduce the treatment time of Cellulitis by up to 50% compared to standard therapy. Vibro-Pulse® increases microcirculation improving the potential delivery of the antibiotics to treat the infection and reduces the associated oedema at the same time (3).

An evaluation was undertaken applying Vibro-Pulse® to a patient with bilateral venous leg ulceration that had also developed bilateral Cellulitis.



Left leg before treatment



Right leg before treatment



Left leg after 4 weeks



Right leg after 4 weeks

### References

- 1) Ryan T J, Thoolen M, Yang Y (2001) The effect of mechanical forces (vibration and external compression) on the dermal content of the upper dermis and epidermis assessed by high frequency ultrasound. J Tiss Viab 11(3): 97-101.
- 2) J.M. Wilson, Y.M. Arseculeratne, Y. Yang, G.W. Cherry Healing venous ulcers with cycloidal multidirectional vibration therapy". Oxford Wound Healing Institute. Churchill Hospital. Oxford UK. Journal of Wound Care Vol 11, No 10, November 2002

### Patient details

The patient was a 91 year old female with a history of memory loss and hypertension. She had been admitted to residential care and presented to the nurse and tissue viability team with bilateral venous leg ulceration. Although the exact length of time that these had been present was unknown it was obvious that the patient had developed the ulcers a considerable time prior to admission. The patient was immobile and very frustrated.

### Wound assessment and treatment.

There were significant amounts of exudate from the patient's wounds as a result they required daily dressing and 3 layer compression bandage changes for 4 months using Paratex dressings, Double base cream and Profore bandages 1, 2 and 4. The patient then developed bilateral Cellulitis and was prescribed oral antibiotics of Flucloxacilin 500mgs QDS. She was also introduced to Vibro-Pulse® treatment.

Before commencing Vibro-Pulse® the leg ulcers were 0.5cm at the deepest point. Left leg ulcer measured 16 x 17 cm and right leg ulcer measured 7 x 9 cm. Oedema: circumference of the left calf 49cm and right calf 34.5cm. The patient often interfered with her bandaging and frequently stated that her legs were very painful recording 4 on a 0 to 5 pain scale (0 = no pain to 5 = severe). Due to Cellulitis the surrounding skin was inflamed with erythema.

Cycloidal Vibration Therapy (Vibro-Pulse®) commenced 3 x a day for 30 minutes on each leg

the patient self administering the treatment assisted by staff from the residential home.

### Results

#### After 2 Weeks of Vibro-Pulse®

The right leg Cellulitis had fully resolved, left leg Cellulitis had significantly improved but some inflamed erythema remained. The patient had started a course of oral co-amoxiclav.

Right leg venous ulcer had healed 100%. Left leg ulcer had reduced in size by 48% and measured 9 x 16cm. Oedema: 10% reduction in the circumference of her left calf and no change in the right. The patient recorded a Pain score of 1 commenting her pain had dramatically reduced including the amount of analgesia (paracetamol) she required. Dressing and bandage changes had reduced to every other day due to the patient's improvement.

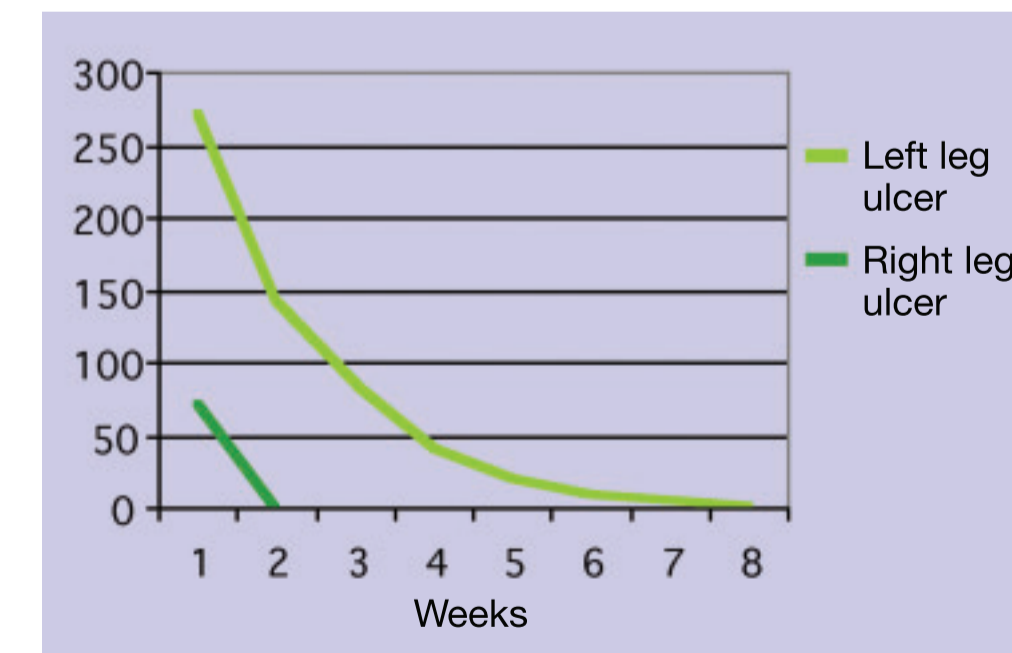
#### After 4 Weeks of Vibro-Pulse®

Cellulitis remained resolved in the right leg and had fully resolved in the left leg. Right leg venous ulcer remained healed. Left leg ulcer had reduced in size by 70% and measured 7 x 12 cm. No change in calf circumference measurements and the patient recorded a pain score of 0. Dressings and bandage changes during this period had reduced to every 4 days.

#### After 8 Weeks of Vibro-Pulse® :

Cellulitis remained resolved. The right venous leg ulcer remained healed and the left venous leg ulcer had reduced by 99.3% with 2 cm sq remaining. The patient healed shortly afterwards and was placed in compression hosiery.

Patient Satisfaction: The patient found Vibro-Pulse very easy to use and relaxing falling a sleep on most occasions. Due to the improvement her quality of life has vastly improved and she is much more mobile.



### Cost comparison of treatment at time of evaluation.

	BEFORE	AFTER
Duration of bilateral leg ulceration/Cellulitis	4 months	2 months
Dressing changes per week	7 (daily bilateral ulcers)	7 daily bilateral for 2 weeks (right leg healed.) 3 x a week for 2 weeks (left leg only) 8 x for 4 weeks (left leg only)
Total Number of Dressing changes	242	42
Nursing Time £30.25 per 30 minutes 40 minutes per visit (4)	121 visits £4906	28 visits £847
Dressing and bandaging costs £5.20 per leg ulcer. (5)	£1258.40	£217.16
Vibro-Pulse® £14.00 per day.	-	£840
	Total cost of treatment to date <b>£6164.40</b>	Total cost to heal using VIBRO-PULSE® <b>£1904.16</b>

### Discussion

Cellulitis can commonly occur due to wounds or leg ulceration, Cycloidal Vibration Therapy (Vibro-Pulse®) in separate studies has shown effective results for treating venous leg ulceration and Cellulitis. This case study is an example of using Vibro-Pulse to treat both conditions at the same time. We would also like to emphasise the psychological impact this treatment had on the patient, the pain reduction experienced resulted in the patient taking more of an active positive role in her own treatment.

### Conclusion

Cycloidal Vibration Therapy in this case was a clinically and cost effective treatment for a patient with both active Cellulitis and venous leg ulceration.



- 3) S. Johnson, Leak K, Tan P et al (2007) Can cycloidal vibration plus standard treatment reduce lower limb cellulitis treatment times? Journal of Wound Care 16(4): 166-169
- 4) Netten A, Curtis L (2006) Unit Costs of Health and Social Care 2006. Personal Social Services Research Unit, University of Kent.
- 5) Drug Tariff. June 2008.