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Review

Recurrence of venous leg ulceration

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ABSTRACT

Published literature consists of a broad range of venous leg ulcer (VLU) recurrence rates. Therefore, to assess the recurrence rate of VLU a search and review of published data was performed using the MEDLINE OvidSP, EMBASE, Web-of-Science, PubMed publisher and Cochrane Library. The resulting data demonstrate VLU recurrence rates ranging from 0% at 6 months to 56% at 54 months. Two studies mention VLU recurrence at 60 months, with VLU recurrence rates of 19 and 48% respectively. Only three studies are comparable with regard to treatment and demonstrate VLU recurrence of 17, 17 and 25% at 12 months. In conclusion, this is the first study summarising high-level evidence with regard to VLU recurrence demonstrating a tendency that even after several years recurrence rates still increase. The results of this study, high recurrence rates indicate the need for new strategies after a VLU has healed.

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Introduction

Chronic venous disease (CVD) of the lower extremity is a very common medical condition caused by venous hypertension as a consequence of reflux, obstruction, or a combination of both [1]. Besides the socioeconomic problem CVD gives rise to disability and loss of quality of life [2]. Studies on incidence and prevalence differ depending on the age range of the study population since the strongest indicator for CVD is age. One of the latest epidemiological studies on CVD is the Bonn Vein Study which forms a representative cross-section of the community [3]. According to the clinical score in the CEAP-classification the investigated study population with an age range of 18 to 79 years the prevalence of

CVD was 90.4% and divided as follows: C0 9.6%, C1 59.1%, C2 14.3%, C3 13.4%, C4 2.9%, C5 0.6% and C6 0.1%. Primary CVD is far more prevalent than secondary CVD, the former accounting for about three-quarters of lower extremities with this disorder [4]. Leg ulceration is the severest manifestation of CVD and is present in up to 0.5% and between 0.6 and 1.4% has healed venous leg ulcers (VLU) [5]. Fifty percent of VLU will heal within 12 weeks, but about 8% of the treated ulcers do not heal after 5 years [6,7]. VLU recurrence rates after healing are high. However, there is a large variation in published recurrence rates.

Methods

Therefore, to assess the recurrence rate of VLU a review of published data was performed. We performed a search using the MEDLINE OvidSP, EMBASE, Web-of-Science, PubMed publisher

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Table 1
Venous leg ulcer recurrence. All prospective studies included between 1996 and 2013, on condition that recurrence rates and duration were mentioned/ estimated.

	Number of VLU			VLU recurrence	
	C5	C6	C5+C6	%	At time (months)
Nelzén et al. (1997) [11]	–	206	206	56 ^a	54
Ghuri et al. (1998) [14]	–	176	176	21 ^b	6
Rhodes et al. (1998) [18]	20	22	42	23 ^b	12
				7 ^c	12
				12 ^c	24
Gloviczki et al. (1999) [17]	21	101	122	30 ^c	36
				16 ^d	12
				28 ^d	24
Barwell et al. (2000) [23]	101	512	613	39 ^d	36
				25 ^e	12
				31 ^e	24
Barwell et al. (2000) [24]	–	633	633	38 ^e	36
				13 ^e	6
				17 ^e	12
Ghuri et al. (2000) [19]	–	336	336	13 ^{e,f}	48
				17 ^g	48
Sybrandy et al. (2001) [25]	–	39	39	37 ^h	36
McDaniel et al. (2002) [21]	–	99	99	48 ^h	60
				9 ⁱ	31.7*
Zamboni et al. (2003) [26]	–	47	47	38 ^j	31.7*
Gohel et al. (2005) [22]	320	1004	1324	17 ^e	12
Van Gent et al. (2006) [27]	–	196	196	22 ⁱ	24
Nelzén et al. (2007) [20]	44	53	97	23 ^c	24
				19 ^c	60
Gohel et al. (2007) [10]	159	341	500	31 ⁱ	48
				56 ^j	48
Darvall et al. (2009) [16]	–	28	28	7 ^j	12
Nael et al. (2010) [12]	–	29	29	17 ^j	0.23*
				20 ⁱ	2.8*
				26 ⁱ	5.5*
Christenson et al. (2011) [13]	–	91	91	14 ^m	36
Kulkarni et al. (2012) [28]	163	37	200	4.7 ⁱ	12
				28.1 ⁱ	48
Clarke-Moloney et al. (2012) [15]	100	–	100	16.1 ⁱ	12
Harlander-Locke et al. (2012) [9]	21	–	21	0 ⁿ	6
				4.8 ⁿ	12
				4.8 ⁿ	18

* Original data calculated to months.

Read out from Kaplan–Meier curve.

^a Observational study, conservative treatment or any surgical treatment.

^b Compression therapy with or without venous surgery (saphenous vein (s) and/or perforators).

^c Subfascial endoscopic perforator surgery (SEPS) with or without superficial venous surgery.

^d SEPS with or without superficial venous surgery and/or split-thickness skin grafting.

^e Compression therapy with or without superficial venous surgery.

^f SEPS.

^g Linton procedure.

^h Compression therapy with or without venous surgery (superficial veins, perforators, and/or deep veins).

ⁱ Compression therapy.

^j Compression therapy with venous surgery (superficial veins and/or perforators).

^k Superficial venous surgery plus compression therapy.

^l Ultrasound-guided foam sclerotherapy.

^m Para-tibial subcutaneous fasciotomy plus compression therapy with or without meshed skin grafting.

ⁿ Compression therapy plus endovenous ablation of superficial veins and/or perforators.

and Cochrane Library with the Medical Subject Headings (MeSH) *varicose ulcer* and *recurrence*. The search was performed from inception to February 5, 2013. Based on titles and abstracts we then independently limited the search by two authors (S.W.I.R. and C.E.) to: one of four languages (English, German, French and Dutch); human studies published from 1996 to February 5, 2013;

venous leg ulcer recurrence; and studies that included more than 20 patients with (recently healed) venous leg ulcers. Subsequently the full-text articles of all the remaining studies were read independently by two authors (S.W.I.R. and C.E.) to determine eligibility of the report to be included. Disagreements were adjudicated by an independent third reviewer (M.B.M.-V.). To be included, studies needed to fulfil the following criteria: prospective study design; diagnosis made by CEAP-classification and/or by using duplex ultrasound; and leg ulcer recurrence expressed as recurrence at a certain time [8]. EndNote software (version X5; Thomson Reuters) was used to manage and deduplicate all identified references.

Results

The initial search yielded 1022 articles. After review of all titles and abstracts, 140 articles were chosen for further review. Twelve articles were excluded during deduplication. Of the remaining 128 articles 20 met the inclusion criteria (Table 1).

Our data demonstrate VLU recurrence rates ranging from 0% at 6 months to 56% at 54 months [1,2,6–19]. Two studies mention (estimated) VLU recurrence at 60 months, with VLU recurrence rates of 19 and 48% [20,21]. However these outcomes are hard to compare, since the patients in the first study were primary treated surgically and the patients in the second study with compression therapy. Only three studies are comparable with regard to treatment – compression therapy with or without superficial venous surgery – and demonstrate VLU recurrence of 17, 17 and 25% respectively at 12 months [19,22,23].

Conclusions

As far as we know, this is the first study that summarises high-level evidence (randomised controlled trials and prospective cohort studies) with regard to VLU recurrence. The included studies vary largely with regard to number of patients, treatment as well as duration of (estimated) VLU recurrence, what makes it difficult to make a clear statement based on these outcomes. However, there is a tendency demonstrating that even after several years recurrence rates still increase. Although a meta-analysis would result in the highest level of evidence on this topic, this will be hard to achieve because of the number of variables. The results of this study, high recurrence rates indicate the need for new strategies after a VLU has healed.

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