Health Sciences & Disease
The Journal of Medicine and Biomedical Sciences

Original Article

Surgical Treatment of Chronic Venous Ulcer in Cameroon: Experience with 25 patients

Traitement Chirurgical de l'Ulcère Veineux Chronique au Cameroun : à Propos de 25 Patients

[1,2]Mve Mvondo Charles, [1]Fokou Marcus, [3]Shousasha Princely, [1]Ela Bella Amos, [1]Kobe Fokalbo Zephanie, [1,2]Ngo Yon Laurence, [1]Tsague Kengni Hermann Nestor, [1]Lowe Kuissu Sepolin, [1]Yepmo Yannick, [4]Ngo Nonga Bernadette, [2]Essomba Arthur

Affiliations
[1] Department of Thoracic and Cardio-Vascular Surgery, Yaoundé General Hospital, Yaoundé, Cameroon
[2] Department of Surgery, Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon
[3] Bamenda Regional Hospital, Bamenda, Cameroon
[4] Department of Surgery, Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon

Corresponding author: Mve Mvondo Charles, MD mmvondocarlo@yahoo.fr, +237-655633474

Key words: venous ulcer; vascular surgery; Cameroon
Mots clés : ulcère veineux ; chirurgie vasculaire ; Cameroun

ABSTRACT

Introduction. Venous leg ulcers (VLUs) are a common chronic condition and a major cause of morbidity and disability. When compared to in the west, publications on VLU in the sub-Saharan region have been primarily anecdotal. As such, the current study reviews the outcomes of patients with VLUs who underwent Sapheno-femoral junction ligation (SFL) and stripping (STP) in Cameroon for ulcer healing and recurrence prevention. **Methods**. We retrospectively reviewed the data of all patients who underwent VLU surgery between January and August 2016 at the General, Central, and University Hospitals in Yaoundé. The data were obtained from patient files, the theater, and ward registers and subsequently analyzed. **Results.** We assessed 25 patients in total, with a male predominance (n = 23, 92%) and a mean age of 54 years, with the age group most represented being >45 years. Approximately 64% of patients worked in a profession which required prolonged standing (>6 hours), and 44% had a family history of venous disorders; 68% of ulcers were located in the left leg, with 36% having a diameter of >5 cm. All patients had great saphenous vein insufficiency, so SFL and STP were performed in all patients. Approximately 88% of patients had complete healing of their ulcer after surgery, with the mean time to complete healing being 62 days. In addition, 48% used compression therapy and 16% were prescribed veno-active drugs after surgery, and 12% faced recurrence at follow-up (mean duration: 26 months). **Conclusion.** Most VLU patients present for treatment at an advanced stage of the condition. Thus, the introduction of venous ulcer management guidelines and the implementation of methods that encourage healing will help reduce the time to complete healing. In our context, high ligation and STP can result in high cure rates with low recurrence.

RÉSUMÉ

Introduction. Les ulcères veineux de jambe (UVJ) sont une affection chronique courante et une cause majeure de morbidité et d'invalidité. Par rapport à l'Occident, les publications sur les UJV dans la région subsaharienne sont essentiellement anecdotiques. C'est pourquoi la présente étude passe en revue les résultats des patients atteints d'ulcères variqueux qui ont subi une ligature de la jonction saphéno-fémorale (JSF) et un stripping (STP) au Cameroun pour la cicatrisation des ulcères et la prévention des récidives. **Méthodes**. Nous avons examiné rétrospectivement les données de tous les patients qui ont subi une chirurgie pour VLU entre janvier et août 2016 dans les hôpitaux généraux, centraux et universitaires de Yaoundé. Les données ont été obtenues à partir des dossiers des patients, du théâtre et des registres des services, puis analysées. **Résultats**. Nous avons évalué 25 patients dont 23 hommes(92%) et avec un âge moyen de 54 ans, le groupe d'âge le plus représenté étant les sujets d'âge >45 ans. Environ 64 % des patients exerçaient une profession nécessitant une station debout prolongée (>6 heures), et 44 % avaient des antécédents familiaux de troubles veineux. En outre, 68 % des ulcères étaient situés dans la jambe gauche, et 36 % avaient un diamètre >5 cm. Tous les patients présentaient une insuffisance de la grande veine saphène, de sorte que la SFL et la STP ont été réalisées chez tous les patients. Environ 88 % des patients ont bénéficié d'une cicatrisation complète de leur ulcère après l'opération, le délai moyen de cicatrisation complète étant de 62 jours. En outre, 48 % des patients ont eu recours à une thérapie par compression et 16 % ont eu une prescription de médicaments veino-actifs après l'opération. Une récidive a été notée chez 12 % des sujets lors du suivi (durée moyenne : 26 mois). **Conclusion.** La plupart des patients atteints d'UVL se présentent pour un traitement à un stade avancé de la maladie. L'introduction de directives de gestion des ulcères veineux et la mise en œuvre de méthodes qui encouragent la cicatrisation contribueront à réduire le temps nécessaire à une cicatrisation complète. Dans notre contexte, la ligature haute et le STP ont eu des taux de guérison élevés avec une faible récurrence.

INTRODUCTION

Venous alterations and venous diseases are among the commonest impairments of health and well-being. More specifically, venous leg ulcers (VLUs) are a common chronic condition and major cause of morbidity and disability [1-3]. VLUs constitute up to between 70% and 80% of chronic leg ulcers [4], with 50% due to primary saphenous vein varicosities caused by reflux from distal perforating veins [5]. The mainstay treatment has been conservative, with compression dressing and elevation of the extremities. However, results have been less than satisfactory because of delays in healing and high recurrence rates following an initial cure. There is evidence that saphenous surgery improves quality of life in patients with varicose veins, with better healing rates and freedom from recurrence as compared to compression alone [6-9].

In developing regions, such as the sub-Sahara, managing patients with VLUs remains challenging primarily because of late or misdiagnoses. Indeed, publications on VLU in the region are rare, although the prevalence rates of varicosity seem frequent with some experience in VLU surgery [10, 11]. The current study thus reviews the outcomes of patients with VLUs who had Sapheno-femoral junction ligation (SFL) and stripping (STP) in Cameroon for ulcer healing and recurrence prevention.

PATIENTS AND METHODS

We conducted a retrospective study from January 2010 to August 2016 in three major hospitals in Yaoundé. Only adult patients (>18 years) who presented with trophic skin changes or skin ulcerations and who underwent surgery for varicosity and superficial venous insufficiency, as confirmed by Doppler ultrasound, were included. Patients with deep ulcers (Figure 1) and deep venous insufficiency as major components or ulcers of unknown or other origins (arterial, infectious, malignant, diabetic) were excluded. In addition, socio-demographic data, ulcer site, location of venous insufficiency, type of surgery, type of ulcer bed, duration of ulcer before surgery, duration to complete healing, and recurrence rate were analyzed.

Figure 1. A) small venous ulcer; B) large venous ulcer after debridement

The diagnosis of a VLU is performed clinically based on the presence of an ulcer in the gaiter region between the ankle and calf muscles. In patients with no contraindication for surgery, a preoperative work-up including laboratory tests and consultation with an anesthetist is presented. Preoperative characteristics are listed in Table 1.

Table 1. Socio-demographic and preoperative data N=25

Variable	%
Age (years)	
15-30	16%
30-45	32%
>45	52%
Male sex	92%
Height in cm, mean (range)	178,5(165-197)
Body Mass Index > 25kg/m2	72%
Prolong standing > 6 hours/day	64%
Family history of chronic venous disease	44%
Ulcer location	
Left leg	16%
Right leg	32%
Ulcer diameter in cm, mean (range)	4.4 (1 – 12)
Ulcer > 5 cm	64%
Leg oedema	84%
Skin pigmentation	64%
Lipodermato-sclerosis	36%
GSV insufficiency	100%
GSV and SSV insufficiency	28%
Associated deep venous insufficiency	8%
Ulcer duration before admission for surgery, mean	7 years

Surgical techniques

Spinal anesthesia was used in all patients. For great saphenous vein (GSV) procedures, the patient is placed in the supine position, and the whole lower limb is gently rotated and bent externally. After skin disinfection and draping, a transverse incision (3 to 6 cm) is made 1 cm below and parallel to the inguinal and medial to the femoral pulse. The incision passes through the subcutaneous fat and then through the membranous layer of the superficial fascia of Scarpa. The vein is cleared distally and proximally (Figure 2) until its termination in the femoral vein, and all its tributaries are isolated, ligated, and divided.

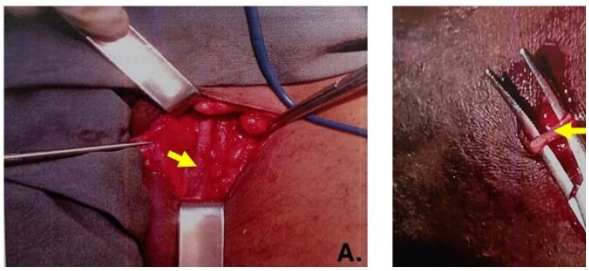

Figure 2. Exposure of the great saphenous vein at the groin (A) and around the ankle (B).

The GSV is then divided close to the saphenous–femoral junction and the stump suture ligated. The stripper is introduced into the distal end of the GSV (Figure 3A), with a single throw tie around the vein to control bleeding, The stripper is advanced down the vein just below the

knee for short STP and to about 2 cm above the medial malleolus in long stripping.

A small incision of about 5 mm to 10 mm is made over the stripper at this point for its retrieval, and artery forceps are used to grasp the stripper and vein through the incision. The stripper is brought out through the proximal end and a suitable acorn head is attached to the stripper. A tie is then made between the vein and stripper, and they are pulled back up into the groin incision (Figure 3B). The incisions are then closed.

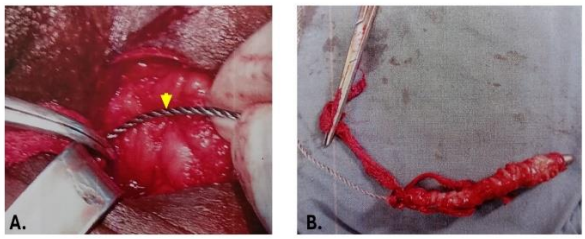

Figure 3. A) Introduction of the Stripper into the great saphenous vein in groin; B) Post stripping showing an avulsed great saphenous vein around the stripper

Statistical analysis

Data were analyzed using Epi Info Version 7, and the information obtained were analyzed as means or percentages.

RESULTS

Our study assessed 25 patients with a mean age of 54 years (range: 25–71 years), the majority of whom were in their third to sixth decade, with the 45–60 years age group most represented. The male gender was also predominant (n = 23, 92%). Approximately 64% of patients worked in a profession requiring prolonged standing (>6 hours), and 44% had a family history of venous disorders. Most of the ulcers (64%) had a diameter less than 5 cm, with the mean VLU size being 4.4 cm (range: 1–12 cm). Further, 84% presented with leg edema, 64% with skin pigmentations, and 36% with lipodermatosclerosis. In addition, 68% of ulcers were located in the left leg, with 36% having a diameter >5 cm. All patients had GSV insufficiency, whereas 28% presented with both great and small saphenous insufficiency. Thus, SFL and STP were conducted in all patients, and surgical techniques are summarized in Table 2.

Table 2. Surgical techniques

Variable	N=25
Stripping of the GSV:	
groin to ankle	72%
groin to knee	28%
Stripping of the SSV	52%
popliteal fossa to ankle	71%
popliteal fossa to calf	29%

Approximately 88% of patients had complete healing of their ulcer after surgery, and the mean time to complete healing was 62 days. Moreover, 48% used compression therapy, 16% were prescribed veno-active drugs after surgery, and there was 12% recurrence at follow-up (mean duration: 26 months).

DISCUSSION

The current study reports a predominance of VLU in men (92%) in their late 40s, with a peak between 45 and 60 years. This is in line with other studies in which age was identified as a major risk factor for chronic venous disorders [4, 12–14], in addition to height and a high body mass index. Moreover, other factors, such as a first-degree relative history of venous disorders and a professional environment requiring prolonged standing, were equally found in 44% and 64% of our patients, respectively. Similar observations were reported by Carpentier et al. and Fokou et al. and others, who identified prolonged standing as a major risk factor for chronic venous disorders in workers, such as bakers [10, 11, 15].

Most of the ulcers (68%) were located in the left leg, which is consistent with the literature findings, as shown by Bland et al., who reported an involvement of the left leg in 56% of their patients [16]. In a study by Placke et al. reporting the data of 731 patients, the authors hypothesized that pelvic congestion syndrome, which is a disorder in pelvic vein circulation that leads to dilatation of the veins in women, and underlying syndromes, such as the May–Thurner syndrome, might increase the rate of left VLU by compression of the left iliac common vein [17].

More than one third of the VLUs had diameter greater than 5 cm, and the majority were associated with oedema (84%), skin pigmentation (64%), and lipodermatosclerosis. (36%). These findings indicate the advanced nature of the disease at the time of surgery, reflecting a delay in proper diagnosis, which is common in our environment. Indeed, in addition to the limited number of vascular and Doppler ultrasound specialists, a misdiagnosis of VLU, which is not uncommon in most patients receiving unproper therapy, results in worsening of the lesions.

Before admission, most of our patients (72%) had prior debridement of their ulcer in various outside institutions, but only 8% complete healing was reported, with all cases recurring, as venous hypertension was not addressed by such a technique. We performed high ligation and STP of the GSV in all cases, and long STP from the groin to the ankle was performed in 72% of patients. Although a higher rate of saphenous vein nerve injury has been reported with such a technique compared to short stripping, [18, 19] we did not face such a complication in the current study.

Although all the ulcers were debrided after surgery, the follow-up and treatment of the ulcer bed was non-uniform. The respect of the healing phase depended on the center and the qualification of the personnel involved in post-surgical follow-up. Despite 36% of VLUs being >5 cm, only 21% were grafted. In part, failure to graft large ulcers and the lesser use of compression therapy after surgery were due to financial reasons.

The VLU healing rate was 88% following SFL and STP, which is similar to the result of Shami et al. [18], but lower than the 93% reported by Barwell et al. in the ESCHAR study [19]. In the latter series, the mean interval to complete healing was 31 days, which was much lower when compared to our findings (62 days).

Most of our patients presented for treatment at an advanced VLU stage. The introduction of venous ulcer management guidelines and the implementation of methods that encourage healing will help reduce the time to complete healing. In our context, high ligation and STP can result in high cure rates with a low recurrence.

REFERENCES

1. Lozano Sánchez FS, Marinel lo Roura J, Carrasco Carrasco E, González-Porras JR, Escudero Rodríguez JR, Sánchez Nevarez I, Díaz Sánchez S; Sociedades Españolas de Angiología y Cirugía Vascular (SEACV); Capítulo Español de Flebologia, the Médicos de Atención Primaria (SEMERGEN); Medicina Familiar y Comunitaria (SemFYC). Venous leg ulcer in the context of chronic venous disease. Phlebology. 2014 May;29(4):220-6. doi: 10.1177/0268355513480489. Epub 2013 May 6. PMID: 23538963.
2. Rai R. Standard guidelines for management of venous leg ulcer. Indian Dermatol Online J. 2014 Jul;5(3):408-11. doi: 10.4103/2229-5178.137830. PMID: 25165686; PMCID: PMC4144254.
3. Rai R, Mysore V. Venous leg ulcer. Indian Dermatol Online J. 2014 Jul;5(3):364-5. doi: 10.4103/2229-5178.137816. PMID: 25165675; PMCID: PMC4144243.
4. https://www.has-sante.fr/Prise en charge de l'ulcère de jambe à prédominance veineuse hors pansement. Recommandations_finales_pdf.pdf (has-sante.fr).
5. Robson, M.C., Cooper, D.M., Aslam, R., Gould, L.J., Harding, K.G., Margolis, D.J., Ochs, D.E., Serena, T.E., Snyder, R.J., Steed, D.L., Thomas, D.R. and Wiersema-Bryant, L. (2008), Guidelines for the prevention of venous ulcers. Wound Repair and Regeneration, 16: 147-150. https://doi.org/10.1111/j.1524-475X.2008.00355.x
6. Kahle B, Hermanns HJ, Gallenkemper G. Evidence-based treatment of chronic leg ulcers. Dtsch Arztebl Int. 2011 Apr;108(14):231-7. doi: 10.3238/arztebl.2011.0231. Epub 2011 Apr 8. PMID: 21547162; PMCID: PMC3087120.
7. Shenoy MM. Prevention of venous leg ulcer recurrence. Indian Dermatol Online J. 2014 Jul;5(3):386-9. doi: 10.4103/2229-5178.137824. PMID: 25165681; PMCID: PMC4144249.
8. Stubbs N. Superficial venous surgery plus compression reduced ulcer recurrence in chronic venous leg ulceration. Evid Based Nurs. 2004 Oct;7(4):113. doi: 10.1136/ebn.7.4.113. PMID: 15487091.
9. Zamboni P, Cisno C, Marchetti F, Mazza P, Fogato L, Carandina S, De Palma M, Liboni A. Minimally invasive surgical management of primary venous ulcers vs. compression treatment: a randomized clinical trial. Eur J Vasc Endovasc Surg. 2003 Apr;25(4):313-8. doi: 10.1053/ejvs.2002.1871. Erratum in: Eur J Vasc Endovasc Surg. 2003 Sep;26(3):337-8. PMID: 12651168.
10. Ngueuka V (1995). Varices des members inférieurs: considerations épidémiologiques et cliniques chez les boulangers et patissiers à Yoaundé. M.D. Thesis, Faculté de Médecine et des Sciences Biomédicales, Université de Yaoundé.
11. Fokou M, Moifo B, Fongang E, Teyang A, Muna W. Characteristics of patients and patterns of chronic venous disease of the lower limbs in a referral hospital in Cameroon. J Vasc Surg Venous Lymphat Disord. 2018 Jan;6(1):90-95. doi: 10.1016/j.jvsv.2017.08.012. Epub 2017 Oct 31. PMID: 29097175.
12. Adhikari A, Criqui MH, Wooll V, et al. The Epidemiology of Chronic Venous Diseases. Phlebology. 2000;15(1):2-18. doi:10.1177/026835550001500102.
13. Bergqvist D, Lindholm C, Nelzén O. Chronic leg ulcers: the impact of venous disease. J Vasc Surg. 1999 Apr;29(4):752-5. doi: 10.1016/s0741-5214(99)70330-7. PMID: 10194512.
14. Heit JA, Rooke TW, Silverstein MD, Mohr DN, Lohse CM, Petterson TM, O'Fallon WM, Melton LJ 3rd. Trends in the incidence of venous stasis syndrome and venous ulcer: a 25-year population-based study. J Vasc Surg. 2001 May;33(5):1022-7. doi: 10.1067/mva.2001.113308. PMID: 11331844.
15. Carpentier PH, Maricq HR, Biro C, Ponçot-Makinen CO, Franco A. Prevalence, risk factors, and clinical patterns of chronic venous disorders of lower limbs: a population-based study in France. J Vasc Surg. 2004 Oct;40(4):650-9. doi: 10.1016/j.jvs.2004.07.025. PMID: 15472591.
16. Bland, J.M., Dumville, J.C., Ashby, R.L. *et al.* Validation of the VEINES-QOL quality of life instrument in venous leg ulcers: repeatability and validity study embedded in a randomised clinical trial. *BMC Cardiovasc Disord* **15**, 85 (2015). https://doi.org/10.1186/s12872-015-0080-7.
17. Left leg venous ulcer…. Placke JM, Jockenhöfer F, Benson S, Dissemond J. Venous ulcerations occur more frequently in women on the left lower leg. Can pelvic congestion syndrome be an often undetected cause? Int Wound J. 2020 Feb;17(1):230-231. doi: 10.1111/iwj.13260. Epub 2019 Nov 7. PMID: 31701627; PMCID: PMC7948770.
18. Shami SK, Sarin S, Cheatle TR, Scurr JH, Smith PD. Venous ulcers and the superficial venous system. J Vasc Surg. 1993 Mar;17(3):487-90. PMID: 8445743.
19. Barwell JR, Davies CE, Deacon J, Harvey K, Minor J, Sassano A, Taylor M, Usher J, Wakely C, Earnshaw JJ, Heather BP, Mitchell DC, Whyman MR, Poskitt KR. Comparison of surgery and compression with compression alone in chronic venous ulceration (ESCHAR study): randomised controlled trial. Lancet. 2004 Jun 5;363(9424):1854-9. doi: 10.1016/S0140-6736(04)16353-8. PMID: 15183623.