

***Le pied ischémique sans lit
d'aval:***

***La place de l'artérialisation
veineuse***

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Chirurgienne vasculaire

24 Novembre 2023



Conflit d'intérêt

- Aucun

L'utilisation de matériel endovasculaire en dehors des recommandations du fabricant sera discuté dans cette présentation

Objectifs

1. Expliquer la physiologie derrière le concept d'artérialisation veineuse (DVA)
2. Énumérer les indications de cette approche
3. Décrire les techniques possible afin d'y parvenir
4. Exposer les résultats de cette technique au niveau mondial ainsi que les résultats de notre expérience dans le CHU de Québec

Ishémie critique des membres inférieurs (CLTI)

- **>1 million** de patients sont atteints de CLTI (*É-U, Medicare*)
 - Une **↑** de **23%** de ce nombre est à prévoir au cours des 10 prochaines années ¹
- **14-20%** des patients atteints de CLTI **n'ont aucune option de reconstruction artérielle (nop-CLTI)** et font face à une **amputation majeure**¹
- Le **taux de mortalité** suite à une amputation majeure est le suivant
 - **50%** à un an²
 - **75%** à 5 ans²

1. Mehdi et al. Transcatheter Arterialization of Deep Veins in Chronic Limb-threatening ischemia. N ENGL J Med 2023;388:1171-80

2. Clair DG et al, PROMISE I: Early feasibility study of the LimFlow System for percutaneous deep vein arterialization in no-option chronic limb-threatening ischemia: 12-month results. J Vasc Surg. 2021 Nov;74(5):1626-1635.

Ischémie critique des membres inférieurs (CLTI)

- Considérant le taux élevé de morbidité et de mortalité associées à une amputation majeure, plusieurs techniques médicales et chirurgicales ont été développées dans le but de soulager la douleur et/ou guérir une plaie afin de **prévenir une amputation majeure**
- **L'artérialisation veineuse (DVA)** s'inscrit comme l'une de ces techniques reconnue pour traiter les **patients avec ischémie critique sans option de revascularisation artérielle (NOP-CLTI)**

SURGERY, GYNECOLOGY AND OBSTETRICS

AN INTERNATIONAL MAGAZINE, PUBLISHED MONTHLY

VOLUME XIV

JANUARY, 1913

NUMBER 1

ARTERIOVENOUS ANASTOMOSIS IN THE TREATMENT OF GANGRENE OF THE EXTREMITIES

By ALBERT E. HALSTEAD, M. D., and ROGER T. VAUGHAN, M. D., CHICAGO, ILLINOIS

THE application in clinical surgery of the experimentally successful procedure of reversal of the circulation in the arteries and veins has been proposed as a means of treatment of conditions which have for their underlying cause a failure of the arteries to perform their function of conveying red blood to the tissues.

Although animal experiments have shown that it is possible to transfer the circulating arterial blood to a corresponding vein, this does not prove that this experimental feat can be successfully employed in the treatment of conditions resulting from a defective blood supply which follows occlusion of the artery from disease, or destruction of the same as a result of trauma.

The great possibilities of this procedure were early recognized by clinical surgeons. Since the early experiments of François Franck, in 1861, many have attempted to produce a satisfactory arteriovenous anastomosis in animals. It remained for Carrel, in 1907, to perfect the technique of vascular experimental surgery, and to make the first satisfactory anastomosis. The failure of the early experiments was largely due to faulty technique, and it may be said that it is largely the splendid work of Carrel that has led the operating surgeon to attempt to apply in clinical surgery the procedure which he has demonstrated as possible in animals. However, the value of arteriovenous anastomosis cannot be fixed by experimental data alone. Its place in surgery can only be determined by actual clinical experience. For this reason we have collected all of the available cases published, and, in addition, have added a number of cases, including two of our own. From an analysis of these we hope to secure data that will permit us to place this procedure in its proper relations, and determine its value as a practical surgical measure.

The indications for arteriovenous anastomosis are chiefly in cases where, as a result of occlusion of an artery, it becomes necessary to transport arterial blood by way of the veins to the capillaries. This obstruction of the circulation through a principal artery, leading to ischemia of the parts supplied with blood through that artery, results generally from some disease by which the artery gradually becomes obliterated, or from the stoppage of an artery by an embolus, or from destruction of an artery by trauma. In all of these conditions arteriovenous anastomosis has been tried, with a hope that by substituting the vein for the artery below the point of obstruction an adequate supply of red blood might be furnished, and thus prevent death of the parts below.

Experimental work on animals has played a large part in the development of a practical working technique in all vascular surgery. For this reason a brief review of the experimental work done, in perfecting the operative

Artérialisation veineuse (DVA)¹

- Définition
 - Utilisation du **lit veineux distal comme conduit alternatif** pour la perfusion des tissus périphériques avec du sang artériel par la **création d'une fistule artérioveineuse et ainsi le renversement du flot dans le réseau veineux**
- Histoire
 - Halstead en 1912 fût le premier à décrire la technique

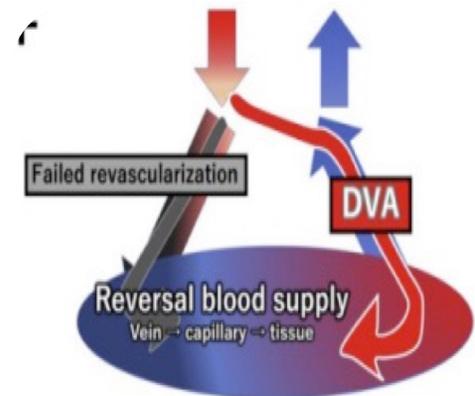
1. Schreve MA et Al. Venous Arterialization for salvage of Critically Ischaemic Limbs: A systematic review and Meta-analysis. Eur J Vasc Endovasc Surg (2017)53, 387-402

Mécanismes d'action d'une DVA¹⁻²

- **Renversement** du flot sanguin dans les veinules ce qui augmente le flot dans les capillaires
- Stimulation de **l'angiogénèse**
- Recrutement des **collatérales hibernantes**

1. Nakama T, Obunai K, Kojima S, Muraishi M, Watanabe H. Angiographic Findings of the Development of a Reverse Blood Supply After Percutaneous Deep Venous Arterialization. JACC Cardiovasc Interv. 2020 Jun 22;13(12):1489-1491

2. Houliand K, Christensen JK, Jepsen JM. Vein arterialization for lower limb revascularization. J Cardiovasc Surg 2016 April;57(2):266-72.





Indications

Parmi la population NOP-CLTI, qui sont les candidats à une DVA?

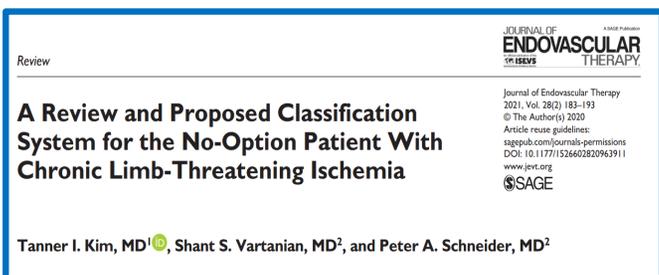


Table 3. Classification of the No-Option and Poor-Option Patient.

Type	Category	Conventional Revascularization Options	No or Poor Option	Description
I: Desert foot pedal anatomy	Anatomic	No	No option	<ul style="list-style-type: none"> No patent pedal vessels or desert foot anatomy Should be staged with the Wifl and GLASS staging classifications (including pedal modifier)
II: Inadequate venous conduit	Anatomic	No	No option	<ul style="list-style-type: none"> Patent pedal target without adequate venous conduit for bypass No endovascular options
III: Extensive tissue loss	Anatomic	Yes	Poor option	<ul style="list-style-type: none"> Tissue loss with exposure of vital structures precluding limb salvage of a functional foot
IV: Prohibitive risk for procedure	Medical-comorbid	Yes	Poor option	<ul style="list-style-type: none"> Excessive or prohibitive risk for revascularization due to advanced medical comorbid conditions
V: Nonfunctional limb	Medical-comorbid	Yes	Poor option	<ul style="list-style-type: none"> Nonfunctional limb due to conditions, such as contractures, paralysis, or chronic nonambulatory status

Abbreviations: GLASS, Global Limb Anatomic Staging System; Wifl, wound, ischemia, and foot infection.

Candidats à DVA

- **Pied désert**
- **Aucun vaisseau cible distal**
- **Aucun conduit**

Concept du Pied désert

> *J Cardiovasc Surg (Torino)*. 2018 Oct;59(5):655-664. doi: 10.23736/S0021-9509.18.10572-6. Epub 2018 May 22.

BAD transmission and SAD distribution: a new scenario for critical limb ischemia

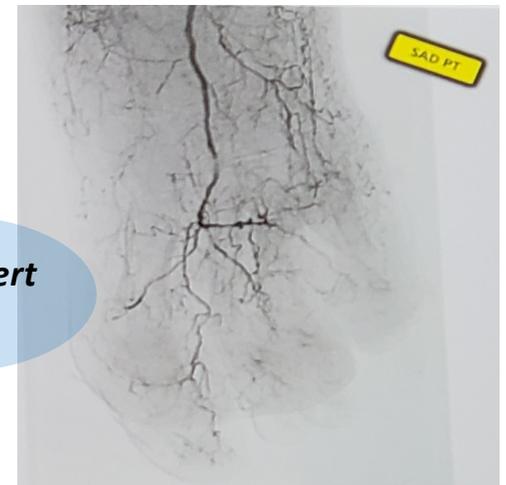
Roberto Ferraresi ¹, Giovanni Mauri ², Fabrizio Losurdo ³, Nicola Troisi ⁴, Diego Brancaccio ⁵, Carlo Caravaggi ⁶, Luca Neri ⁷

Affiliations + expand

PMID: 29786411 DOI: 10.23736/S0021-9509.18.10572-6

[Free article](#)

- Une revascularisation artérielle nécessite un vaisseau cible distal
 - Big Artery Disease transmission (BAD)
 - Small Artery Disease distribution (SAD)
- L'absence de vaisseau distal = **Pied désert**



Pontage tibial distal vs DVA chirurgicale dans la population CLTI

Comparative Study of Venous Arterialization and Pedal Bypass in a Patient Cohort with Critical Limb Ischemia

Michiel A. Schreve,¹ Robert C. Minnee,¹ Jan Bosma,¹ Vanessa J. Leijdekkers,¹ Mirza M. Idu,² and Anco C. Vahl,¹ Amsterdam, The Netherlands

- Artérialisation veineuse chirurgicale (21 patients)
 - 71% perméabilité 53% sauvetage du membre à 1 an
- Pontage tibial distal conventionnel (19 patients)
 - 75% perméabilité 47% sauvetage du membre à 1 an

DVA chirurgicale est comparable à un pontage artériel tibial distal



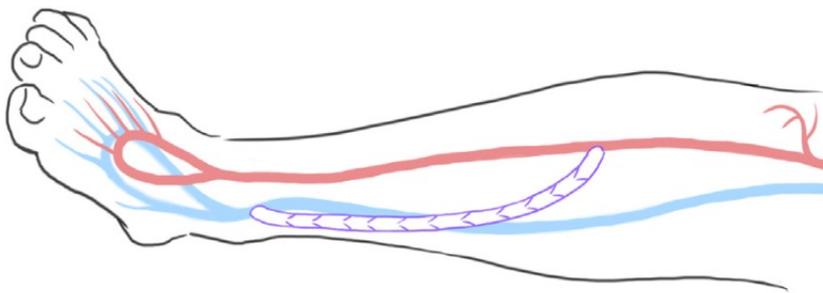


Techniques de DVA

3 Types de DVA

- Artérialisation veineuse chirurgicale
 - Nécessité d'un conduit veineux disponible
 - Création d'une nouvelle plaie distale
- Artérialisation veineuse percutanée (P-DVA)
 - Minimalement invasive
- Artérialisation veineuse hybride

Technique Chirurgicale



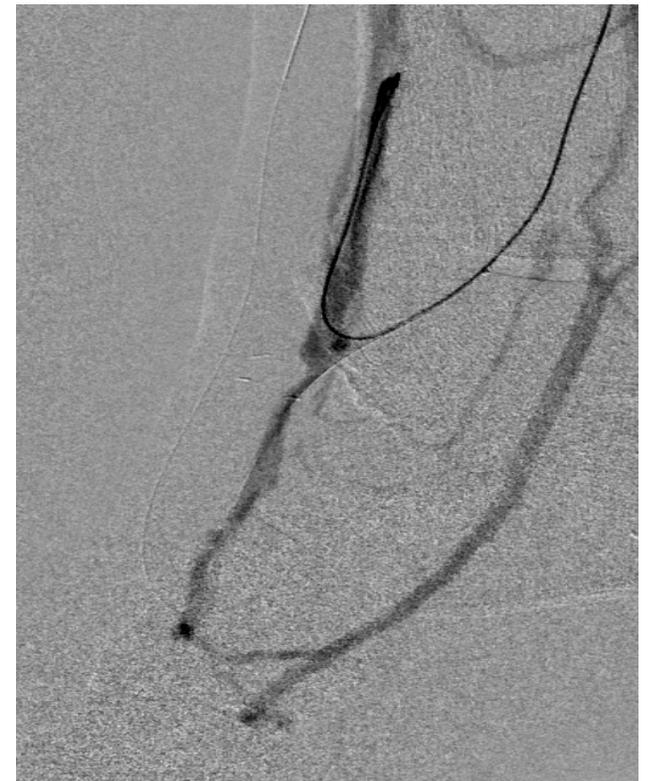
- popliteal artery
- RSVG or in situ GSV or synthetic conduit
- tibial vein



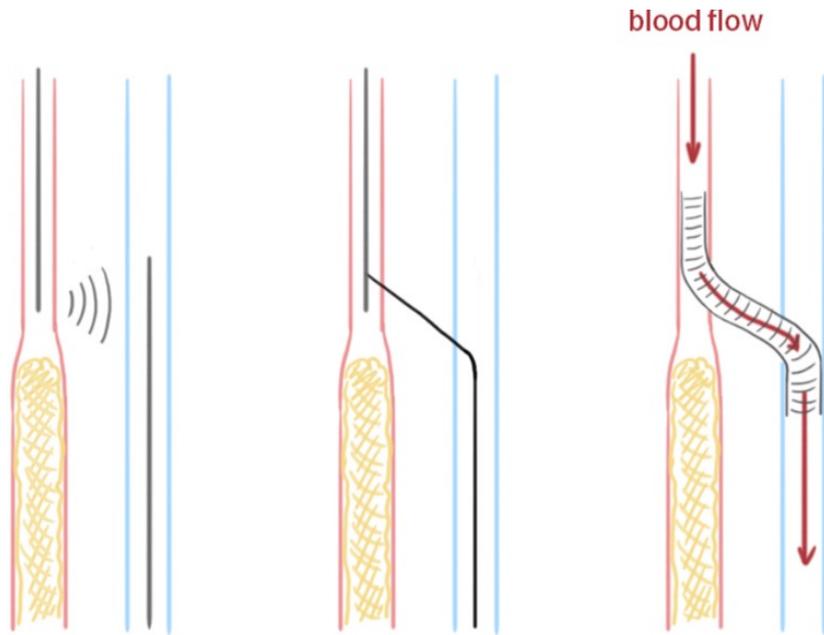
Vy et Al, Open, percutaneous and hybrid deep venous arterialization technique for no-option foot salvage J Vasc Surg 2020 Jun; 71:2152-60

Technique hybride

- Pontage idem à technique chirurgicale
- Valvulotomie sous fluoroscopie



Technique percutanée P-DVA



1. Catheters are aligned with ultrasound signal

2. Crossover and insertion of guidewire

3. Predilatation and insertion of covered stent

DVA chirurgicale, percutanée ou hybride?

Review > J Vasc Surg. 2020 Jun;71(6):2152-2160. doi: 10.1016/j.jvs.2019.10.085.

Epub 2019 Dec 31.

Open, percutaneous, and hybrid deep venous arterialization technique for no-option foot salvage

Vy T Ho¹, Rebecca Gologorsky¹, Pavel Kibrik², Venita Chandra¹, Anna Prent³, Jisun Lee⁴, Anahita Dua⁵

Affiliations + expand

PMID: 31901360 DOI: 10.1016/j.jvs.2019.10.085

- « *Limb salvage* »
 - Chirurgicale 25-100% (12 études)
 - Percutanée 60-86% (3 études)
 - Hybride 46-69% (3 études)

Vy et Al, Open, percutaneous and hybrid deep venous arterialization technique for no-option foot salvage J Vasc Surg 2020 Jun; 71:2152-60



Les évidences



DVA percutanée (P-DVA) : 4 études récentes

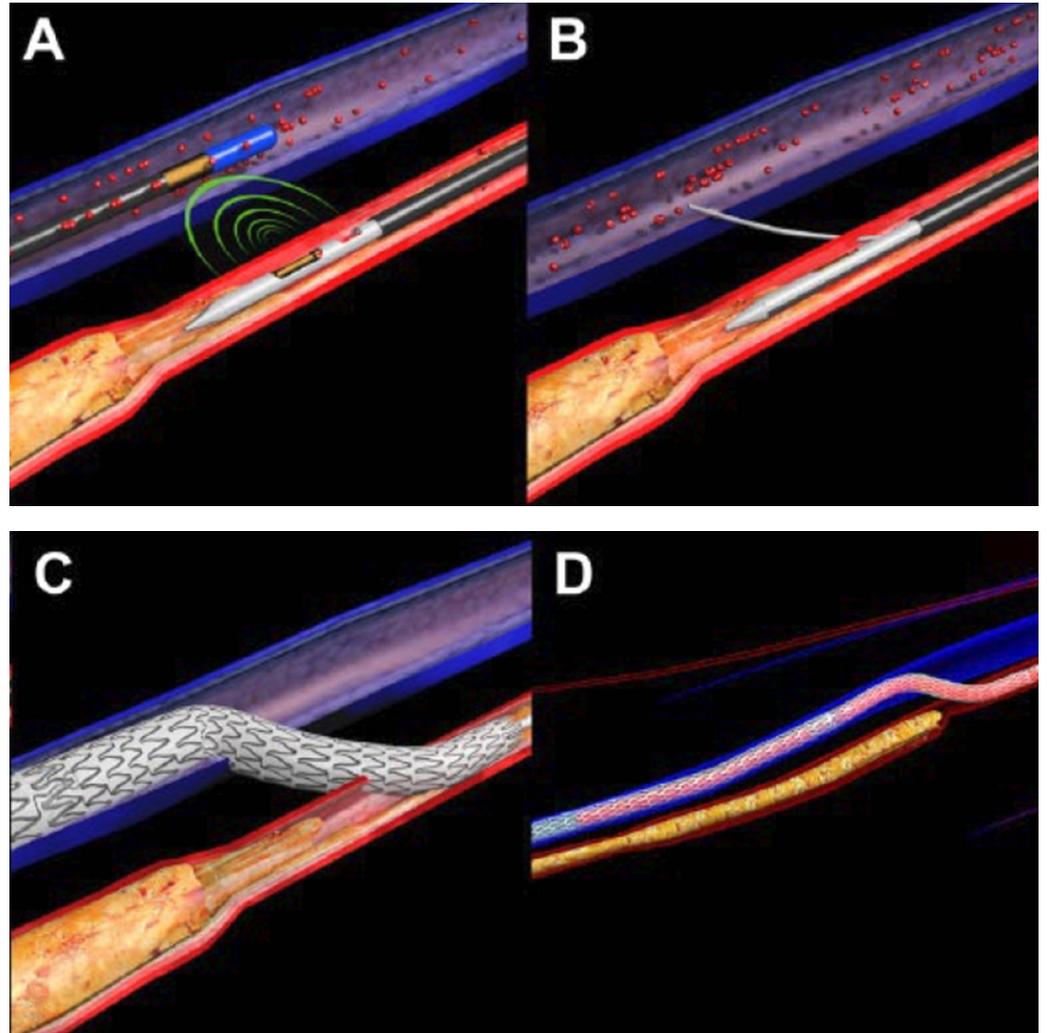
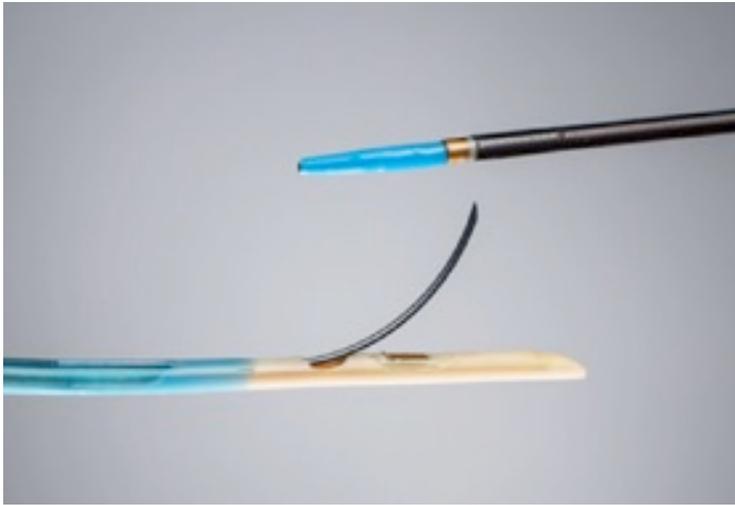
Utilisation de Limflow

- ALPS STUDY
- PROMISE I
- PROMISE II

Utilisation de matériel angio non dédié

- DEPARTURE

LIMFLOW



ALPS STUDY

Multicenter Study > J Endovasc Ther. 2020 Aug;27(4):658-665. doi: 10.1177/1526602820922179.

Epub 2020 May 18.

Midterm Outcomes of Percutaneous Deep Venous Arterialization With a Dedicated System for Patients With No-Option Chronic Limb-Threatening Ischemia: The ALPS Multicenter Study

Andrej Schmidt¹, Michiel A Schreve², Eline Huizing², Costantino Del Giudice³, Daniela Branzan⁴, Çağdaş Ünlü², Ramon L Varcoe⁵, Roberto Ferraresi⁶, Steven Kum⁷

Affiliations + expand

PMID: 32419597 DOI: 10.1177/1526602820922179

- 32 patients
- À 6, 12 et 24 mois
 - “AFS”: 83.9%, 71% and 67.2%
 - “Limb salvage”: 86,8%, 79,8% and 79,8%
 - “Wound healing”: 36,6%, 68,2% and 72,7%
- Réintervention chez 17 patients (53%)

PROMISE I

> J Vasc Surg. 2021 May 18;S0741-5214(21)00737-0. doi: 10.1016/j.jvs.2021.04.057.

Online ahead of print.

PROMISE I early feasibility study of the LimFlow System for percutaneous deep vein arterialization in no-option chronic limb-threatening ischemia 12-month results

Daniel G Clair¹, Jihad A Mustapha², Mehdi H Shishebor³, Peter A Schneider⁴, Steve Henao⁵, Nelson N Bernardo⁶, David H Deaton⁷

Affiliations + expand

PMID: 34019990 DOI: 10.1016/j.jvs.2021.04.057

- 32 patients
- À 1, 6 et 12 mois
 - “AFS”: 91%, 74%, and 70%
 - “Wound healing”: -, 67% and 75%
- Réintervention chez 16 patients (52%)

PROMISE II

- 105 patients
- Prospective
- Un seul groupe
- Multicentrique
- à 6 mois:
 - *AFS: 66.1%*
 - *Limb salvage: 76.0%*
 - *Wound healing: 25%*
 - *Réintervention: 36,5%*

Transcatheter Arterialization of Deep Veins in Chronic Limb-Threatening Ischemia

Shishebor MH et al. DOI: 10.1056/NEJMoa2212754

CLINICAL PROBLEM

Arterial revascularization is standard care for patients with chronic limb-threatening ischemia. However, up to 20% of patients are not candidates for revascularization — primarily owing to the absence of a distal runoff arterial target or lack of an appropriate conduit for surgical bypass — putting them at high risk for above-ankle amputation. Transcatheter arterialization of the deep veins is an alternative endovascular approach in which an arteriovenous fistula is created proximal to the diseased tibial arteries by means of a covered stent, allowing oxygenated blood to be diverted from the tibial arteries to the tibial veins and ultimately reaching the foot through the pedal veins. The effectiveness of this approach in patients with chronic limb-threatening ischemia without revascularization options is unclear.

CLINICAL TRIAL

Design: A prospective, single-group, multicenter study assessed the effectiveness and safety of transcatheter arterialization of the deep veins in patients with chronic limb-threatening ischemia and nonhealing ulcers with no option for revascularization.

Intervention: 105 patients were enrolled to undergo transcatheter arterialization of the deep veins. The primary end point was amputation-free survival (defined as freedom from above-ankle amputation or death from any cause) at 6 months.

RESULTS

Effectiveness: The procedure was technically successful in all but one patient. The percentage of patients with amputation-free survival at 6 months was 66.1%. The probability that this outcome exceeded the performance goal of 54% exceeded the predefined success criterion.

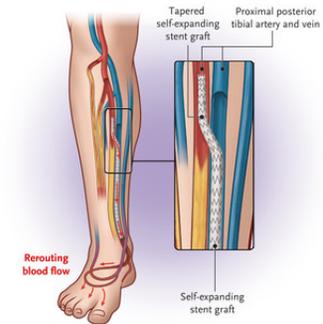
Safety: No unanticipated device-related adverse events were reported.

LIMITATIONS AND REMAINING QUESTIONS

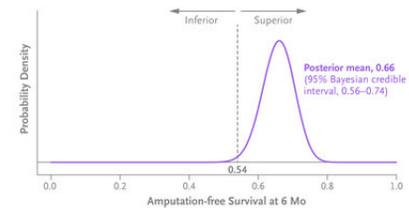
- The study lacked a control group, although randomization of patients at high risk for amputation was not ethically feasible.
- The procedure may not be available outside specialist centers.
- Follow-up was relatively short-term.

Links: [Full Article](#) | [NEJM Quick Take](#) | [Editorial](#)

Transcatheter Arterialization of Deep Veins



Amputation-free Survival



Major amputation	23/102 patients
Death	12/102 patients

CONCLUSIONS

Among patients with chronic limb-threatening ischemia and no option for revascularization who underwent transcatheter arterialization of the deep veins, nearly two thirds were alive and free of above-ankle amputation at the 6-month follow-up, with no unanticipated safety concerns.

DEPARTURE

Cardiovasc Intervent Radiol (2022) 45:622–632
<https://doi.org/10.1007/s00270-022-03095-1>

CIRSE



CLINICAL INVESTIGATION

ARTERIAL INTERVENTIONS

Twelve-Month Clinical Outcomes of Percutaneous Deep Venous Arterialization with Alternative Techniques and Ordinary Endovascular Therapy Devices for Patients with Chronic Limb-Threatening Ischemia: Results of the DEPARTURE Japan Study

Tatsuya Nakama¹ · Shigeo Ichihashi² · Kenji Ogata³ · Shunsuke Kojima¹ · Makio Muraishi¹ · Kotaro Obunai¹ · Hiroyuki Watanabe¹

- 18 patients
- À 6 and 12 mois:
 - « *AFS* »: 55,6% and 49,4%
 - « *Limb salvage* »: 72,2% and 72,2%
 - « *Wound healing* »: 23,0% and 53,2%
- Réintervention: Non rapportée



Notre expérience P-DVA HSFA-CHU de Québec

Série partagée avec
Dr Mathieu Béland, MD FRCPC,
Radiologiste d'intervention

JVIR

Journal of Vascular and Interventional Radiology

Society of
Interventional
Radiology

EXTREME IR | VOLUME 30, ISSUE 4, P570-571, APRIL 01, 2019

Venous Arterialization with Common Endovascular Devices

Mathieu Béland, MD, FRCPC • Mireille Méthot, MD, FRCSC • Simon Bradette, MD • Myriam Montminy, MD, MSc, FRCSC • Catherine Lalonde, MD, FRCPC

DOI: <https://doi.org/10.1016/j.jvir.2018.11.022> • 

JVIR

Journal of Vascular and Interventional Radiology

Society of
Interventional
Radiology

EXTREME IR | VOLUME 32, ISSUE 9, P1404-1405, SEPTEMBER 01, 2021

Repeated Foot Arterialization in No-Option Revascularization Patient

Mathieu Béland, MD, FRCPC • Gérald Gahide, MD, PhD, FRCPC • François Coulombe, MD, PhD • Vincent Fontaine, MD • Mireille Méthot, MD, FRCSC

DOI: <https://doi.org/10.1016/j.jvir.2021.06.006> • 

Cardiovascular and Interventional Radiological Society of Europe

Barcelona, Spain
September 10-14

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ABSTRACTS & AUTHOR INDEX

PART 1: SCIENTIFIC PAPERS FIRST@CIRSE MEET THE PI STUDENTS ON STAGE	S146
PART 2: POSTERS	S320
PART 3: AUTHOR INDEX	S971

Online Publication Number:
10.1007/s00270-022-03246-4

CIRSE

CIRSE 2022 – Abstract Book

365 (author index ID)

P-479 / Endovascular deep venous arterialization of the foot with off-the-shelf devices

Beland M¹, Méthot M², Gahide G³

¹CHU de Québec - Department of Radiology, Québec, Canada, ²CHU de Québec - Department of Surgery, Québec, Canada, ³Centre Hospitalier Universitaire de Sherbrooke - Department of Radiology, Sherbrooke, Canada

Purpose

Deep venous arterialization of the foot is a "last resort" technique to prevent major amputation in cases of critical limb ischemia without endovascular or surgical revascularization option. No dedicated endovascular device is approved for this technique in North America. The objective of the present study was to assess the efficacy of percutaneous deep venous arterialization (pDVA) performed with off-the-shelf devices in cases of no-option critical limb ischemia of the foot.

Materials and Methods

This was a single center study conducted from January 2018 to January 2021 using a prospectively held registry. Consecutive patients with pDVA performed with off-the-shelf devices were included. Technical success, primary/secondary patencies and limb salvage at 6 and 12-months were reported.

Results

15 consecutive cases (14 patients) were performed. They were all Rutherford 6 without endovascular or surgical revascularization option. 10(67%) were diabetic and 4(27%) were dialysis dependant. Technical success was 93%(14/15). Of those successful procedures(N=14), 3 were not included in our analysis (1 death within 30 days not related to the procedure (nosocomial pneumonia), 1 patient asked for an amputation at 6weeks and 1 asked for discontinuation of dialysis, both for poor quality of life reasons), leaving a total of 11 cases to analyse. Primary and secondary patencies and limb salvage rate were 27%(3/11), 55%(6/11), 64%(7/11) at 6 and 12 months. For salvaged limbs(N=7), wound healing was complete at 12-months for 100% of patients(7/7).

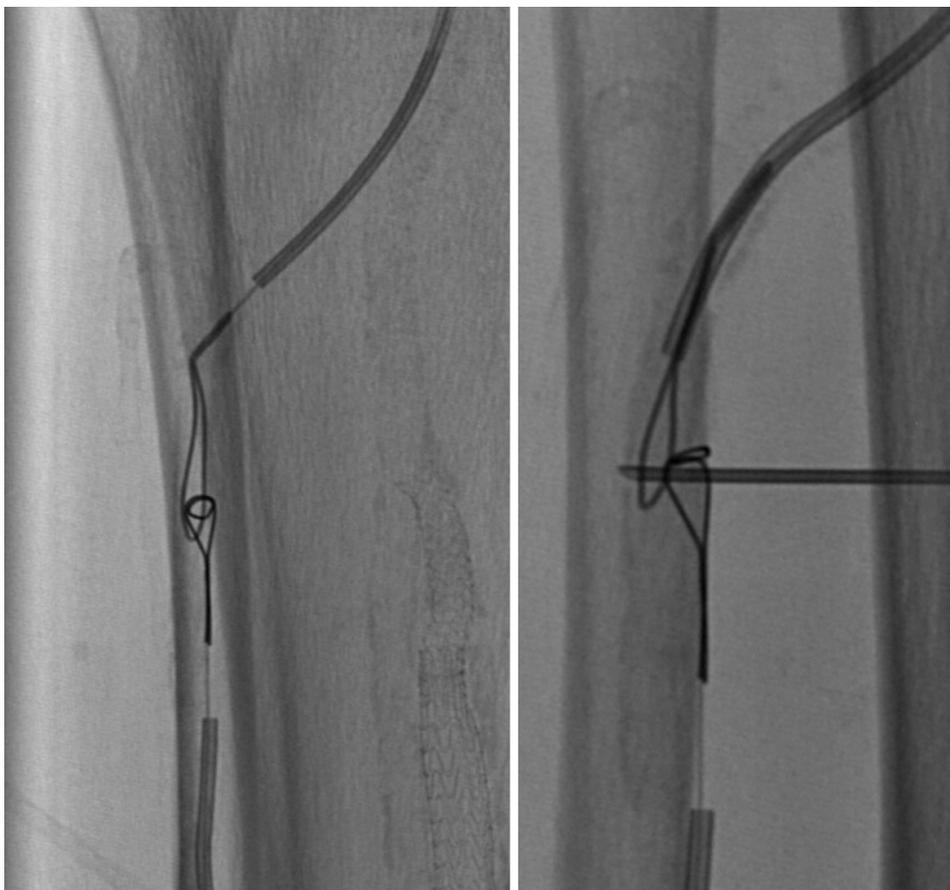
Conclusion

pDVA performed with off-the-shelf devices is a promising "last resort" technique for no-option critical limb ischemia patients to prevent major amputation.

Notre technique de P-DVA

1. Création d'une **fistule proximale**
2. Déploiement d'un **tuteur couvert jusqu'à la cheville**
3. **Connection des systèmes veineux** superficiel et profond
4. **Valvulotomie** pour inverser le flot dans l'arcade veineuse
5. **Focalisation du flot:** Embolisation des collatérales veineuses qui créent un effet de vol trop important, au moment de la DVA ou quelques semaines plus tard

Création d'une fistule proximale

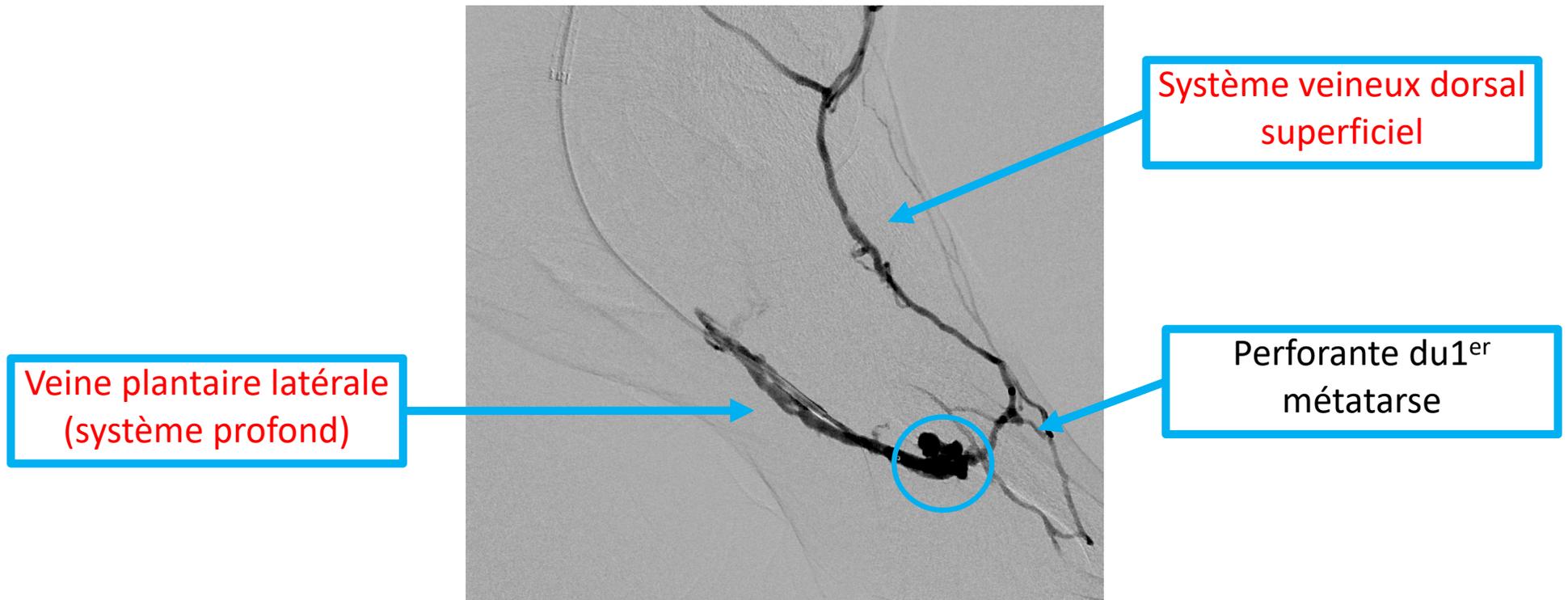


Déploiement d'un tuteur couvert jusqu'à la cheville

- **Buts**
 - Couvrir les collatérales veineuses pour prévenir un vol
 - Briser les valvules
- **Choix du tuteur**
 - Auto-expansible 5 mm (Viabahn)



Connexion du système veineux superficiel au système profond

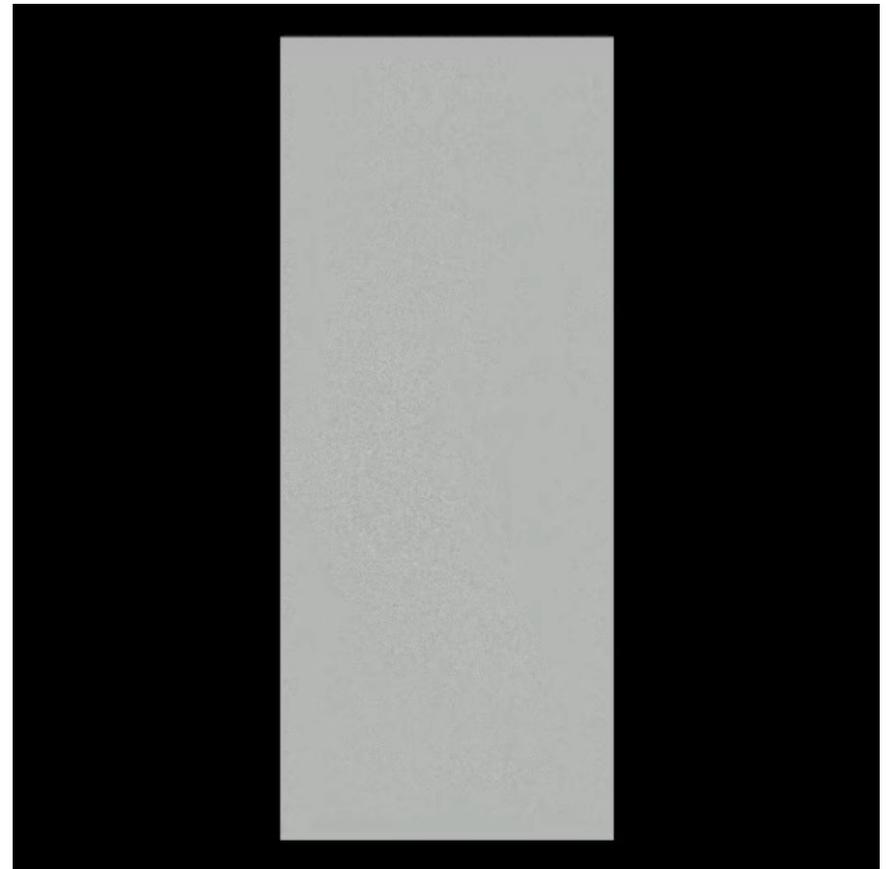
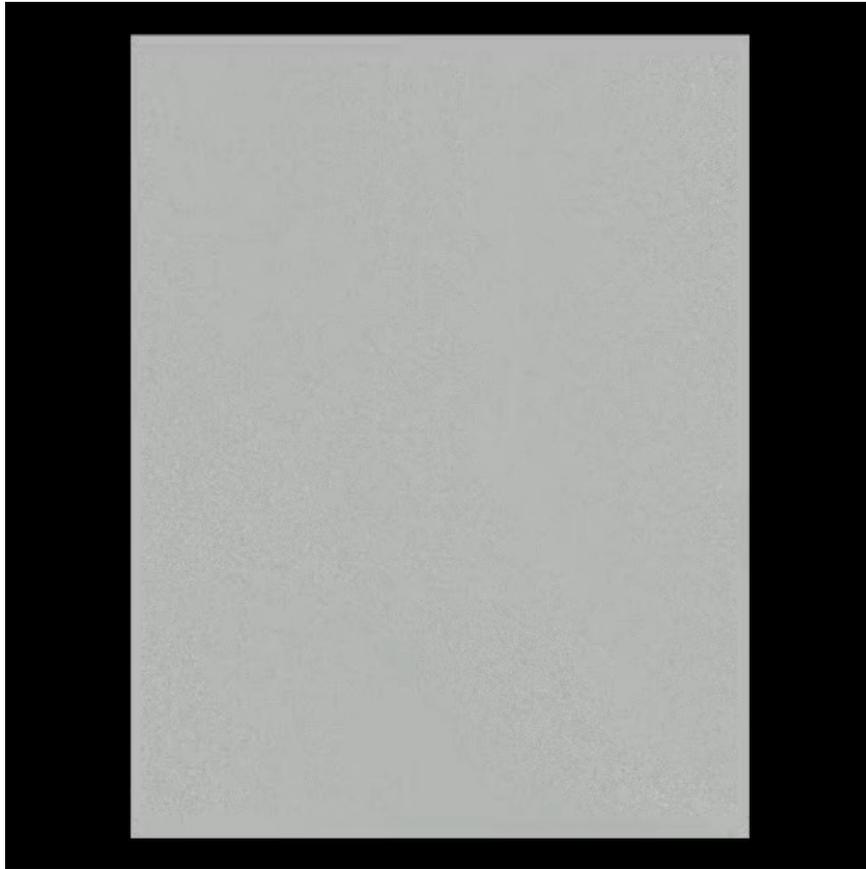


Valvulotomie pour inverser le flot dans l'arcade veineuse

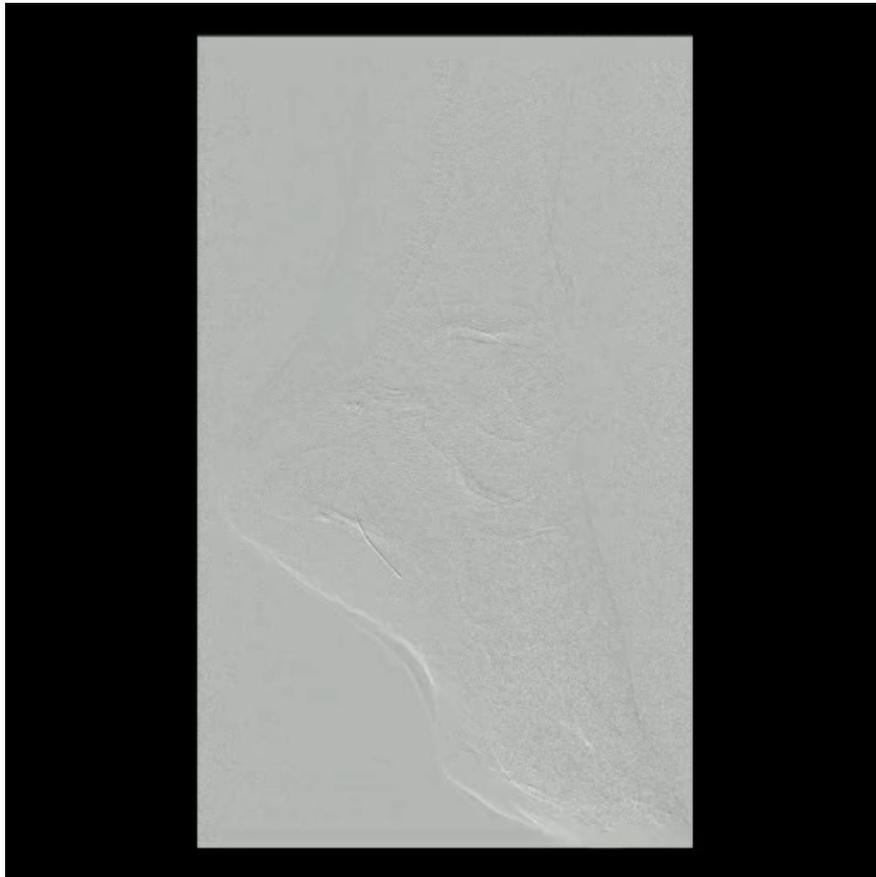


"cutting ballon" de 3,5 mm

Résultat: Immédiatement après la valvulotomie



Résultat: Après maturation de la DVA



Un mois plus tard

Focalisation du flot sanguin



Avant DVA



2 mois post-DVA





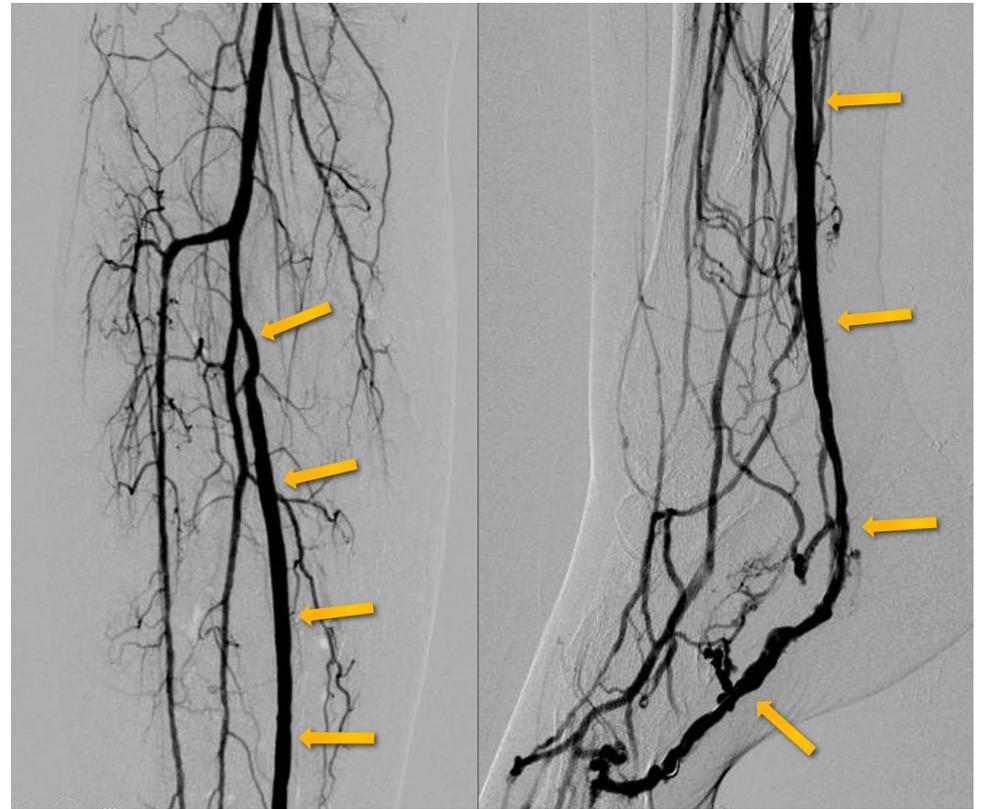
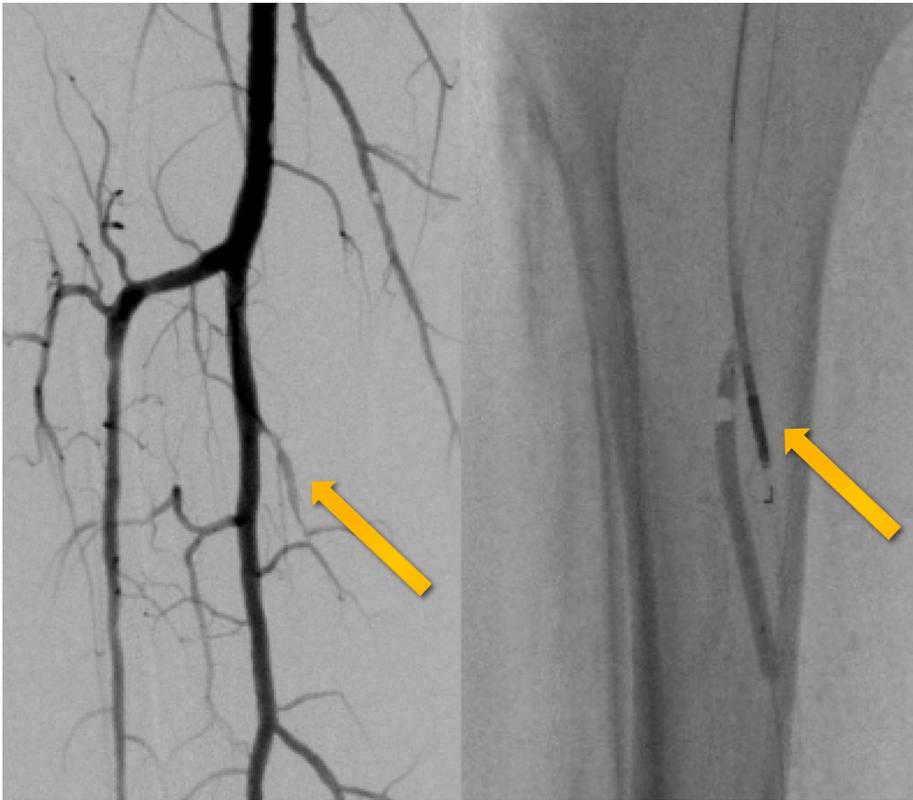
6 mois post DVA



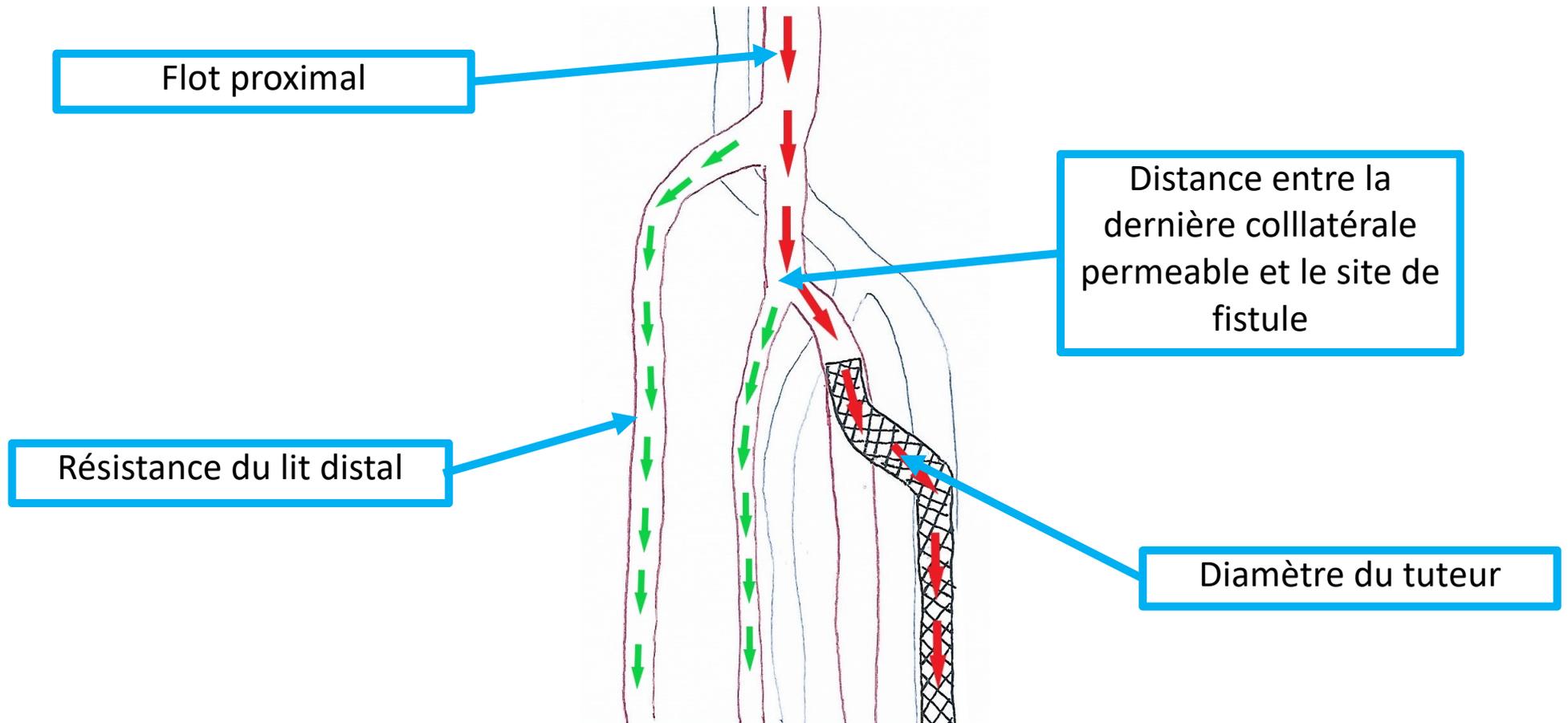
Trucs et astuces pour réussir la DVA

- Flot antegrade doit être parfait
- Utiliser l'artère et la veine tibiale postérieure est souvent plus facile
- **Préserver l'artère tibiale qui s'occlue le plus distalement et utiliser l'artère tibiale qui s'occlue plus proximale pour diminuer l'effet de vol post DVA**

Choix de l'artère pour la DVA: Tibiale postérieure



Facteurs qui influencent l'effet de vol de la DVA

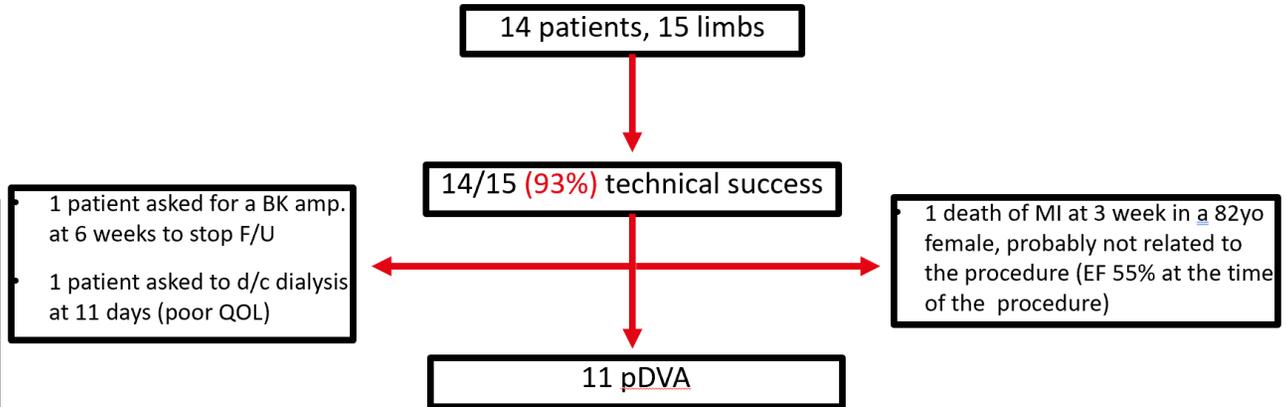


Caractéristiques des patients HSFA

ALPS:
 Rutherford 5(72%) /Rutherford 6 (28%)
 DB(66%)
 Dialyse (16%)

Promise 2:
 Rutherford 5(64%) /Rutherford 6 (37%)
 DB(69%)
 Dialyse (18%)

Departure:
 Rutherford 5(33%) /Rutherford 6 (67%)
 DB(7%)
 Dialyse (89%)
 Fauteuil roulant(33%)



- 7 hommes / 4 females
- Âgés de 62 à 77 ans (Moyenne 68 ans)
- Rutherford 6 (100%)
- DB 9/11 (82%), Dialyse 3/11 (27%)
- Suivi de 4 to 28 months
- Tibiale antérieure 2/11 (18%)---- Tibiale postérieure 9/11 (82%)

“Limb salvage” à 12 mois:

11 pDVA

7/11 (64%) limb salvage

4/11 (36%) major amputations

1. 1 patient with an occlusion at 5 months but wound completely healed. Percutaneous lumbar sympathectomy for pain. No major amputation at 22 months.

Plaie guérie chez les 7 patients à 12 mois

1. BK amp. at 2 months, patent pDVA but important oedema and pain
2. BK amp. at 1 month, patent pDVA but important pain
3. BK amp. at 1 month, patent pDVA but important pain
4. BK amp. at 3 months, occluded pDVA



Points-clés en pré et post-opératoire

Sélection des patients

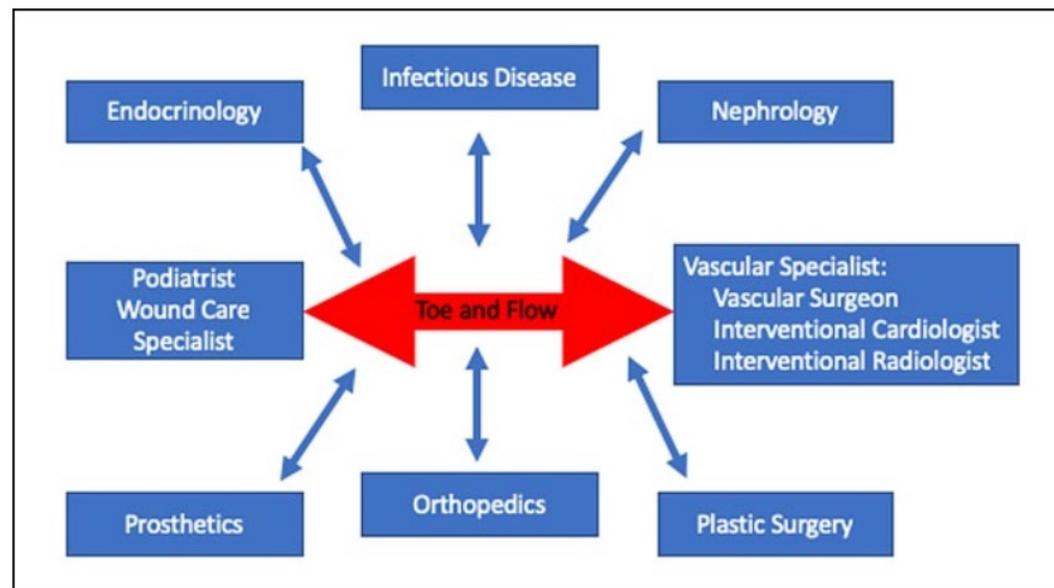
Contre-indications relatives

- **Insuffisance cardiaque**
 - FEVG < 40%
 - Dysfonction diastolique
 - **FAV à haut débit existante (FAV hémodialyse)**
 - Gangrène extensive avant pied
 - Proximale à l'articulation tarso-métatarsienne
 - Sepsis ou infection de la plaie
 - ATCD de TPP ipsilatérale
- Caractéristiques intrinsèques des patients
 - Faible motivation
 - Non-ambulatoire
 - Douleur non contrôlée
 - Espérance de vie limitée
 - Faible qualité de vie

Soins post artérialisation

- **Gestion de la douleur**
 - Narcotiques/Lyrica
 - Bloc
- **Gestion de l'oedème**
 - Élévation du membre
 - Compression (Tubigrip) si toléré
- **Soins de plaie**
 - Pansements/VAC
 - Débridements PRN
 - Décharger la plaie
- **Contrôle de l'infection**
 - Antibiotiques
- **Amputation**
 - « Timing »:
 - Post contrôle de l'oedème
 - 1-3 semaines post DVA idéalement
 - Niveau:
 - Le plus distal possible
 - Doit respecter les arcades veineuses
 - Plaie:
 - *Doit être laissée OUVERTE*
- **Greffe cutanée au besoin**

Importance de l'approche multidisciplinaire



Anticoagulation

- Très peu d'évidences
- Pour 3 mois
 - Anticoagulation (HBPM ou coumadin) + ASA
- Après 3 mois?
 - Anticoagulation + ASA ou « DAPT »

Suivi

- Laboratoire vasculaire?
- TCPO2?
- Doppler?
 - Nous effectuons des mesures de base post DVA et suivons à 1 sem, 1 mois, 3 mois, 6mois

Doppler de suivi

> [Diagnostics \(Basel\)](#). 2020 Sep 28;10(10):760. doi: 10.3390/diagnostics10100760.

Volume Flow and Peak Systolic Velocity of the Arteriovenous Circuit in Patients after Percutaneous Deep Venous Arterialization

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Affiliations + expand

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- Un Débit volumétrique **<195 mL/min** serait prédictif de thrombose et une mesure de **>364 mL/min** au milieu du tuteur serait un signe de perméabilité
- Une PSV **<55 cm/s** serait prédictif de thrombose et **PSV >99 cm/s** serait un indicateur de perméabilité lorsque mesuré au milieu du tuteur

Conclusion

- La DVA percutanée est une technique jeune mais prometteuse et sécuritaire pour les patients Nop-CLTI
- Les réinterventions sont fréquemment nécessaires pour permettre la guérison de la plaie
- La sélection des patients est très importante
- Un suivi clinique rapproché est nécessaire
- La création de la DVA est seulement une partie de la procédure, la clé du succès est l'approche multidisciplinaire
- Les résultats au CHU de Québec sont encourageants et il nous fera plaisir de répondre à vos questions ou d'évaluer vos patients si cette technique n'est pas disponible dans votre centre

Merci!

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