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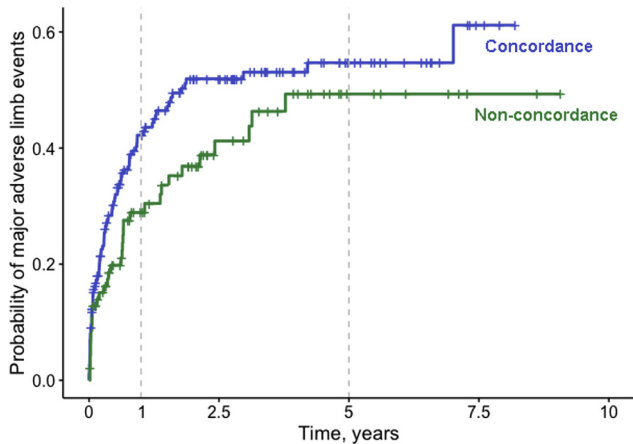


Fig. Kaplan-Meier estimates of major adverse limb events (MALE) stratified by concordance with Global Vascular Guidelines (GVG) treatment recommendations. The concordance group had received treatment in concordance with the GVG-recommended revascularization strategies and the nonconcordance group had not. The 5-year MALE was 54.7% in the concordance group vs 49.3% in the nonconcordance group (log-rank $P = .09$). Multivariate analysis showed no significant differences between the concordance and nonconcordance groups (hazard ratio, 0.72; 95% confidence interval, 0.48-1.09; $P = .12$).

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Living in a Food Desert is Associated With Increased Wound Complications After Major Vascular Procedures



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Objective: Food deserts (FDs) are regions that lack grocery stores, have unaffordable healthy options, and/or have a density of poor-quality food choices. Living in a FD has been associated with metabolic risks; however, its relationship to wound complications after major vascular surgery remains unexplored. We hypothesized that FD status would be associated with an increased incidence of wound complications after major vascular surgery.

Methods: We performed a single-center retrospective analysis of open vascular procedures from 2012 to 2020. FD status was determined by matching the patient census tract location to low- income and low-food access metrics from the U.S. Department of Agriculture Food Access Research Atlas. Major vascular procedures included infrainguinal bypass, femoral endarterectomy, aortofemoral bypass grafting, lower extremity bypass, open abdominal aortic aneurysm repair, and thoracoabdominal aortic repair. The Area Deprivation Index (ADI), a validated marker of socioeconomic status, was used to distinguish the effects of FD status from other markers of social disadvantage such as education and housing. Multivariable logistic regression was used to assess the independent association of FD status with wound complications.

Results: Among 1417 patients, 119 (8%) resided in a FD. Overall, wound complications occurred in 124 patients (9%): 15%, femoral endarterectomy; 14%, aortofemoral bypass grafting; 13%, infrainguinal bypass; 10%, thoracoabdominal aortic aneurysm repair; and 4%, open abdominal aortic aneurysm repair ($P < .01$). Patients in an FD were younger (61 vs 67 years; $P < .01$), more frequently had chronic obstructive pulmonary disease (28% vs 17%; $P = .02$), and had twice the incidence of wound complications (24% vs 12%; $P < .01$). On multivariable analysis, FD status was independently associated with increased odds of wound complications (1.9; 95% confidence interval 1.0-3.5; $P = .04$; Table). On sensitivity analysis, FD status and diabetes interacted, and FD and diabetes combined

resulted in a 2.8-fold increased odds (95% confidence interval, 1.1-7.0) of wound complications compared with those without either risk factor.

Conclusions: Living in a FD was associated with twice the odds of wound complications after major vascular operations. These results suggest that food insecurity can affect wound healing and should be considered as a potential modifiable perioperative risk factor. Future study of interventions aimed at addressing access to healthy foods is warranted.

Table. Multivariable analysis of wound complications

Covariate	aOR ^a	95% CI	<i>P</i> value
Food desert	1.9	1.0-3.5	.04
Obesity	1.6	1.0-2.5	.03
CAD	1.7	1.1-2.6	.01
Area deprivation index ^b			
Medium	1.7	1.0-2.9	.03
High	1.3	0.7-2.2	.42

aOR, Adjusted odds ratio; CAD, coronary artery disease; CI, confidence interval. Boldface *P* values represent statistical significance.

^aAdjusted for age ≥ 70 years, diabetes mellitus, coronary artery disease, area deprivation index, chronic obstructive pulmonary disease, obesity, aspirin, postoperative red blood cell transfusion, chronic kidney disease stage 5, operative indication, and procedure type.

^bCompared with an area deprivation index reference group of low.

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Acute Aortoiliac Arterial Thrombosis in Patients With the Novel Coronavirus Disease 2019: A Case Series and Systematic Review of the Literature



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Objective: Venous thrombosis has been widely described in the setting of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. However, arterial thrombosis has rarely been reported. We aimed to assess the incidence, risk factors, interventions, and outcomes of acute aortoiliac arterial thrombosis in patients with active SARS-CoV-2 infection.

Methods: We present the cases of seven patients with SARS-CoV-2 infection from our institution who had acutely developed thrombi in the aortoiliac arterial system. A systematic review of the literature on aortoiliac arterial thrombosis in patients with SARS-CoV-2 infection was performed. The available data from all reported cases and from our institution were analyzed.

Results: We found 59 patients with SARS-CoV-2 infection who had developed acute aortoiliac thrombosis. The abdominal aorta was the most frequent location for the development of thrombus (Table I). The baseline demographics and medical comorbidities were not significantly different between the symptomatic and asymptomatic cohorts. Of the 59 patients, 71% were symptomatic (lower limb ischemia, 75.0%; renal infarction, 20.0%; stroke, 12.5%; mesenteric ischemia, 10.0%). All patients with thrombus involving the ascending aorta, aortic bifurcation, or iliac artery had developed complications. All the patients had received systemic anticoagulation (Table II). Of all 59 patients, 53% were treated medically, and 94% of asymptomatic patients were treated medically. One asymptomatic patient underwent endovascular aspiration of a mobile thrombus. Three patients in the asymptomatic cohort (23.1%) had died of hypoxic respiratory failure. Fourteen patients in the symptomatic cohort (36.8%) had died. The in-hospital mortality rate was 33.3% overall and 43.8% for patients with thrombi involving more than one aortoiliac segment.

Conclusions: The presence of thrombi in the aortoiliac arterial system appears to be a poor prognostic indicator for patients with active SARS-CoV-2 infection. The presence of thrombi involving the ascending aorta, aortic bifurcation, or iliac artery could warrant consideration for operative intervention because of the risk of thromboembolic or ischemic complications. Further study is needed to fully delineate the risk factors, optimal treatment, and outcomes of arterial thrombosis in the setting of SARS-CoV-2 infection.

Table I. Arterial territories affected by acute thrombosis in the setting of SARS-CoV-2 infection

Territory	All patients (n = 59)	Asymptomatic patients (n = 16)	Symptomatic patients (n = 40)	P value
Ascending aortic thrombus	5 (8.5)	0 (0.0)	5 (12.5)	.138
Aortic arch thrombus	12 (20.3)	7 (43.8)	4 (10.0)	.004
Descending aortic thrombus	17 (28.8)	10 (62.5)	7 (17.5)	.001
Abdominal aortic thrombus	27 (45.8)	2 (12.5)	23 (57.5)	.002
Aortic bifurcation/iliac artery thrombus	20 (33.9)	0 (0.0)	20 (50.0)	.000
Concomitant infrainguinal arterial thrombosis	16 (27.1)	0 (0.0)	16 (40.0)	.003
Concomitant infrapopliteal arterial thrombosis	13 (22.0)	0 (0.0)	13 (32.5)	.009

SARS-CoV-2, Severe acute respiratory syndrome coronavirus 2. Data presented as number (%).

Table II. Management strategies used and in-hospital mortality

Variable	All patients	Valid no.	Asymptomatic patients	Valid no.	Symptomatic patients	Valid no.	P value
Managed medically	29 (52.7)	55	15 (93.8)	16	14 (35.9)	39	.000
Received systemic anticoagulation	43 (100)	43	14 (100)	14	29 (100)	29	NA
Required surgery	24 (42.9)	56	1 (6.3)	16	23 (57.5)	40	.000
Open surgery performed	22 (91.7)	24	0 (0.0)	1	22 (95.7)	23	NA
Endovascular therapy performed	5 (20.8)	24	1 (100.0)	1	4 (17.4)	23	NA
Received thrombolytic agents	6 (10.9)	55	1 (6.3)	16	5 (12.8)	39	.478
In-hospital mortality	17 (33.3)	51	3 (23.1)	13	14 (36.8)	38	.363

NA, Not applicable. Data presented as number (%), unless noted otherwise.

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Feasibility and Utility of Pedal Acceleration Time as Novel Assessment Tool for Limb Ischemia



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Objective: A number of diagnostic tools are available to evaluate tissue perfusion in patients with peripheral artery disease (PAD). However, it is not uncommon for patients to have noncompressible vessels, concomitant inflammation, or prior minor amputations that preclude the use of these metrics accurately and reproducibly. Recently, the pedal acceleration time (PAT) has been proposed as a novel predictor of limb ischemia. Thus, we evaluated the feasibility of using PAT as an alternative measure of limb ischemia.

Methods: We abstracted data for patients who had undergone evaluation for PAD with PAT measurements from June 2020 to December 2020. The demographics, comorbidities, clinical history, and symptoms were captured from the electronic medical records. The PATs were obtained for five predetermined pedal vessels by certified vascular laboratory technicians. The primary outcome was the PAT correlation with the ankle brachial index (ABI), ankle pressure (AP), toe brachial index (TBI), and toe pressure (TP). The secondary outcome was the PAT correlation with symptoms. Statistical analysis was performed using Pearson's correlation, linear regression, and analysis of variance.

Results: A total of 58 patients (74.1% male; 82.8% with diabetes; 74.1% with hypertension; 29.3% with renal disease; and 39.6% with tobacco use) with 71 lower extremities had undergone arterial duplex ultrasound with PAT measurements for evaluation of PAD. Of the 71 lower extremities, 42% had undergone prior revascularization, 22.5% had undergone prior podiatric intervention, 39% had presented with rest pain or foot wounds, 28% had had claudication, and 31% were asymptomatic. Although the ABI and AP demonstrated negative correlations with the maximum, minimum, and average PATs, the TP and TBI also demonstrated negative correlations with individual pedal PATs. The strongest correlation was with the maximum PAT [TP: $r(64) = -0.51$; $P < .001$; TBI: $r(64) = -0.48$; $P < .001$] and average PATs [TP: $r(64) = -0.51$; $P < .001$];

TBI: $r(64) = -0.47$; $P < .001$]. The ABI, AP, TBI, and TP did not correlate with the angiosome PATs for the limbs with foot wounds. No significant correlation was found between symptoms and the PATs.

Conclusions: The PAT increased with decreasing ABI, AP, TP, and TBI and, thus, might be an alternative metric for assessing limb ischemia severity, especially in those with highly calcified tibial and pedal arteries.

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Predictors of Amputation-Free Survival and Wound Healing After Infrainguinal Bypass with Alternative Conduits



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Objective: Inadequate vein quality or prior harvest precludes the use of autologous single-segment great saphenous vein (ssGSV) in many patients with chronic limb-threatening ischemia (CLTI). How the clinical characteristics and the use of alternative (non-ssGSV) conduits relate to patient outcomes after infrainguinal bypass is not well understood. We hypothesized that the limb presentation, bypass target, and conduit type would be associated with amputation-free survival (AFS) after infrainguinal bypass using alternative conduits.

Methods: A single-center retrospective study (2013-2020) was performed of 139 patients with CLTI who had undergone infrainguinal bypass with a cryopreserved GSV (n = 71), polytetrafluoroethylene (PTFE) graft (n = 23), or an arm or spliced vein (n = 45). The characteristics, wound, ischemia, foot infection (WIFI) stage, and outcomes were recorded. Multivariable Cox proportional hazards and CART (classification and regression tree analysis) were used to model the predictors of AFS.

Results: The mean patient age was 71 years, 59% were men, and 51% had undergone nonelective procedures. More patients who had undergone bypass with a cryopreserved GSV had had WIFI stage 4 (41%) compared with those who had received a PTFE graft (13%) or arm or spliced vein (27%; $P = .04$). The AFS was 80% for the arm/spliced vein group, 83% for the PTFE graft group, and 61% for the cryopreserved GSV group (adjusted hazard ratio [aHR] for cryopreserved GSV group,