

Section: SURGERY

Abstract: CIR-O4

Transverse tibial cortex transport for below-knee ischemic lesions of the lower limbs: a cohort study

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INTRODUCTION: Transverse tibial cortex transport (TTT) may be an alternative for patients with lower-limb ischemia who would otherwise undergo amputation. This study assessed the effectiveness of TTT in reducing amputation rates and improving tissue perfusion among patients with lower-limb lesions who were not candidates for revascularization. **METHOD:** This nonrandomized comparative cohort with a retrospective arm compared two groups of patients with ischemic lower-limb lesions. The control group (CG; retrospective analysis) included patients with an ankle-brachial index ≥ 0.4 and Wagner grade 2 to 4 lesions. The intervention group (IG; prospective analysis) included patients who met the same inclusion criteria and were treated with TTT. The IG was followed for six months to assess collateral-vessel formation by angiography and progression of ischemic lesions. Demographic and clinical characteristics included age, sex, comorbidities, previous amputations and osteomyelitis, Wagner lesion grade, and treatment complications. The primary outcome was the transtibial amputation rate, and the secondary outcome was post-TTT angiographic findings. Statistical analyses used the chi-square test for nonparametric variables, Student's t-test for parametric variables, relative risks, and 95% confidence intervals. **RESULTS:** Twenty-five patients were included (nine in the IG and 16 in the CG). There were no statistically significant differences in demographic or clinical characteristics between groups: male sex [66.7% vs 68.8% ($p=0.91$)], mean age [67 vs 63.6 years ($p=0.53$)], previous amputations [88.9% vs 50% (RR 0.125; 95% CI 0.013–1.24; $p=0.052$)], ≥ 3 comorbidities [55.6% vs 43.8% (RR 0.62; 95% CI 0.12–3.22; $p=0.57$)], previous osteomyelitis [100% vs 75% (RR 1.33; 95% CI 1.005–1.769; $p=0.102$)], Wagner lesion grade [3.78 (SD 0.44) vs 3.38 (SD 0.50) ($p=0.56$)], and complications [33.3% vs 43.8% (RR 1.556; 95% CI 0.284–8.531; $p=0.610$)]. For the primary outcome, transtibial amputation occurred in 22.2% of the IG versus 100% of the CG (RR 0.22; 95% CI 0.065–0.754; $p<0.0001$). For the secondary outcome, collateral circulation increased in 77.7% of IG patients. **DISCUSSION:** Demographic data indicate that the groups were comparable, although the IG had more severe disease, with more previous amputations, osteomyelitis, and comorbidities, albeit without statistically significant differences. TTT produced an improvement of approximately 78% compared with no intervention ($p<0.0001$), suggesting that it is an important new therapy that should be investigated in robust randomized studies. In addition, collateral vessels on angiography demonstrate the intervention's angiogenic potential and its contribution to limb preservation. **CONCLUSION:** The findings indicate that TTT may significantly reduce amputation rates and markedly improve tissue perfusion among patients with chronic ischemia who are not candidates for revascularization.

KEYWORDS: Transverse tibial cortex transport; Chronic lower-limb ischemia; Amputation; Tissue perfusion