Clinical Impact of Improvement in the Ankle–Brachial Index after Endovascular Therapy for Peripheral Arterial Disease

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Introduction
Predictive ability of changes in ABI after EVT for long-term clinical outcomes has not been well evaluated.

Study Population
2517 patients (4245 limbs)
consecutive endovascular therapy for aortoiliac or femoropopliteal lesions
732 limbs for repeated revascularization

2517 patients (3542 limbs)
first treated limbs per patients

1499 limbs excluded
236 limbs Asymptomatic or unknown symptom
469 limbs Ischemic ulceration and gangrene
1131 limbs Below the knee lesions
13 limbs Only aortic lesions
17 limbs Acute limb ischemia
13 limbs Failed EVT

1575 patients (2043 limbs)
successful endovascular therapy for symptomatic aortoiliac or femoropopliteal lesions

364 limbs excluded
12 limbs Preprocedural ABI>1.4
169 limbs Inadequate data for preprocedural ABI
272 limbs Inadequate data for postprocedural ABI

1307 patients (1679 limbs)
successful endovascular therapy for symptomatic aortoiliac or femoropopliteal lesions with pre- and postprocedural ABI

1307 patients (1307 limbs)
underwent their first endovascular therapy

ΔABI≥0.15 group (980 limbs)  ΔABI<0.15 group (327 limbs)

Results

A. All-cause mortality
Crude HR 0.77 (95% CI 0.60–0.98), P=0.03
Adjusted HR 0.82 (95% CI 0.63–1.07), P=0.14

B. Target limb revascularization or major amputation
Crude HR 0.70 (95% CI 0.56–0.87), P=0.01
Adjusted HR 0.54 (95% CI 0.42–0.68), P<0.001

C. Target limb revascularization
Crude HR 0.70 (95% CI 0.56–0.87), P=0.02
Adjusted HR 0.54 (95% CI 0.45–0.73), P<0.001

D. Major amputation for target limb
Crude HR 0.65 (95% CI 0.16–2.61), P=0.54
Adjusted HR 0.50 (95% CI 0.09–2.94), P=0.45

Fewer patients with ΔABI≥0.15 suffered from all-cause death compared with those with ΔABI<0.15 groups.
Target limb revascularization was significantly lower in the ΔABI≥0.15 than in the ΔABI<0.15 group.
Major amputation was performed for 9 limbs, with no significant difference between the two groups.

Conclusions
An increase of ABI≥0.15 after successful EVT was an independent predictor for freedom from a composite of target limb revascularization and major amputation.
While it remains debatable whether more aggressive EVT improves ΔABI, further studies are needed to test the hypothesis that physiology-guided EVT reduces late clinical events.
Larger-scale studies are needed to clarify why the increase of ABI≥0.15 is associated with lower mortality following the lower risk of revascularization.