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# Early outcomes of endovascular treatment for chronic limb-threatening ischemia in the elderly

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**Introduction:** Chronic limb-threatening ischemia (CLTI) carries a high risk of amputation and death.[1] Studies show that conservative treatment in older patients results in higher mortality rate than in those treated by revascularization and that endovascular-first approach in this population is safe and feasible.[2-4] The aim of our study was to assess early outcomes of endovascular treatment for elderly CLTI patients at our hospital.

**Patients and Methods:** We conducted a retrospective analysis of patients aged ≥75 years admitted for CLTI and treated by endovascular intervention at University Hospital Centre Zagreb between 09/2024 and 09/2026. Primary endpoints were defined as all-cause mortality, major amputation, and minor amputation during the index hospitalization and within 90 days of the intervention. Secondary endpoint was to assess documented statin use and antithrombotic/anticoagulant treatment at admission. Comparisons by sex and age (75–79 versus ≥80 years) were analyzed using Fisher and Fisher–Freeman–Halton exact tests.

**Results:** A total of 93 patients (53.8% male, median age 80 years) were included. Baseline characteristics are presented in **Table 1**. In-hospital data were available for all patients. Mortality data for the 90-day follow-up period were available for 85 patients, and amputation data for 81 patients (missing data were related to deaths and incomplete follow-up due to recent intervention date). In-hospital mortality, major amputation and minor amputation occurred in 2 (2.2%), 8 (8.6%), and 7 (7.5%) patients, respec-

**TABLE 1. Baseline characteristics by age group.**

| Characteristic | Overall (n = 93) | 75–79 years (n = 44) | ≥80 years (n = 49) |
|---|---|---|---|
| Age, years, median (range) | 80 (75–91) | 78 (75–79) | 83 (80–91) |
| Male sex | 50 (53.8) | 24 (54.5) | 26 (53.1) |
| Arterial hypertension | 84 (90.3) | 41 (93.2) | 43 (87.8) |
| Diabetes mellitus | 45 (48.4) | 24 (54.5) | 21 (42.9) |
| Chronic kidney disease | 56 (60.2) | 21 (47.7) | 35 (71.4) |
| Hemodialysis | 1 (1.1) | 1 (2.3) | 0 (0.0) |
| Coronary artery disease | 21 (22.6) | 8 (18.2) | 13 (26.5) |
| Previous lower-limb revascularization | 23 (24.7) | 11 (25.0) | 12 (24.5) |
| Rutherford category 4 | 30 (32.3) | 16 (36.4) | 14 (28.6) |
| Rutherford category 5 | 60 (64.5) | 26 (59.1) | 34 (69.4) |
| Rutherford category 6 | 3 (3.2) | 2 (4.5) | 1 (2.0) |
| Statin at admission | 54 (58.1) | 30 (68.2) | 24 (49.0) |
| Any antithrombotic treatment* at admission | 61 (65.6) | 27 (61.4) | 34 (69.4) |

Values are n (%) or median (range); *aspirin/clopidogrel, aspirin+rivaroxaban or anticoagulants.

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**TABLE 2. Early outcomes by age and sex.**

| Outcome | Overall | 75–79 years | ≥80 years | P (age) | Male | Female | P (sex) |
|---|---|---|---|---|---|---|---|
| In hospital | | | | | | | |
| Mortality | 2/93 (2.2) | 1/44 (2.3) | 1/49 (2.0) | 1.000 | 0/50 (0.0) | 2/43 (4.7) | 0.211 |
| Amputation distribution | | | | 0.216 | | | 0.088 |
| No amputation | 78/93 (83.9) | 34/44 (77.3) | 44/49 (89.8) | | 38/50 (76.0) | 40/43 (93.0) | |
| Major amputation | 8/93 (8.6) | 6/44 (13.6) | 2/49 (4.1) | | 6/50 (12.0) | 2/43 (4.7) | |
| Minor amputation | 7/93 (7.5) | 4/44 (9.1) | 3/49 (6.1) | | 6/50 (12.0) | 1/43 (2.3) | |
| Within 90 days after intervention | | | | | | | |
| Mortality | 4/85 (4.7) | 2/42 (4.8) | 2/43 (4.7) | 1.000 | 3/48 (6.2) | 1/37 (2.7) | 0.629 |
| Amputation distribution | | | | 0.274 | | | 0.860 |
| No amputation | 73/81 (90.1) | 34/40 (85.0) | 39/41 (95.1) | | 40/45 (88.9) | 33/36 (91.7) | |
| Major amputation | 4/81 (4.9) | 3/40 (7.5) | 1/41 (2.4) | | 2/45 (4.4) | 2/36 (5.6) | |
| Minor amputation | 4/81 (4.9) | 3/40 (7.5) | 1/41 (2.4) | | 3/45 (6.7) | 1/36 (2.8) | |

Values are n/N (%). Postdischarge analysis excluded in-hospital deaths and unavailable data. Comparisons are exploratory and unadjusted.

tively. Four patients (4.7%) died within 90 days after intervention. 90-day amputations occurred in 8 patients (9.9%) – 4 major and 4 minor. Although in-hospital and 90-day major and minor amputations were numerically higher in younger and male patients, differences did not reach statistical significance. Furthermore, there was no significant age or sex difference in in-hospital or 90-day mortality (**Table 2**). Only 58.1% patients received statins prior to admission, and antithrombotic therapy was recorded in 65.6% patients. No statistically significant differences in statin or antithrombotic use were observed between men and women or the age groups studied.

**Conclusion:** In our cohort, endovascular treatment was associated with low in-hospital and 90-day adverse outcomes, with no significant age or sex differences, in accordance to similar published data.[5] Limited statin and antithrombotic use at admission warrants a better secondary prevention in this population.

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