Impact of extent of revascularization on limb salvage for chronic limb threatening ischemia

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Background

- **Chronic limb-threatening ischemia (CLTI)** affects nearly 10% of adults worldwide and is associated with:
  - Chronic pain at rest, gangrene, and/or ulcers
  - 20% risk of major amputation
- **Multi-level disease is common for CLTI**, with differential treatment based on levels of disease
  - Inflow (above the inguinal ligament)
  - Outflow (below the inguinal ligament)
- Inflow with or without outflow revascularization can provide adequate blood supply to aid in wound healing

There is little evidence about if inflow intervention vs. inflow and outflow intervention is needed to heal wounds and prevent major amputation

Hypothesis

Among patients with multilevel disease and CLTI, we hypothesize that isolated inflow procedures would be adequate for the healing of small wounds.

CLTI-Wound Retrospective Cohort

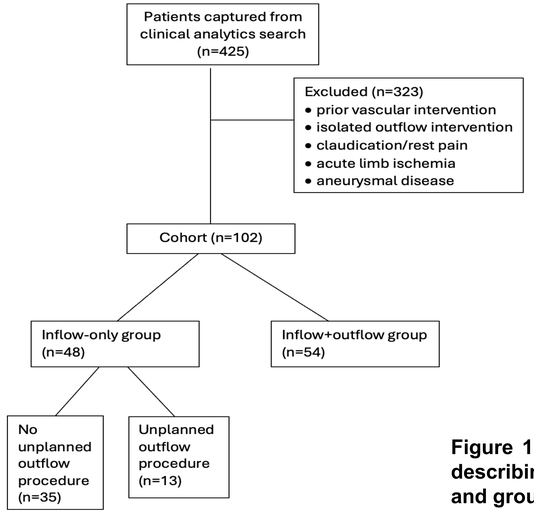

Figure 1. Consort diagram describing search strategy and group determination.

Methods

- Lower extremity revascularization procedures (2016-2020) at a multi-hospital, single healthcare system were reviewed using the search term “tissue loss” followed by individual patient chart review
- Patients undergoing inflow-only procedures were compared to those undergoing inflow with concurrent outflow (inflow+outflow) procedures
- Primary outcome: one-year major amputation rate
- Secondary outcomes: repeated ABIs, toe pressures (TPs), and WIfI scores as a change from baseline

Results

	Inflow-only (n=48)	Inflow+outflow (n=54)
Length of stay (days)	9.42	9.46
In-hospital mortality within 30 days	2 (2%)	0 (0%)
One year limb amputation rate	No amp: 43 (89.58%) BKA: 2 (4.17%) AKA: 3 (6.25%)	No amp: 48 (88.89%) BKA: 5 (9.26%) AKA: 1 (1.85%)
One year mortality rate	14 (29.17%)	11 (20.37%)
One year major adverse cardiac event (MACE) rate	11 (22.92%)	10 (18.52%)
One year major adverse limb event (MALE) rate	14 (29.17%)	17 (31.48%)
Preop ABI	0.35 (SD 0.26), range 0-0.99	0.42 (SD 0.24), range 0-0.97
Preop toe pressure	15.43 (SD 23.49), range 0-86	20.28 (SD 23.38), range 0-87)
Preop Rutherford class	5: 33 (68.75%) 6: 15 (31.25%)	5: 40 (74.07%) 6: 14 (25.93%)
Preop WIFI total score	1: 1 (2.7%) 2: 3 (8.11%) 3: 16 (43.24%) 4: 17 (45.95%)	1: 2 (4.88%) 2: 2 (4.88%) 3: 11 (26.83%) 4: 26 (63.41%)

Table 1. Outcomes data for inflow-only and inflow+outflow groups.

Results

- Mean age 70.5±11.1 years, 64.7% male, 84% White
- In inflow-only group, 13 (27%) underwent unplanned outflow interventions
- Preop ABI, TP, and WIfI were similar between the planned and unplanned subgroups in the inflow cohort
- Those requiring subsequent outflow had lower one-month post-operative ABI and TPs

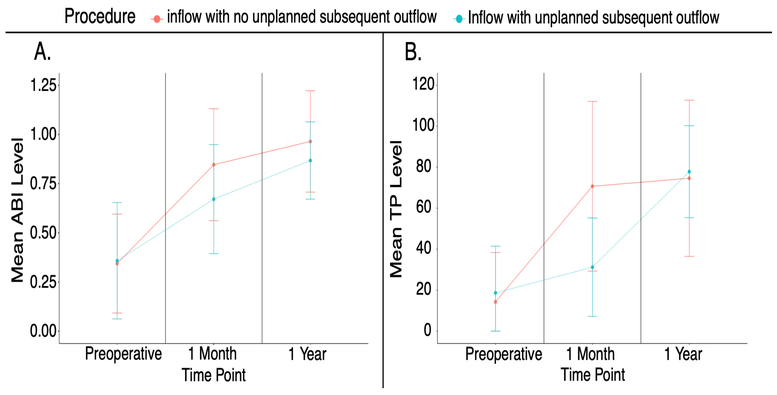

Figure 2. Change in ABI and TP over time in the inflow-only group based on unplanned outflow intervention.

Conclusions

- Patients with inflow-only revascularization had a higher prevalence of comorbidities but similar amputation rates and improvement in WIfI stage as those who underwent concurrent inflow+outflow procedures
- Additionally, major amputation was not increased in inflow-only patients requiring subsequent outflow revascularization
- These findings support that inflow-only revascularization may be acceptable in CLTI patients, reserving outflow procedures for those who do not exhibit improved toe pressures at one-month post-op