Poland, Wrocław 01-Jul-2025

Study Design

NCT numer: *pending*

Title: Assessment of Vascular Complications in Patients Undergoing Peripheral Revascularization: The Impact of SGLT-2 Inhibitors

Type: Retrospective, observational study

1. **Study Objective**: To assess the impact of SGLT2 inhibitors on vascular complications in patients undergoing peripheral revascularization.

Specific Objective: To evaluate the occurrence of 3-point MACE (Major Adverse Cardiac Events) or MALE (Major Adverse Limb Events) after vascular surgery procedures (both open and minimally invasive), performed electively or urgently, in patients previously treated with SGLT2 inhibitors.

Follow-up period: ONE YEAR: assessment at 30 days, 3 months, and 12 months post-procedure.

Definition of MACE:

Myocardial infarction (MI) not resulting in death

Stroke affecting the central nervous system (CNS) not resulting in death

Cardiovascular death

**Definition of MALE:*

Untreated loss or deterioration of patency in a previously revascularized vessel (decline in ABPI)

Repeat intervention in the revascularized segment due to loss of patency

Amputation (above or below the knee) of the revascularized limb

2. **Primary Outcome Measures**: MALE and MACE

3. **Secondary Outcome Measures:** Individual components of MALE and MACE

4. **Additional Secondary Outcome Measures**:

Surgical complications such as surgical site infection (SSI) or major bleeding

Acute kidney injury

Need for reintervention (readmission and procedure in the same segment)

Foot necrosis

“Minor amputation” (defined as amputation within the foot)

Hospitalization due to heart failure

5. Inclusion and Exclusion Criteria

Inclusion Criteria:

Surgical procedure on peripheral vessels due to acute or chronic ischemia

Use of SGLT2 inhibitors (reason for initiation is irrelevant: CKD – chronic kidney disease / cardiovascular indications / diabetes) - Condition required only for the drug-exposed group.

Ability to follow up the patient for at least 30 days up to 1 year after the vascular procedure

Exclusion Criteria:

Vascular injury as the reason for the procedure

Amputation for reasons other than ischemia (e.g., tumor, neuropathy, trauma without concomitant ischemia)

Planned revascularization procedure not involving lower limbs (e.g., coronary or carotid vessels)

Planned amputation due to ischemia, partial, in the area of the operated limb

Planned other major surgical procedure with high cardiovascular risk

6. Collected Parameters (at admission to the vascular surgery ward):

Laboratory tests:

Complete blood count

Blood creatinine with eGFR

Urinalysis

Full lipid panel

HbA1c (if patient has diabetes)

Fasting glucose (FG)

Anthropometric data: weight, height – calculation of BMI (body mass index)

Demographics: age and biological sex

Medical history (structured questions):

a. Does the patient have diabetes? (If YES: record type 1 or 2; duration in years or <1 year if less than one year; medications for diabetes; presence of chronic microvascular complications: neuropathy, albuminuria, diabetic eye disease)

b. Does the patient have a history of:

Myocardial infarction (MI)

Stroke

Diagnosed peripheral arterial occlusive disease (PAD) (if YES: date of diagnosis; date of symptom progression that led to current procedure)

Previous interventions on coronary vessels (if YES: date in years, e.g., 5 years ago, or <1 year if within the past year)

Previous interventions on carotid or other head/neck vessels (if YES: date in years, e.g., 5 years ago, or <1 year if within the past year)

Additional Collected Parameters :

Previous interventions on lower limb vessels (including iliac arteries – e.g., external iliac artery): indicate the date in years, e.g., 5 years ago, or <1 year if within the past year

History of aortic aneurysm surgery (thoracic or abdominal); if YES, indicate date

History of heart failure treatment

Hypertension

Hyperlipidemia

History of cardiac arrhythmias (e.g., atrial fibrillation – AF)

Thyroid disease (hypothyroidism/hyperthyroidism only); if YES, provide most recent TSH value, if known or measured in hospital

Smoking status:

Current smoker?

If NO, date of cessation in years, <1 year if within the past year

Includes e-cigarettes (if yes, mark YES)

Chronic medications before hospital admission (excluding supplements) – chemical names

Recent interruptions in chronic medications

SGLT2 inhibitor (flozin) used before procedure: type, dose, duration, indication (diabetes, cardiology, nephrology)

7. Parameters to collect during follow-up (post-procedure):

Medications prescribed for chronic use: chemical names

Whether prescribed medications were taken regularly during follow-up

Occurrence of any of the following events**:

a. Myocardial infarction not resulting in death

b. Stroke (central nervous system) not resulting in death

c. Cardiovascular death

d. Deterioration of previously revascularized vessel (ABI decrease) confirmed by visit to vascular surgeon/angiologist

e. Repeat intervention in previously revascularized segment due to deterioration

f. Amputation (above or below knee) of revascularized limb

g. Deep surgical site infection (other than skin)

h. Major bleeding: at surgical site, gastrointestinal, other (specify location)

i. Acute kidney injury

j. Necrosis of the foot

k. “Minor amputation” (foot or toes)

l. Hospitalization due to heart failure

8. SGLT2 inhibitor (flozin) continuation during follow-up (up to 1 year):

Did the patient continue taking the flozin as before the procedure?

If not, was it discontinued immediately before surgery or during follow-up? Indicate timing.

9. Hypoglycemia in patients with diabetes:

Were there any hypoglycemic events? (Symptoms confirmed by blood glucose <70 mg/dL or asymptomatic blood glucose <70 mg/dL)

10. Type of procedure performed:

Record the specific vascular intervention.

11. ABI measurements:

Pre-procedure ABI

Post-procedure ABI

ABI if the patient underwent another procedure during follow-up due to restenosis

Notes / Guidelines:

SGLT2 inhibitors (flozins) – include also combination drugs (e.g., Xigduo). If the patient takes a combination drug, mark each component in the Excel sheet (e.g., Lonamo Duo → mark both metformin and DPP-4i; Dipeptidyl Peptidase-4 inhibitors).

If information is unavailable, enter “NZ” to confirm it was checked.

For stroke, include TIA (Transient Ischemic Attack) if confirmed.

*MALE definitione, comments: Untreated loss or deterioration of patency in a previously revascularized vessel, measured by: ABI decrease (objective), Restenosis on ultrasound (objective), Shortening of claudication distance (subjective/clinical). Comment: If ABI is not performed at a center, other listed criteria may be used to confirm MALE. ABI is not strictly required if another criterion is met.

**For follow-up events (point 7):

Myocardial infarction not resulting in death, CNS stroke not resulting in death, cardiovascular death, or deterioration of previously revascularized vessel. Comment: “Deterioration requiring

visit and confirmed by physician” is sufficient; ABI measurement is optional but preferred for objective confirmation. Record method of confirmation.

For ABI (point 11): If ABI was not measured at any of the time points, mark “not performed.”

The key is that inclusion criteria are met and primary, secondary, and additional endpoints are assessed.