

Minimally Invasive Dual-Port Local Antibiotic Delivery Using a Gentamicin-Eluting Bone Graft Substitute Demonstrates High Eradication Rates in Diabetic Foot Osteomyelitis

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Cutting Edge Research

BACKGROUND, PURPOSE & COHORT

Why this approach?

- Diabetic foot osteomyelitis carries high recurrence and amputation risk.
- Conventional surgery may require extensive bone resection.
- Systemic antibiotics may have limited bone penetration and cause toxicity.
- Local antibiotic delivery provides high concentrations at the infection site while preserving bone.

Purpose

Evaluate clinical outcomes of a minimally invasive dual-port technique delivering a gentamicin-eluting hydroxyapatite/calcium sulfate bone void filler for forefoot DFO.

Study design & cohort

Design	Retrospective case series
Patients	35 adults
Location	Forefoot DFO
Technique	Dual-port antibiotic delivery
Mean follow-up	25 months
Primary outcome	Infection eradication

CLINICAL RESULTS

30 / 35
85.7% INFECTION
ERADICATION

5 / 35
14.3% MINOR
AMPUTATIONS

0
MAJOR AMPUTATIONS

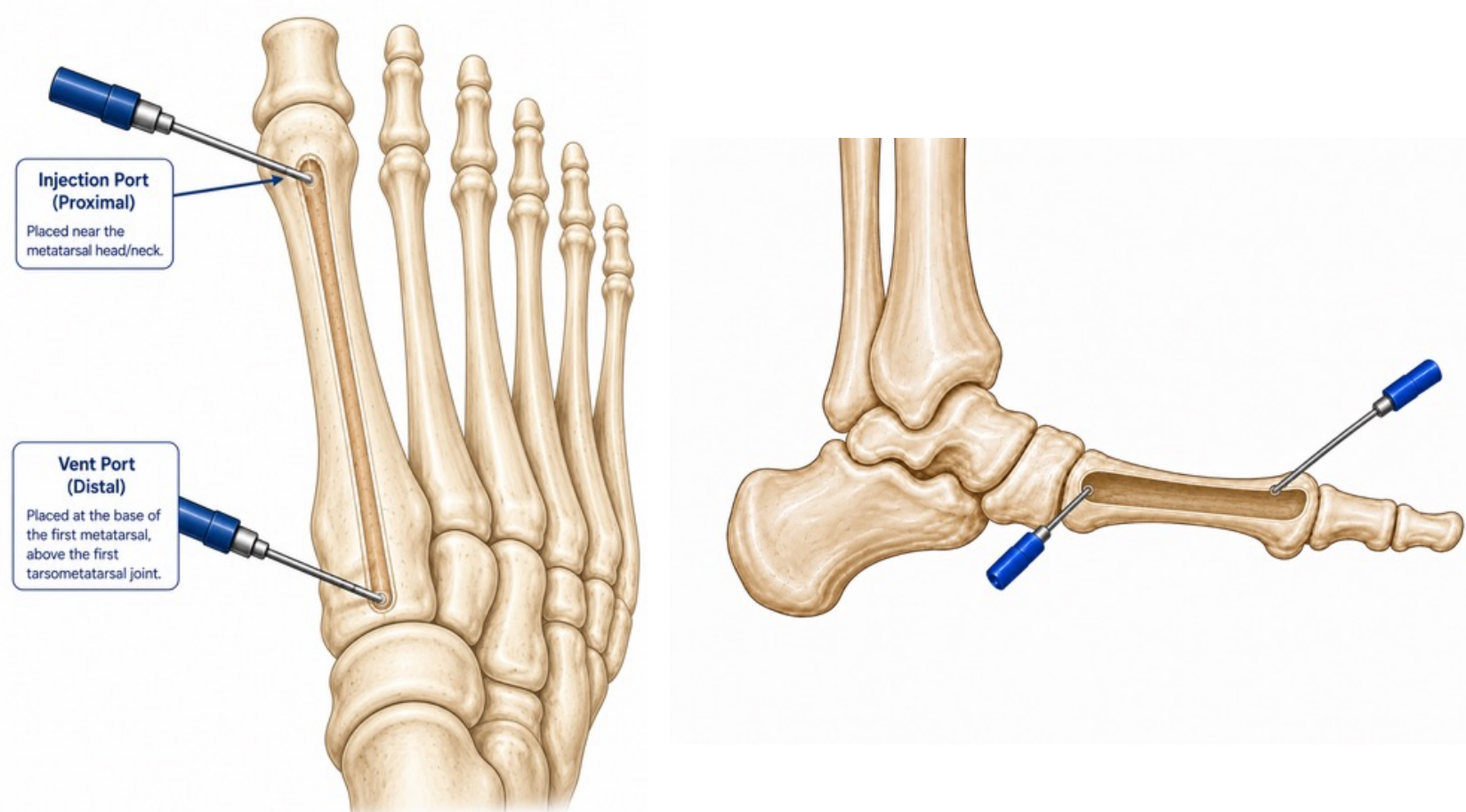
0
SYSTEMIC TOXICITY

0
FILLER-RELATED
COMPLICATIONS

25
MONTHS MEAN FOLLOW-
UP

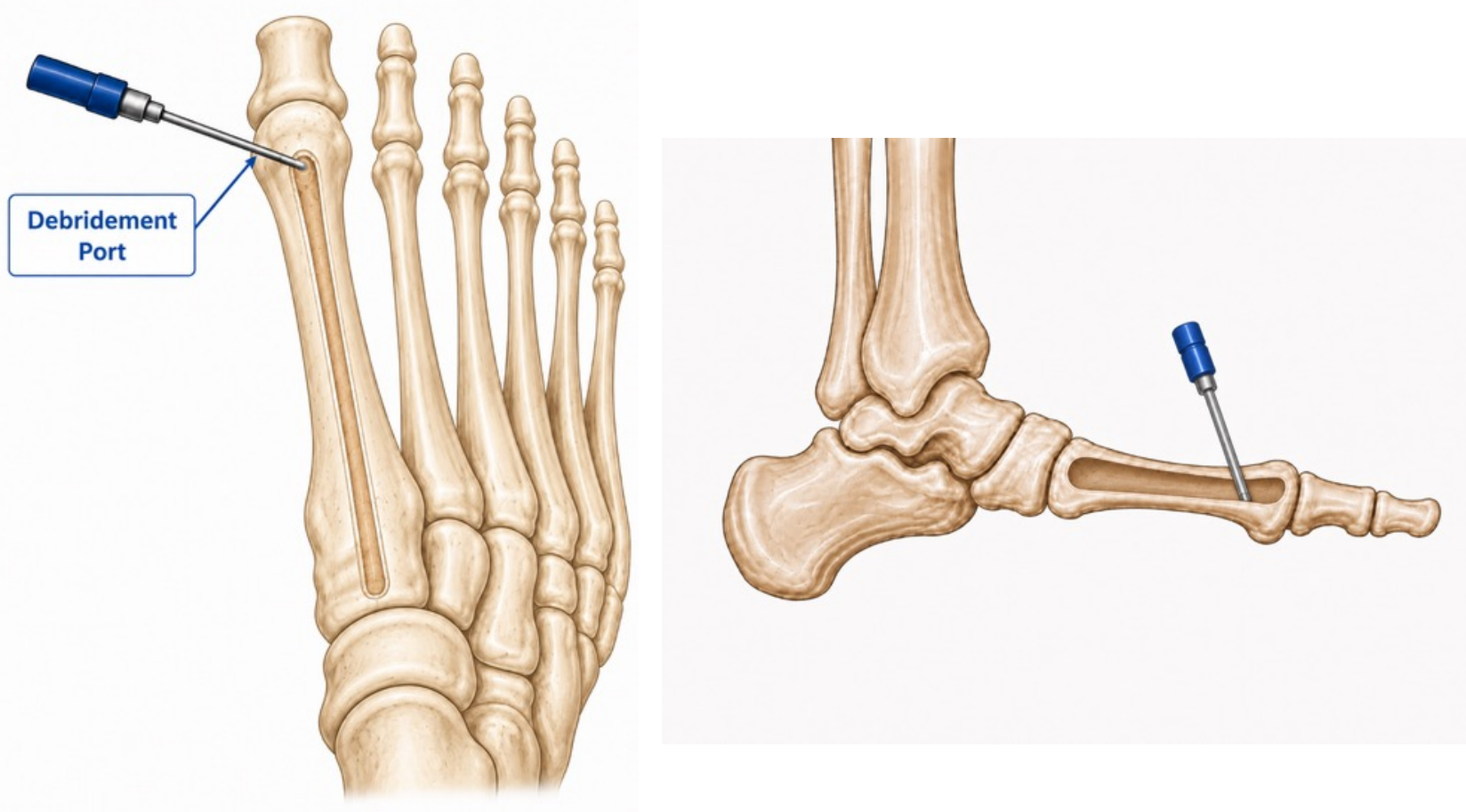
B-PLAST DUAL-PORT TECHNIQUE: FIVE-STEP PROCESS

1 ACCESS & PLANNING



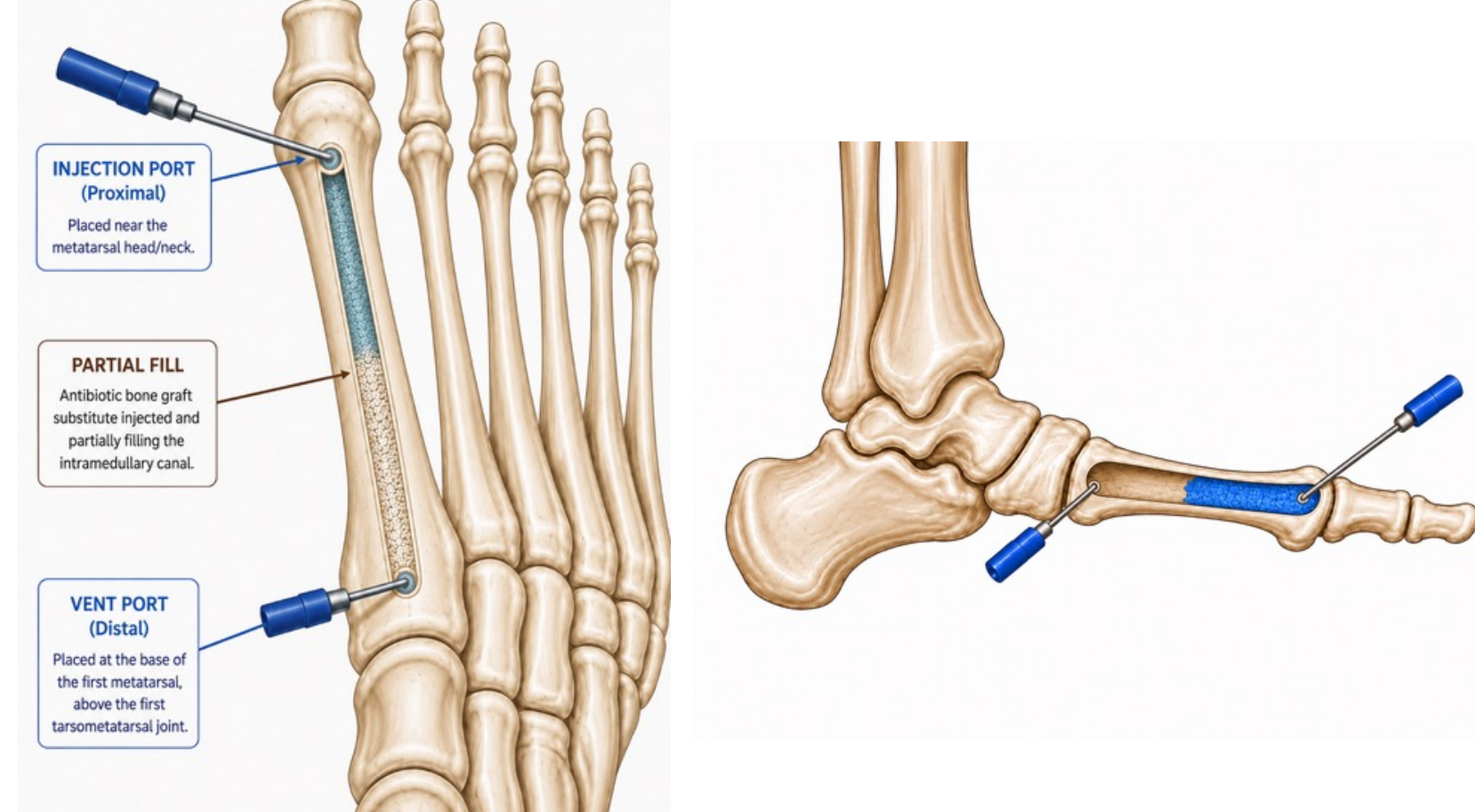
Plan injection and vent access.

2 BONE SAMPLING & DEBRIDEMENT



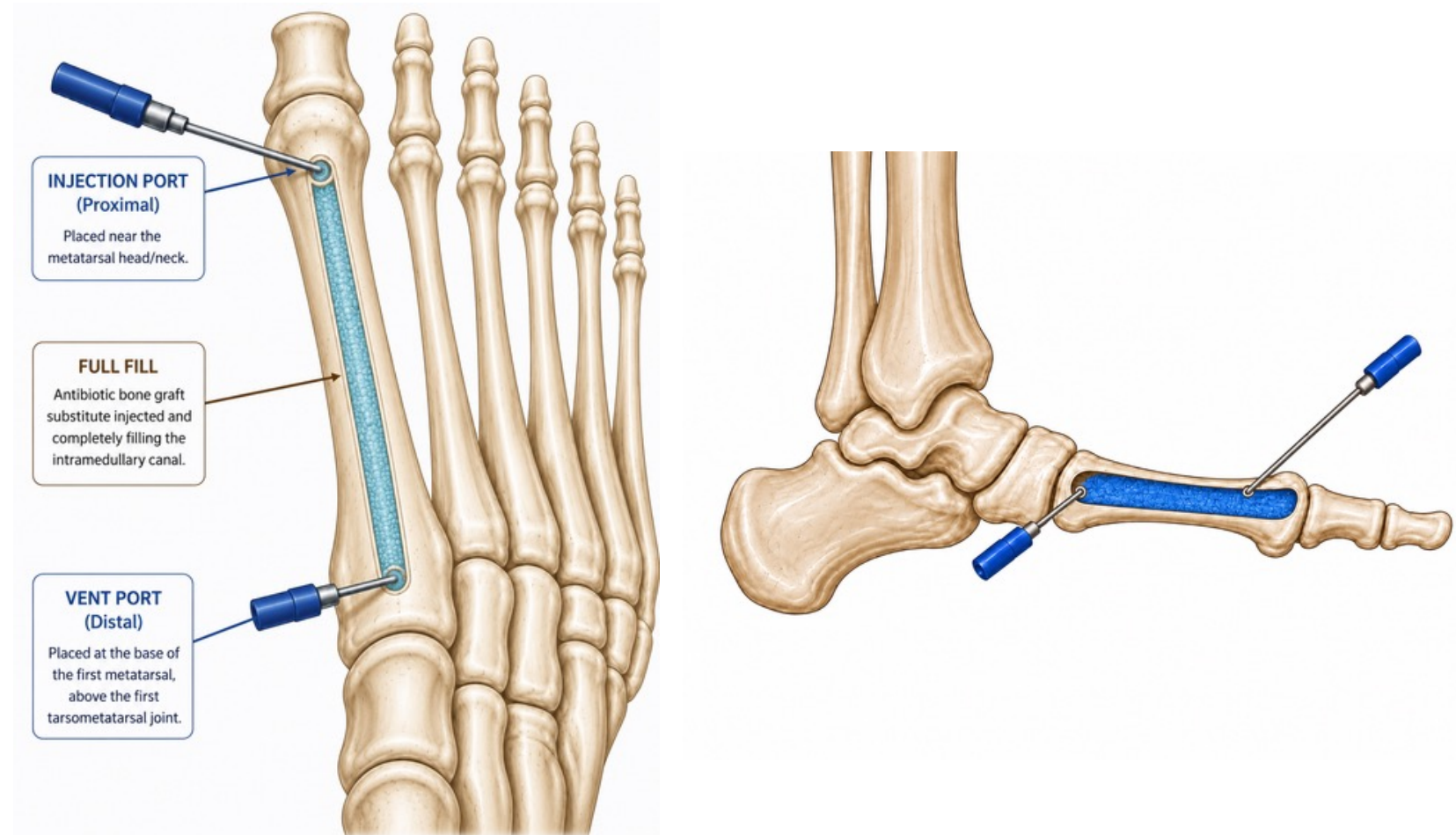
Obtain bone samples and remove nonviable tissue.

3 DUAL-PORT ANTIBIOTIC DELIVERY



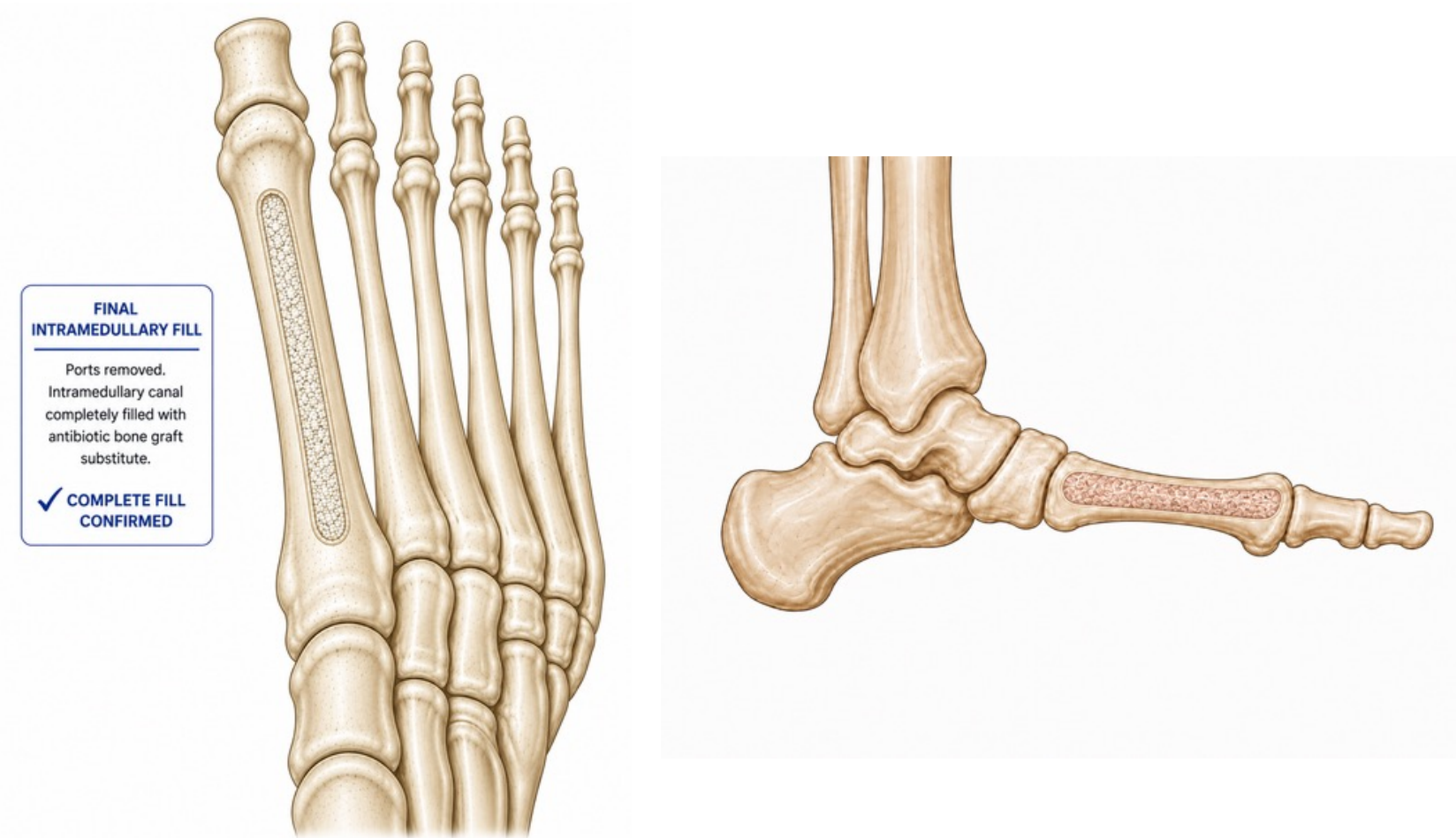
Deliver local antibiotic through the port.

4 CONTROLLED VENTING & COMPLETE FILLING



Distal venting relieves pressure and confirms distribution.

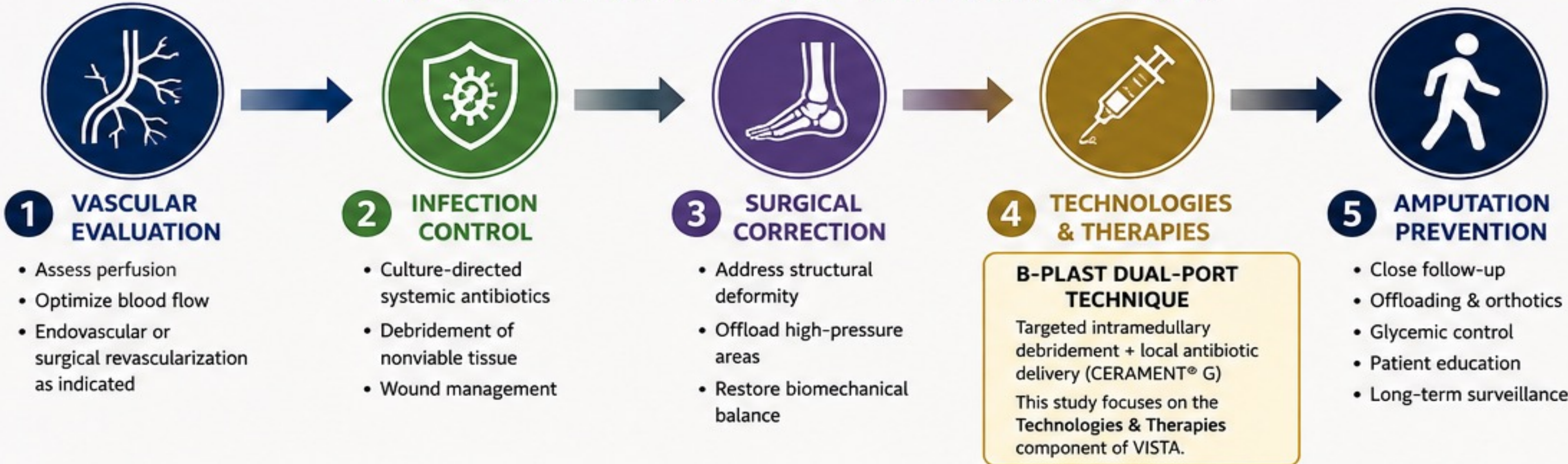
5 POST-PROCEDURE MANAGEMENT



Protect the limb and reassess healing longitudinally.

THE VISTA LIMB PRESERVATION PATHWAY

THE VISTA LIMB PRESERVATION PATHWAY A MULTIDISCIPLINARY APPROACH TO PREVENT AMPUTATION



WHERE B-PLAST FITS

B-PLAST supports the Technologies & Therapies component of VISTA.

It complements vascular evaluation, infection control, structural correction, and long-term amputation prevention.

WHAT IS B-PLAST?

Bone-Percutaneous Limb Antibiotic Salvage Treatment combines targeted intramedullary debridement with fluoroscopically guided dual-port delivery of a gentamicin-eluting hydroxyapatite/calcium sulfate bone graft substitute. The goal is to preserve structurally viable bone, maintain stability, and reduce the need for amputation.

DISCUSSION

- Dual-port delivery allows controlled intramedullary distribution, pressure relief, and confirmation of filling.
- Infection eradication was achieved while preserving limb structure.
- No major amputations, systemic toxicity, or filler-related complications were observed.
- Prospective controlled studies are warranted.

CONCLUSION

85.7% infection eradication

Minimally invasive dual-port local antibiotic delivery achieved high infection eradication with no major amputations or treatment-related toxicity during a mean follow-up of 25 months. The technique offers a limb-preserving adjunct for forefoot diabetic foot osteomyelitis.