

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

- Diabetic foot osteomyelitis (DFO) is associated with high recurrence and amputation rates.
- Conventional surgery often requires extensive bone resection.
- Systemic antibiotics have limited bone penetration and may cause systemic toxicity.
- Local antibiotic delivery achieves high concentrations at the site of infection while preserving bone.

PURPOSE

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

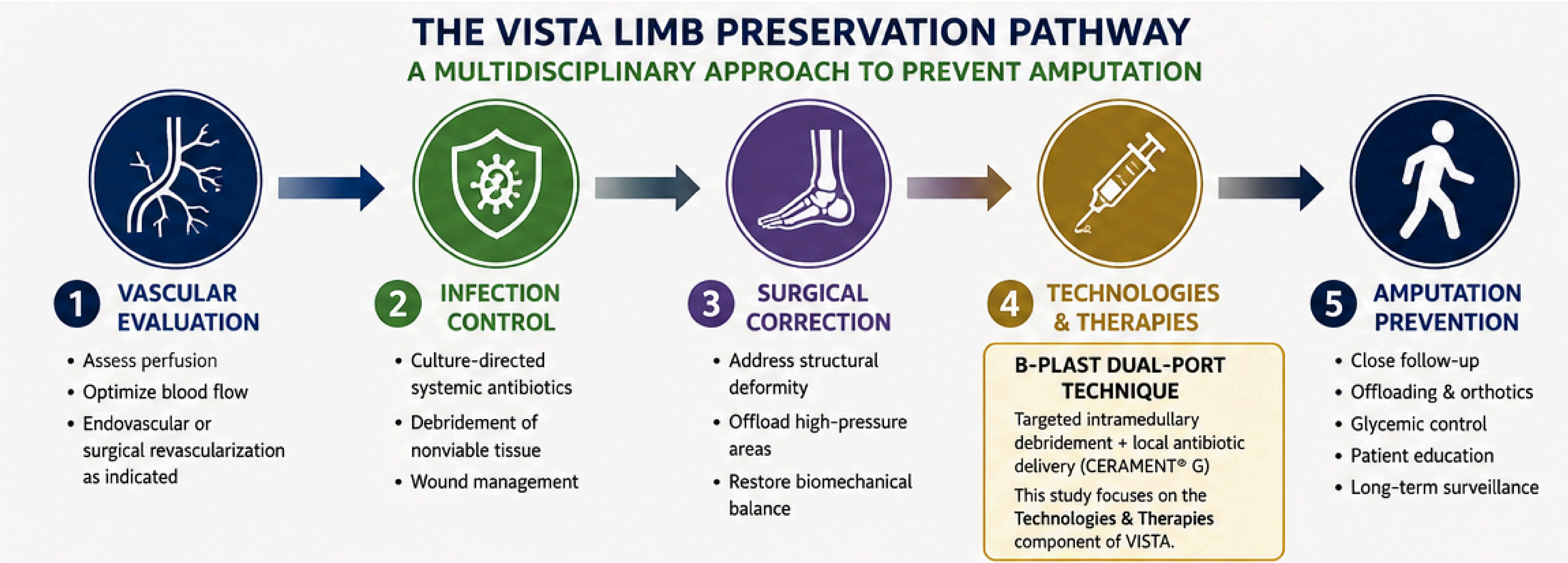
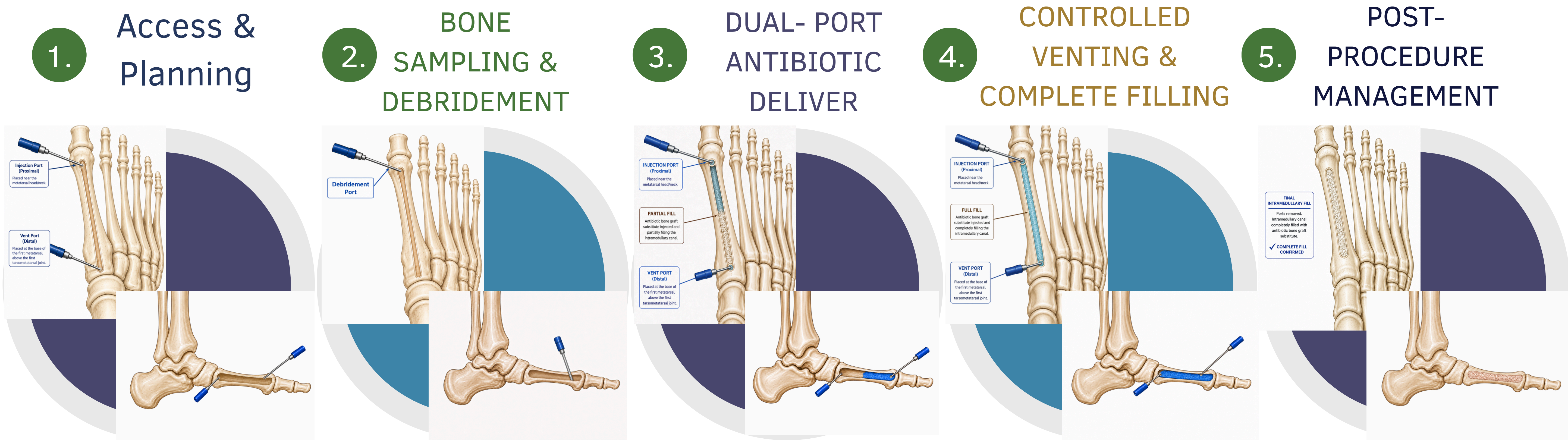
STUDY DESIGN & COHORT

Design	Retrospective Case Series
Patients	35 Adults
Location	Forefoot DFO
Technique	Dual- Port Antibiotic Delivery
Mean Follow-Up	25 Months
Primary Outcome	Infection Eradication

DISCUSSION

- Dual -port delivery allows controlled intramedullary distribution with pressure relief and confirmation of complete filling
- High rates of infection eradication were achieved with preservation of limb structure.
- No major amputation, systemic toxicity, or filler- related complications were observed.
- This technique may be a valuable adjunct for limb-preserving management of DFO.
- Further prospective controlled studies are warranted.

B-PLAST DUAL-PORT TECHNIQUE- 5 STEP PROCESS



CONCLUSION

- Minimally invasive dual-port local antibiotic delivery achieved an 85.7% infection eradication rate in patients with forefoot diabetic foot osteomyelitis.
- No major amputations, systemic toxicity, or filler-related complications were observed during a mean follow-up of 25 months.
- The dual-port technique facilitates controlled intramedullary delivery, pressure venting, and uniform distribution of a gentamicin-eluting hydroxyapatite/calcium sulfate bone graft substitute.
- By combining targeted debridement, sustained local antibiotic delivery, and remodeling bone support, this approach offers a valuable limb-preserving adjunct for the treatment of diabetic foot osteomyelitis.
- Prospective comparative studies are warranted to further define the role of this technique within contemporary limb preservation strategies.

CLINICAL RESULTS



B-PLAST

Bone-Percutaneous Limb Antibiotic Salvage

Treatment (B-PLAST) is a minimally invasive limb preservation technique that combines targeted intramedullary debridement with fluoroscopically guided dual-port delivery of a gentamicin-eluting hydroxyapatite/calcium sulfate bone graft substitute. By preserving structurally viable bone while achieving high local antibiotic concentrations, B-PLAST is designed to eradicate osteomyelitis, maintain skeletal stability, and reduce the need for amputation.

Minimally invasive. Targeted. Effective. Limb Preserving.

B-PLAST within the VISTA pathway integrates comprehensive care to eradicate infection, restore function, and prevent amputation.