

Treatment of Chronic Cavitory Osteomyelitis: A Clinical Assessment of Combined Methods

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INTRODUCTION

- Chronic cavitory osteomyelitis remains a major challenge, driven by biofilm formation and persistent “dead space”.
- The Diamond Concept guides reconstruction: stable scaffold, osteoinductive signals, osteogenic cells.
- Bioactive Glass 45SS (Aktibone®) offers osteoconduction and antimicrobial activity via local pH elevation.
- Hypothesis: Synergy between Bioactive Glass 45SS and BMA accelerates bio-integration.

MATERIALS & METHODS

- **Study Design:** Prospective cohort; 10 patients with cavitory FRI, 2022-2025. Mean age 47,4; 90% male.
- **Stage 1:** Radical sequestrectomy until “paprika sign”; 5 biopsies; Gentamicin-PMMA spacer + flap coverage.
- **Stage 2 (6 weeks):** BMA from posterior iliac crest (2ml/site, needle reorientation). Spacer replaces by Aktibone® Putty+BMA.
- **Follow-up:** 12 months; ESR/CRP; CT; LOS; return-to-work.

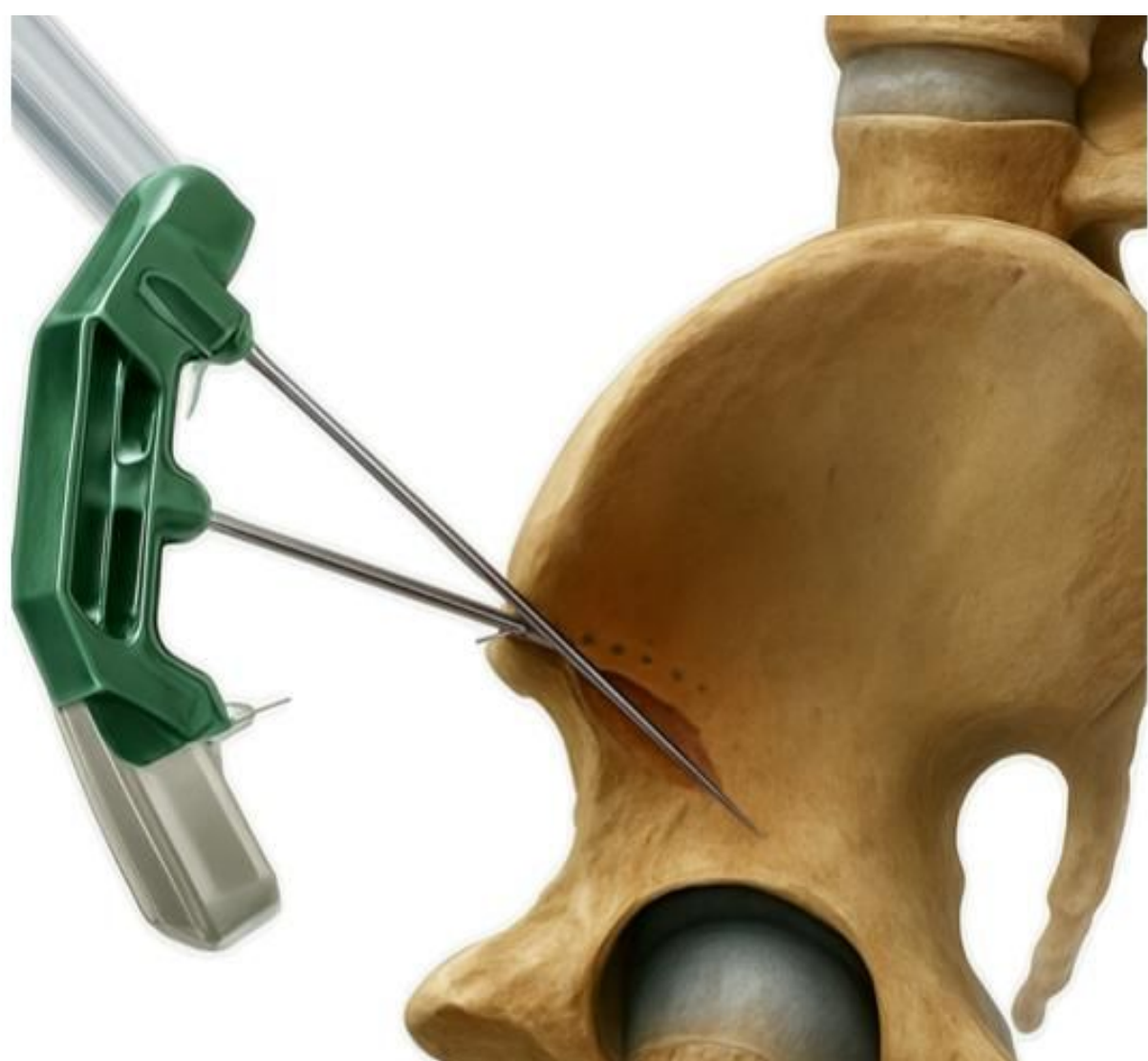


Fig 1- BMA harvest technique.
Medical ilustration showing needle reorientation.

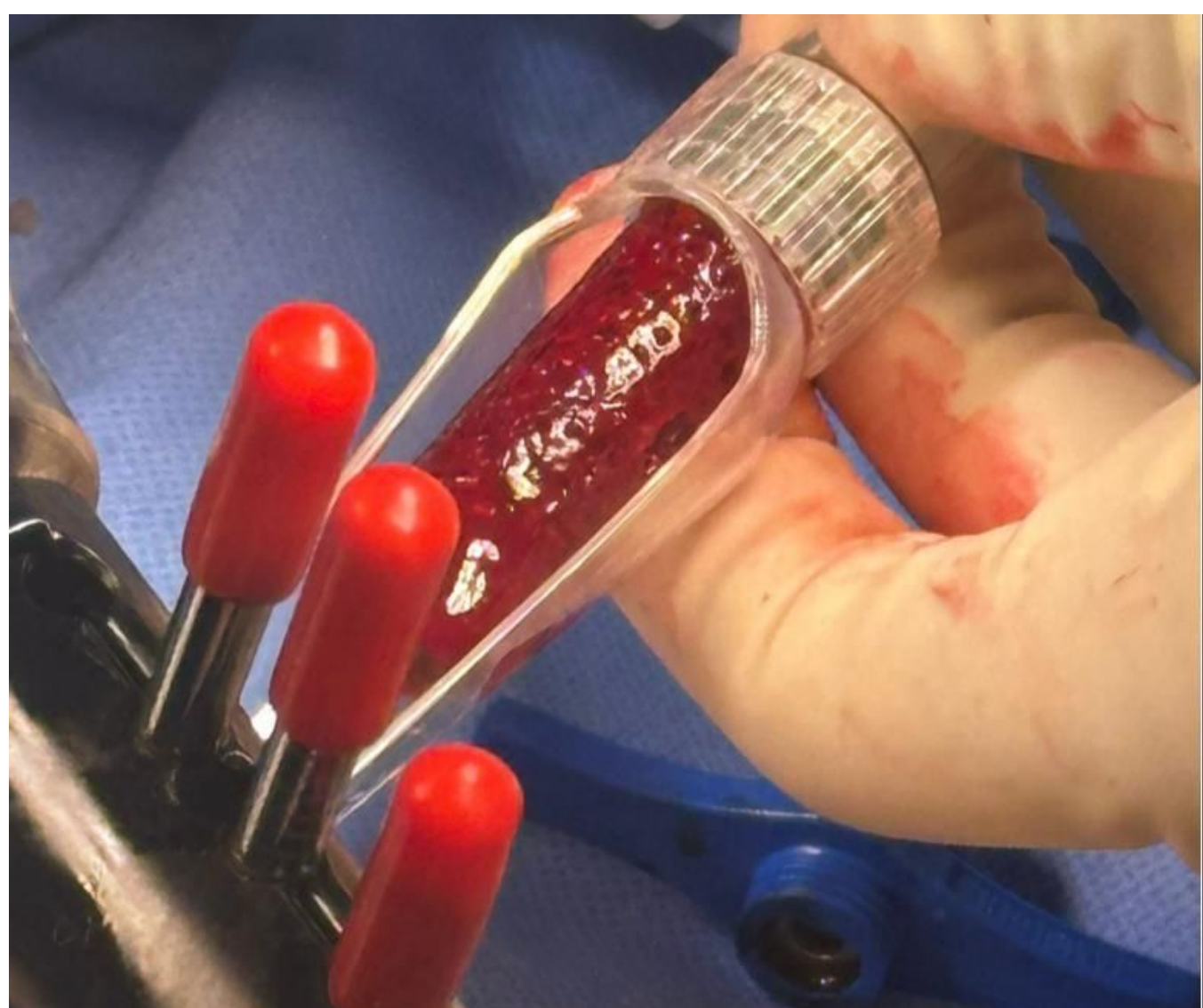


Fig 2 - BMA harvest.
Intraoperative view of aspirate.

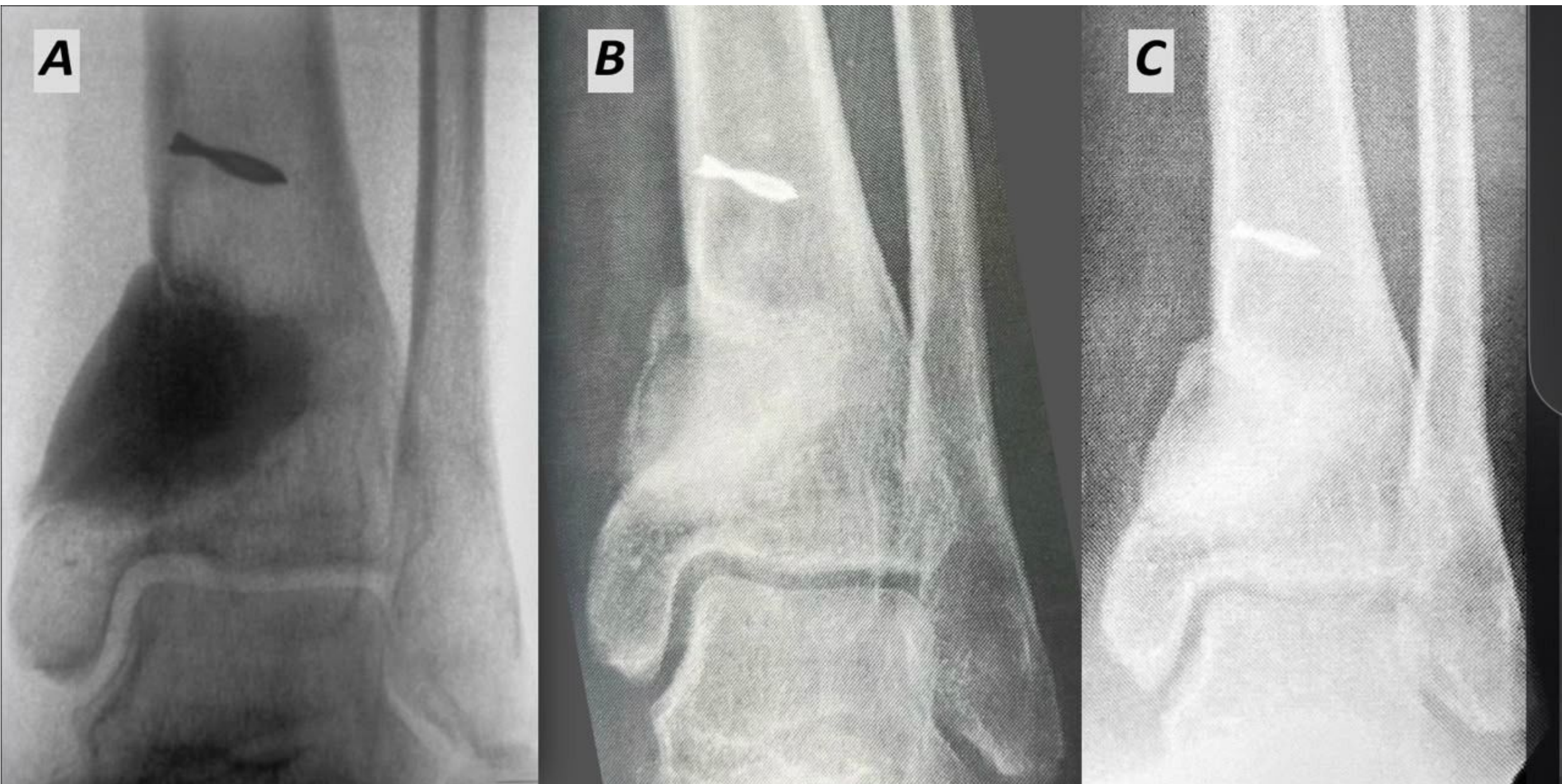


Fig 3 - Radiografic biotransformation.
(A) Stage 1. (B) stage 2. (C) 12 months.

RESULTS

- Infection eradication: 100% (10/10); CRP/ESR; normalized by week 12.
- Systemic antibiotics: mean 5,1 +- 0,8 weeks.
- Bone integration: 100% biotransformation on CT at 12 months.
- Length of stay: 5,2 +- 1,4 days per stage.
- Return to work: 80%.

Outcome	Aktibone + BMA	Literature	p-Value
Infection eradication	100% (10/10)	78-85%	< 0,05
Mean LOS (days/stage)	5,2 +- 1,4	14,2 +- 3,1	< 0,01
Systemic antibiotics (weeks)	5,1 +- 0,8	12,0 +- 2,0	< 0,01
Bone integration (CT)	100% at 12 months	82%	< 0,05
Return to work	80%	55%	< 0,05

CONCLUSIONS

- Aktibone ®-BMA composite in two-stage Masquelet is safe, robust, cost-effective.
- Achieves 100% eradication with minimal hospitalization.
- Total biotransformation into living host bone within 12 months.
- Maximizes return to productivity while reducing costs.



Fig 4 - Clinical reconstruction.
(A) Debridement. (B) Packing. (C) Flap/graft closure.

CITED LITERATURE

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