

USE OF SYNTHETIC BONE GRAFT SUBSTITUTES IN FOOT AND ANKLE INFECTIONS: OUR EXPERIENCE IN A SINGLE METROPOLITAN HOSPITAL

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INTRODUCTION

Local antibiotic carriers (LAC) and bioactive glass (ABG) are increasingly used in the management of foot and ankle bone infections (FABI). However, evidence regarding their efficacy in this specific anatomical region remains limited. Based on our clinical experience, these devices may represent an effective strategy for enhancing infection control and functional recovery in both acute and chronic osteomyelitis.

MATERIALS AND METHOD

A retrospective case series of 22 patients with acute or chronic foot and ankle bone infection (FABI), managed with local antibiotic carrier (LAC) (14 patients) or active bioglass (ABG) (8 patients) between January 2019 and October 2024, was analyzed.

Data collected:

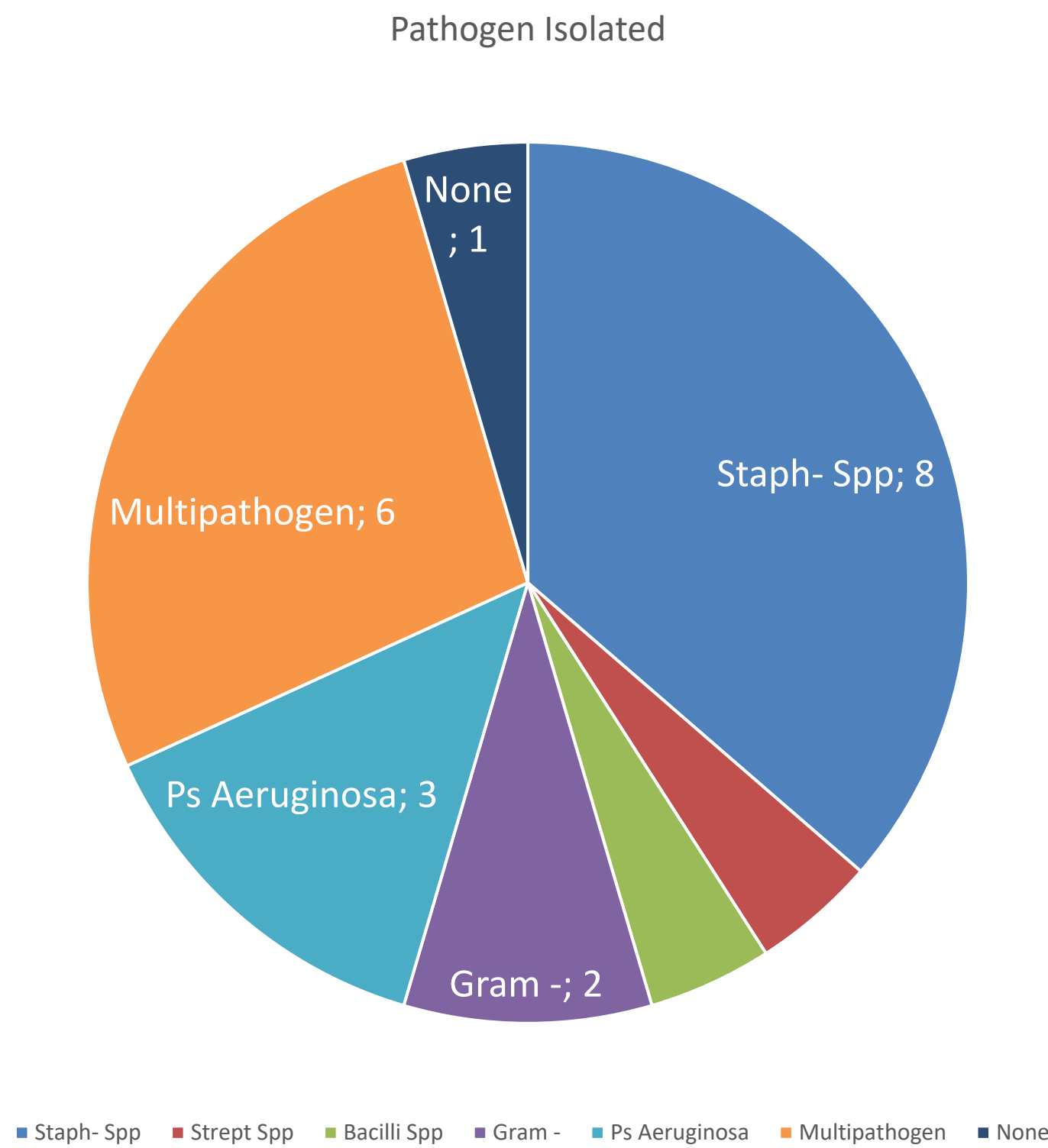
- demographic data
- pre- and postoperative functional scores

The minimum follow-up period was 12 months.

Functional outcomes were evaluated using the American Orthopaedic Foot and Ankle Society (AOFAS) score

Pain (40 points)	
• None	40
• Mild, occasional	30
• Moderate, daily	20
• Severe, almost always present	0
Function (50 points)	
Activity limitations, support requirement	
• No limitations, no support	10
• No limitation of daily activities, limitation of recreational activities, no support	7
• Limited daily and recreational activities, cane	4
• Severe limitation of daily and recreational activities, walker, crutches, wheelchair, brace	0
Maximum walking distance, blocks	
• Greater than 6	5
• 4-6	4
• 1-3	2
• Less than 1	0
Walking surfaces	
• No difficulty on any surface	5
• Some difficulty on uneven terrain, stairs, inclines, ladders	3
• Severe difficulty on uneven terrain, stairs, inclines, ladders	0
Gait abnormality	
• None, slight	8
• Obvious	4
• Marked	0
Sagittal motion (flexion plus extension)	
• Normal or mild restriction (30° or more)	8
• Moderate restriction (15°–29°)	4
• Severe restriction (less than 150°)	0
Hindfoot motion (inversion plus eversion)	
• Normal or mild restriction (75–100% normal)	6
• Moderate restriction (25–74% normal)	3
• Marked restriction (less than 25% normal)	0
Ankle-hindfoot stability (anteroposterior, varus-valgus)	
• Stable	8
• Definitely unstable	0
Alignment (10 points)	
• Good, plantigrade foot, midfoot well aligned	15
• Fair, plantigrade foot, some degree of midfoot malalignment observed, no symptoms	8
• Poor, nonplantigrade foot, severe malalignment, symptoms	0

Culture isolated pathogens



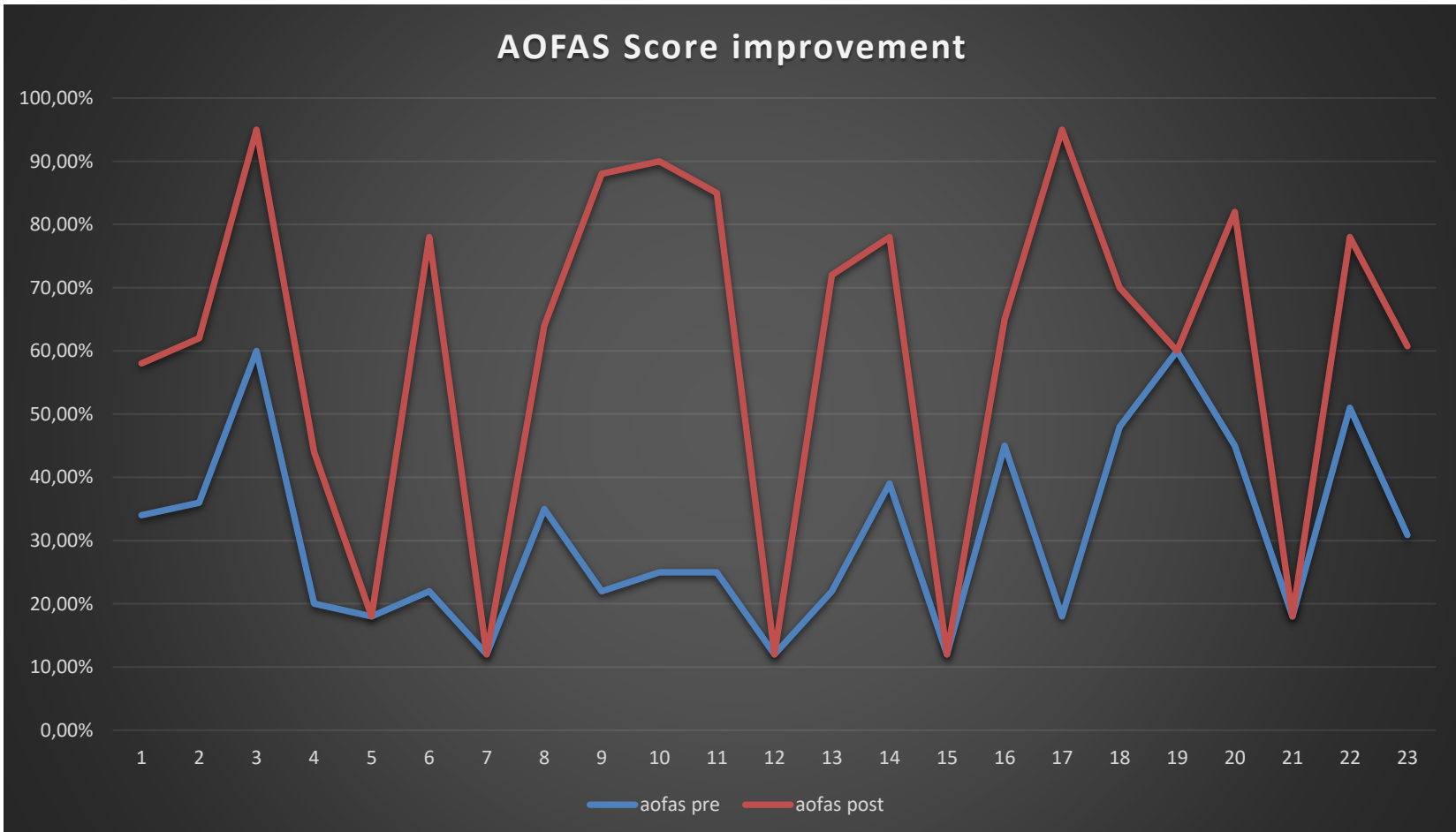
RESULTS

One patient required a below-knee amputation.

Seventeen patients (77.3%) remained infection-free during follow-up, while five (22.7%) demonstrated persistent signs of infection requiring revision surgery.

Mean AOFAS score improved from 30.86 preoperatively to 60.73 postoperatively, reflecting significant functional recovery. **Difference in mean AOFAS score before and after surgery showed significant improve (P=4,83892E-06).**

The most frequently observed complications were persistent drainage and delayed wound healing.



DISCUSSION AND CONCLUSION

LAC and ABG appear to be valuable adjuncts in the treatment of bone infections of the foot and ankle, promoting infection eradication and favorable functional outcomes. Even if some local complications were present, **global outcome data showed major improve I QoL and infection free period > than 12 months in the majority of patients treated.**

Further studies with larger cohorts and comparative designs are needed to better define their specific efficacy, optimal indications, and appropriate selection criteria.

These preliminary results suggest that the choice of a specific LAC or BAG, taking into account both patient conditions and preoperative pathogen identification, may contribute to improve clinical and functional outcomes.