

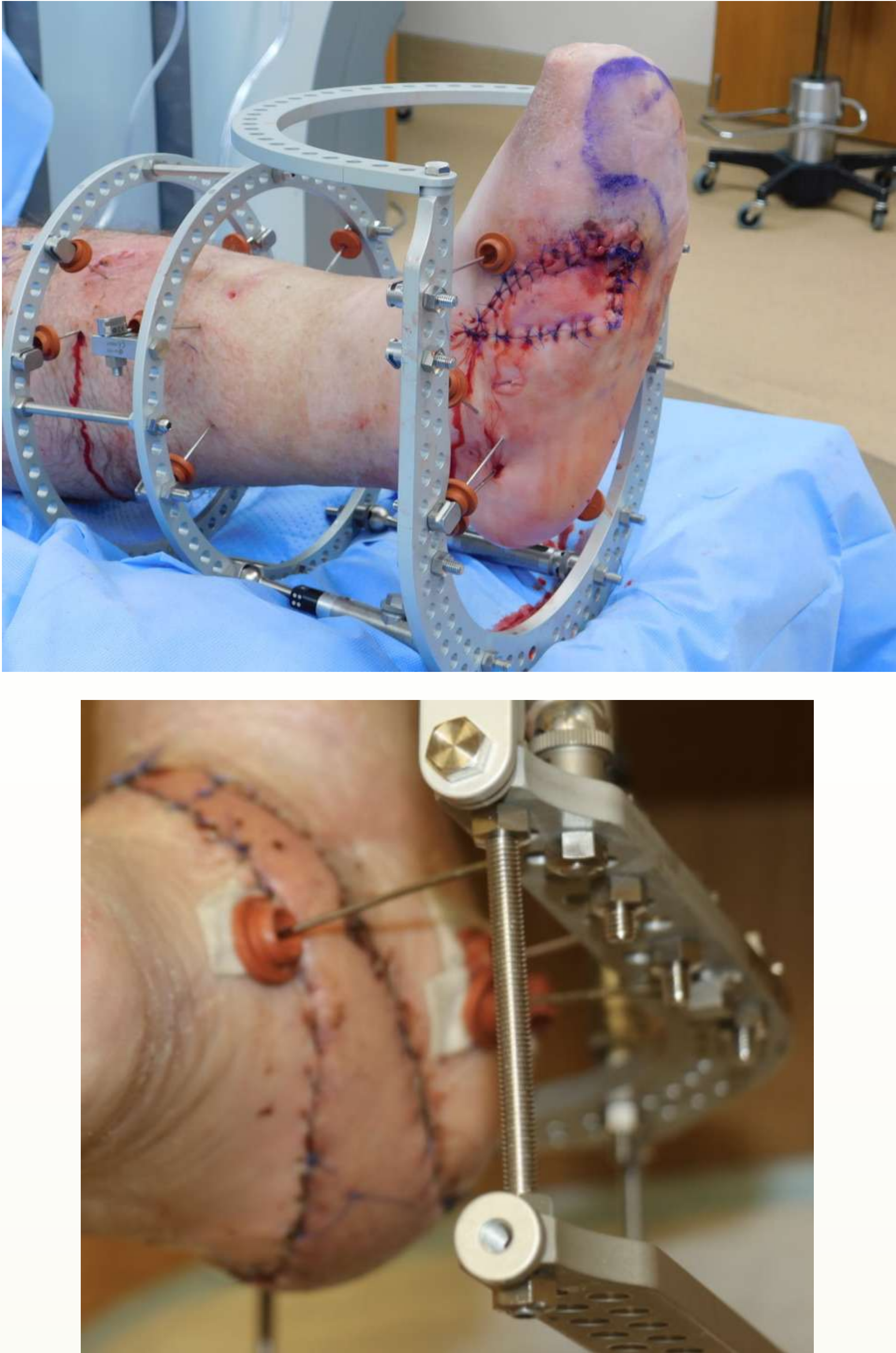
USE OF CIRCULAR FRAME FIXATION FOR OFFLOADING IN LOWER EXTREMITY RECONSTRUCTION: A CASE SERIES

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Background

- Lower extremity limb salvage offers unique surgical challenges: the dependent nature of the lower leg, vascular disease, and the need for offloading.
- External fixation is a proven option to protect surgical sites and allow for monitoring following lower extremity reconstruction.^{1, 2, 3}
- The use and benefit of multiplanar external fixation is explored in podiatric literature but is not been adopted by plastic surgeons as a routine part of lower extremity limb salvage.⁴



Methods

- A Single Surgeon's experience
- Retrospective Review
- N = 47
- Descriptive Examination
 - Demographics
 - Wound Characteristics
 - Surgical Characteristics
 - Complications
- Inferential investigation
 - Predictors of Complications

Clinical Implications

- The use of multiplanar external fixation has been seen to be safe and effective in post-operative flap protection.
- Allows for immediate ambulation.
- Broken Pin and Pin track infections are the most common frame complications.
- These results reinforce practices to increase frame stability, such as, while not directly explored in this review, adding an extra pin per ring, especially in patients at a higher risk of complications.

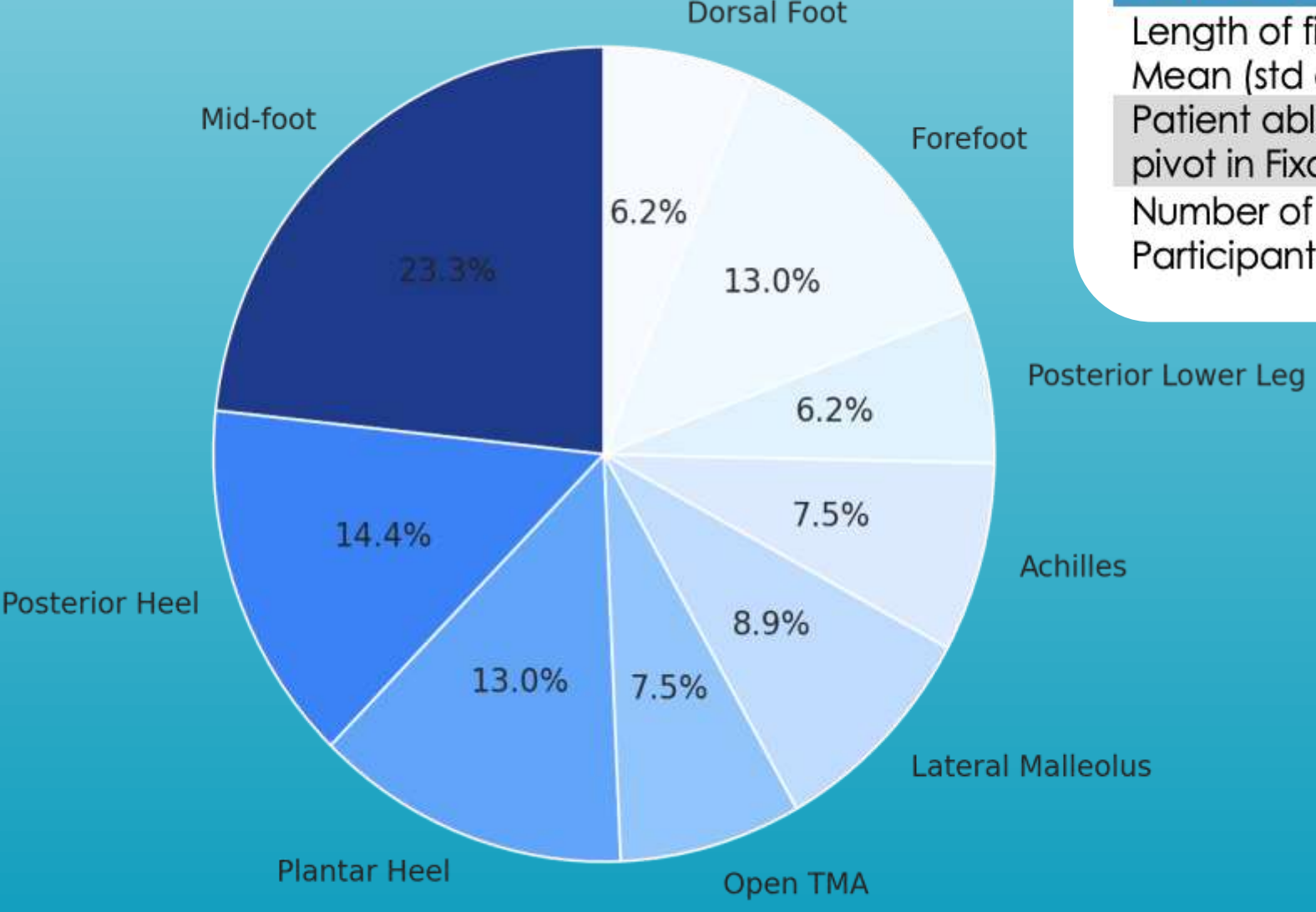
Results

Demographics

Variables	Statistics	n
Age (years) – Mean (min, max)	62.4 (47, 88)	47
Female-%	42.6 %	20
Male-%	57.4 %	27
BMI- Mean (Std Dev)	30.7 (±6.2)	47
Comorbidities (Std Dev)	3.1 (±1.8)	47
Diabetes Mellitus	72.3%	34
Smoking	29.7%	14

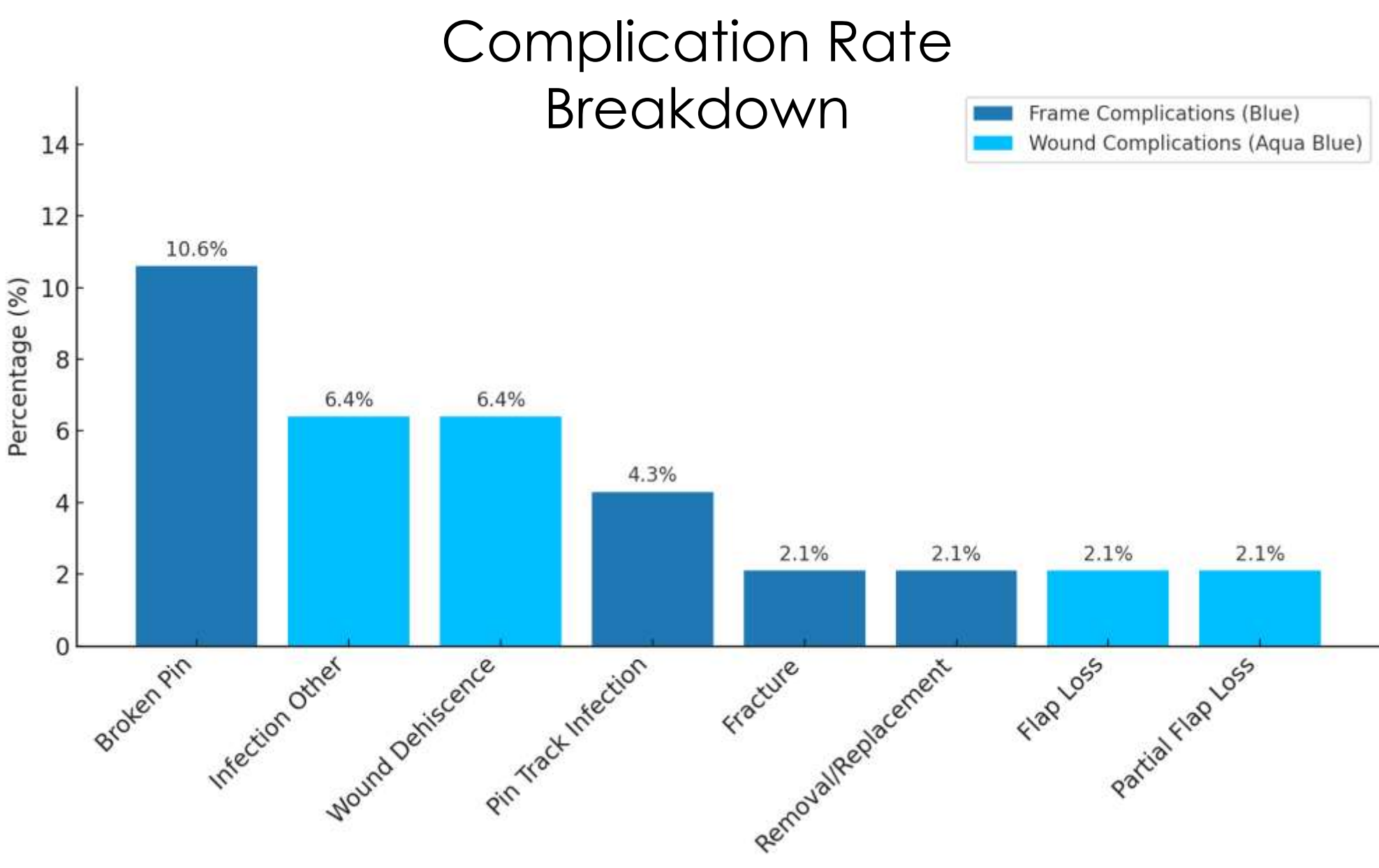
Comorbidities include: Peripheral vascular disease- treated, Peripheral Vascular Disease- untreated, Insulin Dependent Diabetes Mellitus, Diabetes Mellitus - oral meds, Coronary Artery Disease, Chronic Renal Failure, Osteomalacia, COPD, and Smoking.

Distribution of Wound Locations



Notable Wound and Surgical Characteristics

Variables	Statistics	N
Length of fixator use (days) - Mean (std dev)	64.7 (49.5)	47
Patient able to ambulate or pivot in Fixator?	97.8%	46
Number of Wounds per Participant- Mean (Std Dev)	1.3 (.55)	47



Frame Complication Rate = 14.9 % (N = 7)

Total Complication Rate = 27.7% (N = 13)

Predictors of Complications

Variables	OR (95% CI)	P
Age > 60	.60 (.16-2.17)	.52
Obesity (BMI > 30 kg/m^2)	15.2 (1.77-130.40)	.0031*
Wound number (≥ 2)	3.31 (.84 – 13.02)	.14
Chronic Wound (> 90 days)	1.7 (.44-6.71)	.48
Length of Fixator use (>60 days)	1.4 (.38-5.03)	.74
Smoker	.62 (.14-2.74)	.72
Diabetes mellitus	1.4 (.31-6.13)	1.0
PVD	1.1 (.30-4.14)	1.0
Chronic Renal Failure	1.7 (.44-6.71)	.48
Acute Renal Failure	2.07 (.47-9.03)	.43
COPD	.60 (.27-12.77)	.60
Coronary Artery Disease	1.1 (.26-4.28)	1.0
Osteomyelitis	.72 (.18-2.81)	.74

BMI, Body Mass Index; PVD, Peripheral Vascular Disease; COPD, Chronic Obstructive Pulmonary Disease; *, Significant

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2. Buford GA, Trzeciak MA. A novel method for lower-extremity immobilization after free-flap reconstruction of posterior heel defects. *Plast Reconstr Surg*. 2003;111(2):821-824. doi:10.1097/01.PRS.0000039398.59464.D4
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