

BACKGROUND

- Open fractures are devastating injuries that often require additional procedures for definitive soft tissue coverage.
- Delay in coverage beyond 7 days has been associated with poor outcomes.
- Despite this fact, delivering timely wound coverage is often limited by resources and logistics

OBJECTIVES

- (I) Define the incidence and severity of the open fractures presenting to our institution
- (I) Identify coverage methods and timing
- (I) Determine the incidence of postoperative complications.

METHODS

- Patients were identified through ICD-9 and ICD-10 codes specific for open fractures in our institutional registry.
- Descriptive statistics were performed on demographics, fracture type (Anderson classification), coverage methods, and delayed complications.

RESULTS

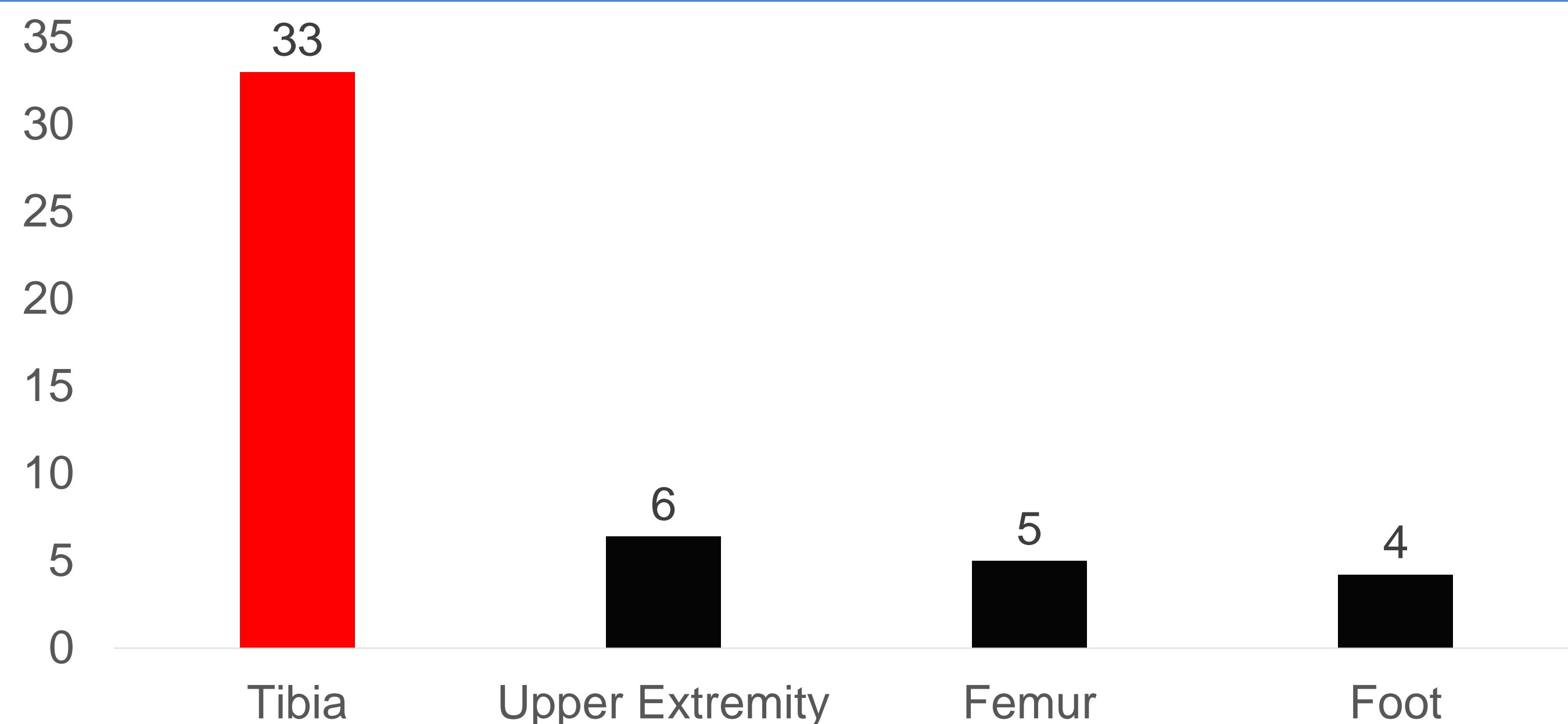


Figure 1A. Average Incidence (n= 286) of Open Fractures per year between 2012-2017 presenting to our institution. Patient age was 39.5 ± 16.1 years. Blunt trauma was the most common mechanism, accounting for 84.6% (n=187).

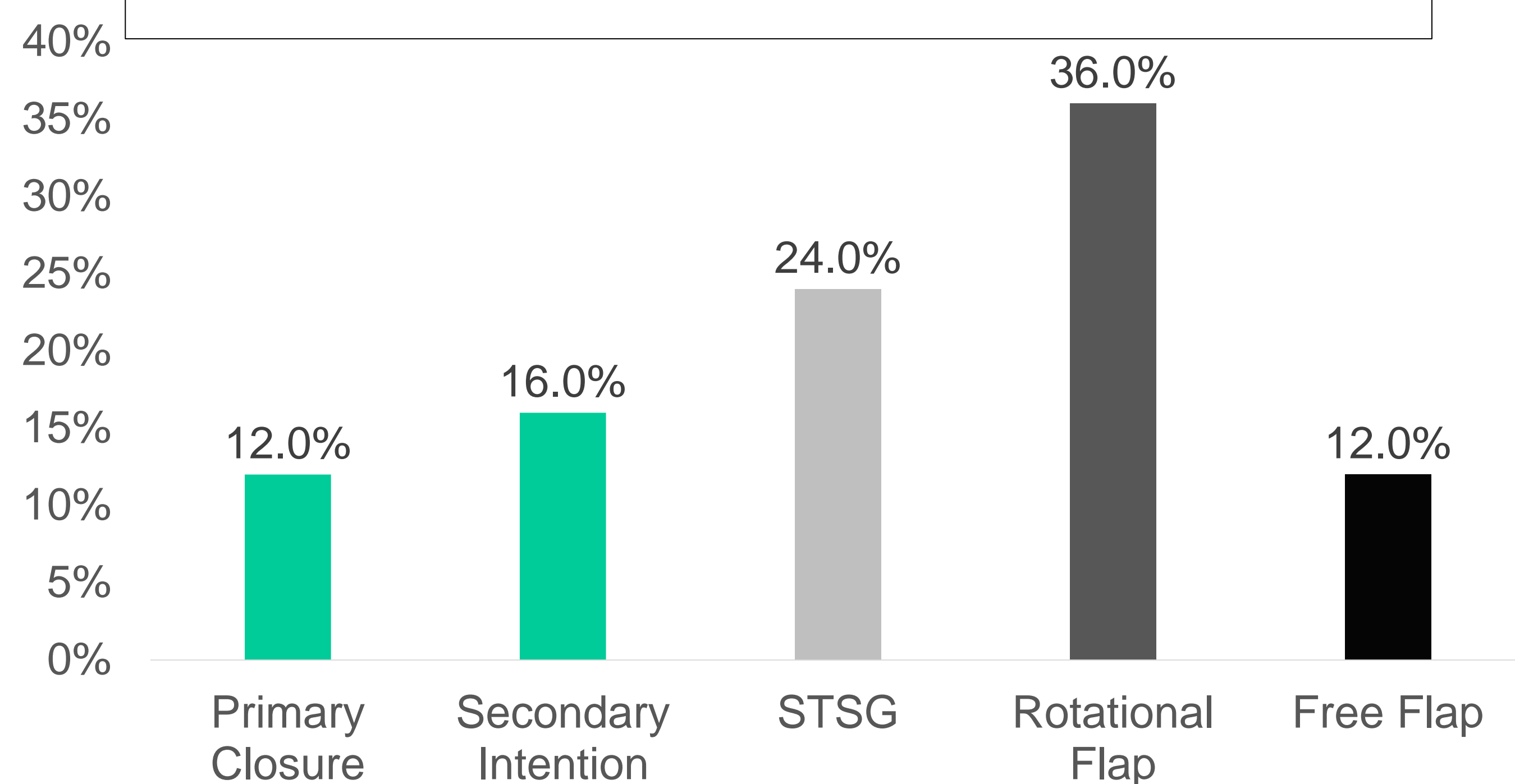


Figure 2A. Coverage methods of Type IIIB/C Tibia Fracture. Approximately 6 tibia fractures per year were type IIIB or C and required soft tissue coverage.

Table 2: Delayed Complications of blunt IIIB and IIIC Injuries

	Cases		Nonunion		Infection		Wound Breakdown		Delayed Amputation	
	n	%	n	%	n	%	n	%	n	%
Primary Closure	100	61.3%	9	9.0%	2	2.0%	2	2.0%	4	4.0%
Secondary Intention	16	9.8%	0	0.0%	3	18.8%	1	6.3%	6	37.5%
STSG	26	16.0%	3	11.5%	4	15.4%	1	3.8%	2	7.7%
Rotational Flap	16	9.8%	5	31.3%	3	18.8%	4	25.0%	1	6.3%
Free Flap	5	3.1%	1	20.0%	0	0.0%	0	0.0%	2	40.0%
Totals	163	100%	18	11.0%	12	7.4%	8	4.9%	15	9.2%

Table 3A. Of note, amputations occurred 31.0±18.4 days following injury.

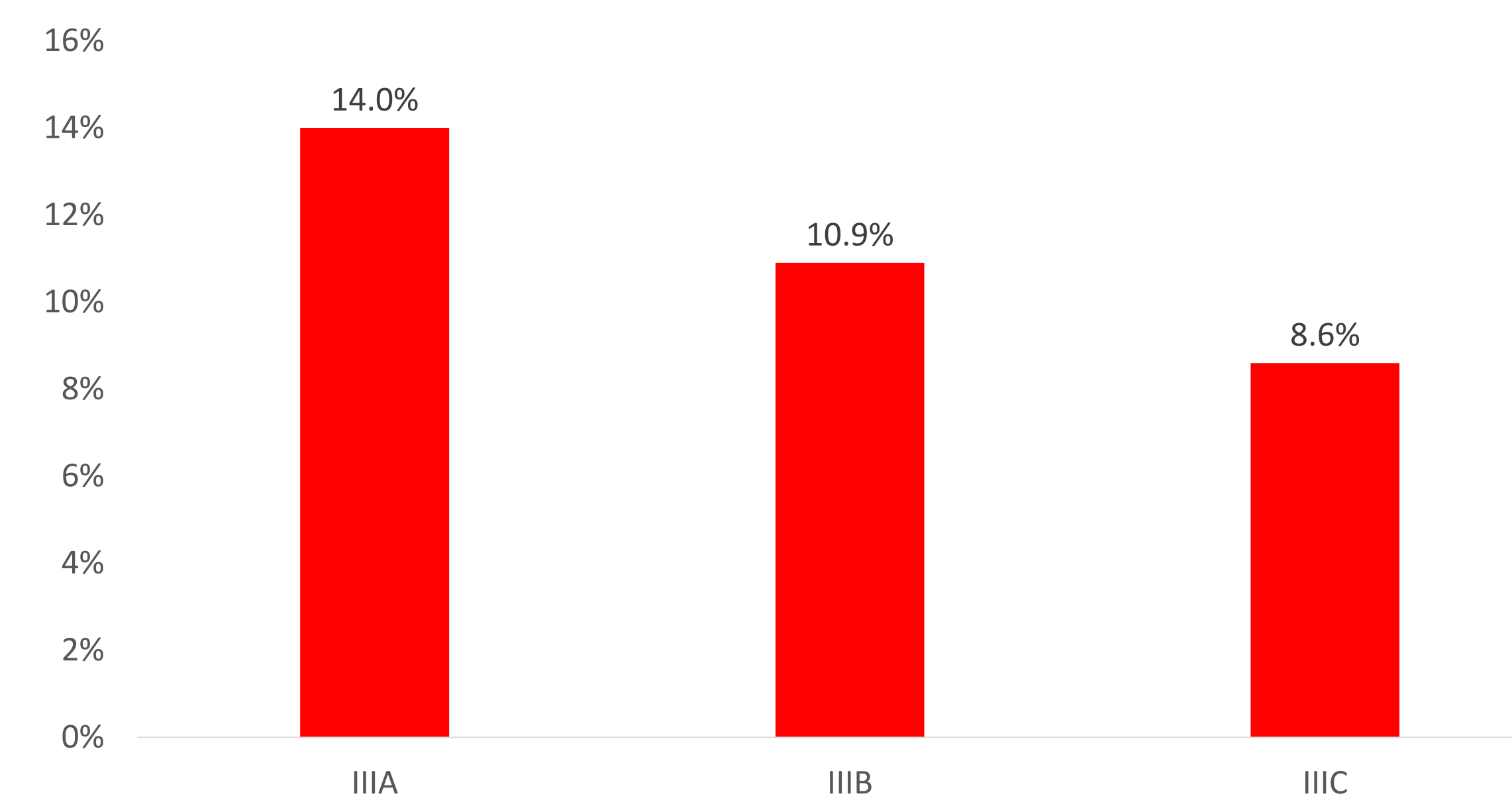


Figure 1B. Severity of Open Tibia Fractures per year. Gustillo and Anderson fracture classification on admission to the hospital.

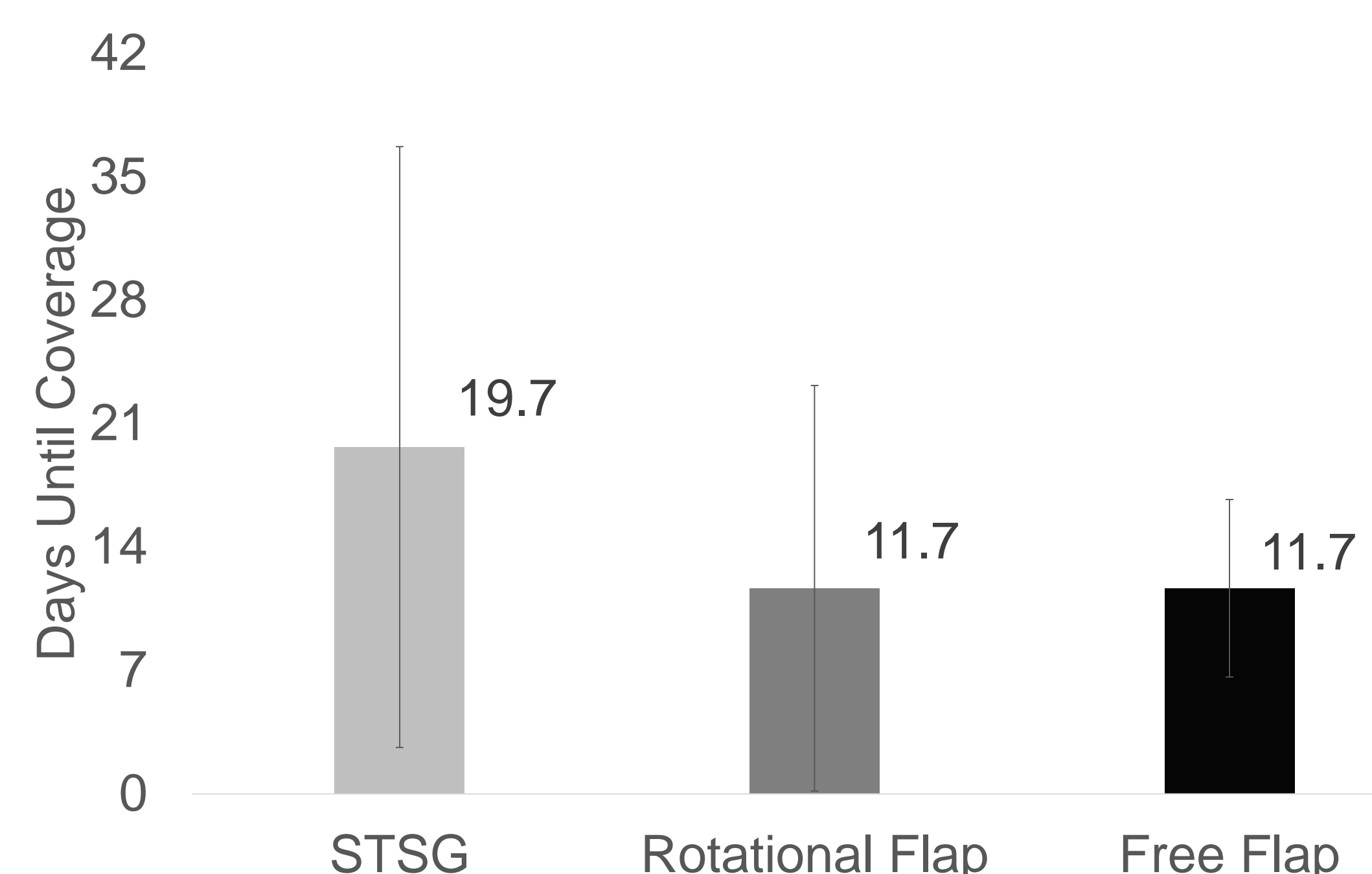


Figure 2B. Mean time (days ±SD) until coverage.

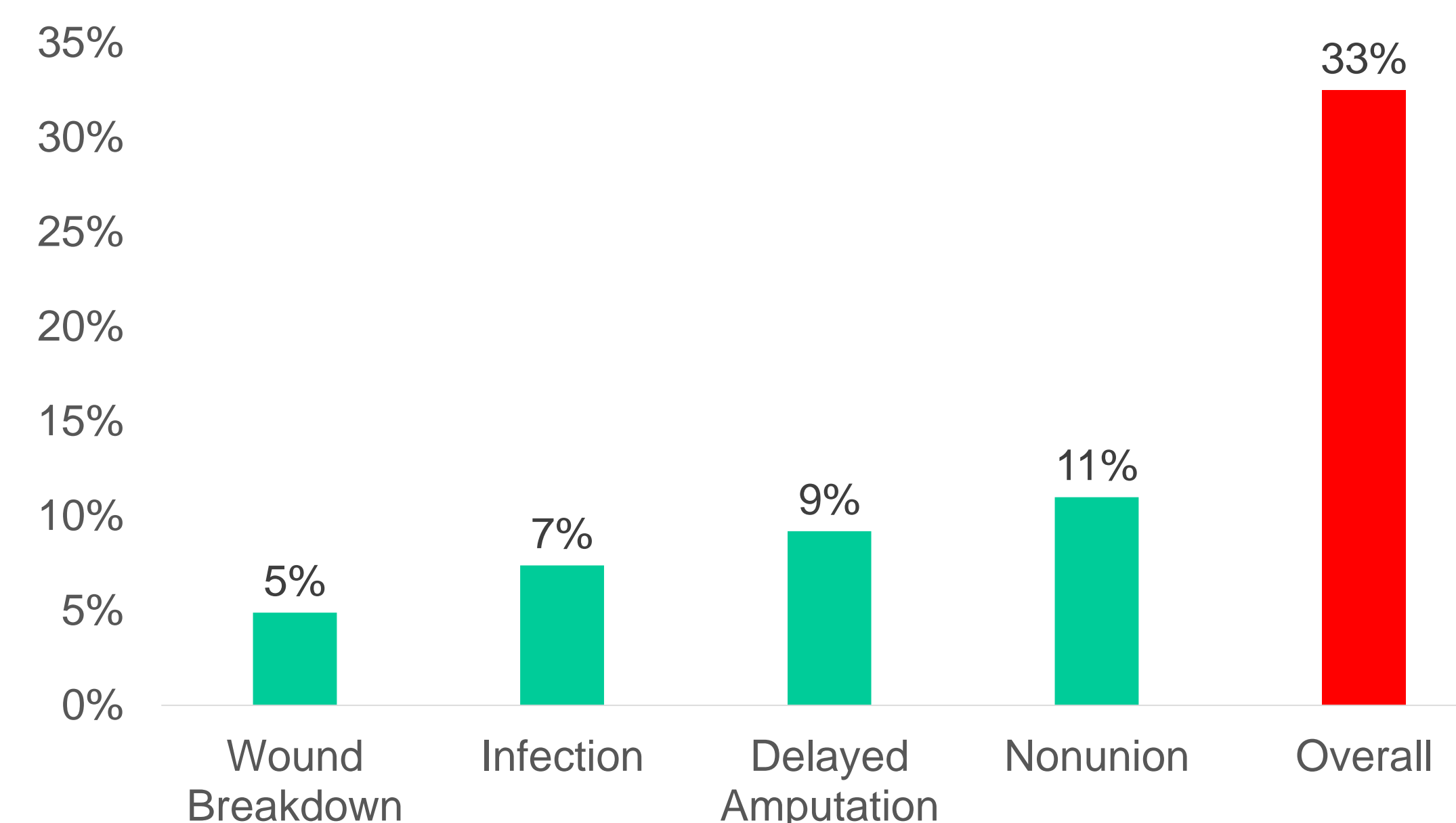


Figure 3B. Postoperative Complications Following IIIB/C Injuries (n=53, 33%). Blunt IIIB/C injuries were complicated by wound breakdown (n=8, 4.9%), infection (n=12, 7.4%), amputation (n=15, 9.2%), and nonunion (n=18, 11.0%).

RESULTS

(I) Incidence and Severity

- 286 patients with open fractures presented between 2012-2017.
- Grade II tibia fractures were the most common, 26.7% (n=59)
- There were forty-six (16.5%) Type IIIB and thirty (10.8%) Type IIIC injuries with nine (30%) of IIIC injuries resulting from penetrating trauma.

(II) Coverage Method and Timing

- Of the blunt IIIB/C injuries most were treated with split-thickness skin grafting (n=18 [23.7%]) occurring 16.2±11.5 (3-40) days following injury.

(III) Postoperative Complications

- Of the IIIC injuries, sixteen (53%) underwent immediate amputation and twelve (40%) had vascular repair.

CONCLUSION

- Adequate soft tissue repair of open fractures decreases complication risk.
- As a tertiary care centers high grade open fractures are treated frequently, but often are not provided with timely, definitive coverage.
- As a result, complications such as nonunion, infection, wound breakdown and delayed amputation are frequent.
- In a resource limited environment, high risk patients should be identified and orthopedic surgeons should manage these complications.