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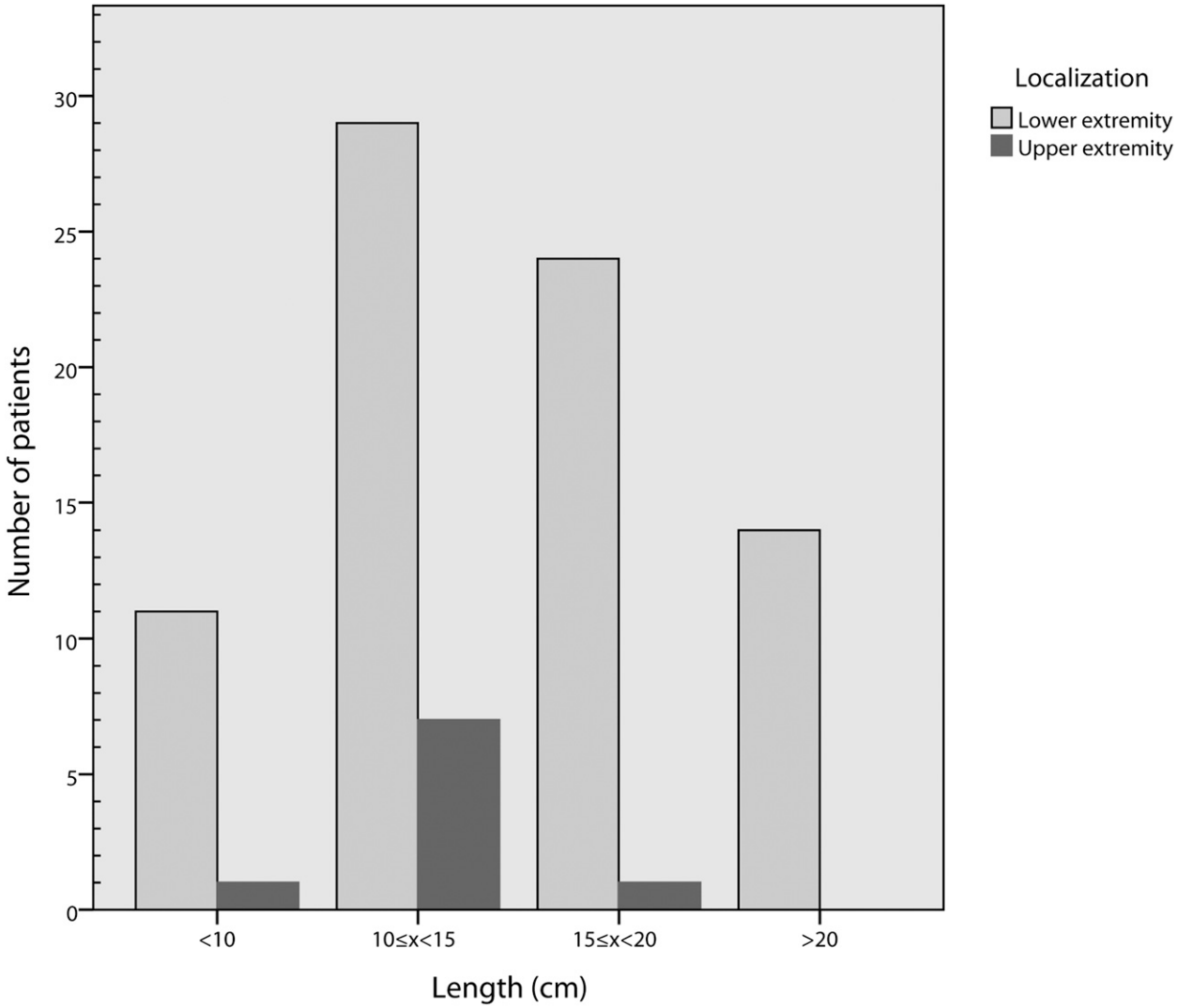

Fig. E-1
Bar graph showing the distribution of reconstruction sizes; the median (and standard deviation) was 14.0 ± 4.8 cm for all localizations and 14.8 ± 5.0 cm for the lower extremity.

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TABLE E-1 Univariate Cox Regression Analysis for the Time to Failure (N = 15) and Time to Full Weight-Bearing (N = 49)

Covariates	All Localizations		Lower Extremity	
	Hazard Ratio*	P Value	Hazard Ratio*	P Value
Time to failure				
Infection	3.12 (0.95-10.20)	0.06	—	—
Fracture	2.81 (0.94-8.41)	0.06	4.67 (1.17-18.66)	0.02
Patient age of eighteen years or more	6.66 (1.47-30.11)	0.01	9.46 (1.18-75.71)	0.03
Osteosynthesis: bridging plate(s)	0.11 (0.01-0.82)	0.03	0.15 (0.02-1.23)	0.08
Localization within bone piece: diaphyseal	2.83 (0.86-9.30)	0.08	4.08 (0.85-19.68)	0.08
Allograft length ≥15.0 cm	2.80 (0.86-9.11)	0.09	9.00 (1.12-72.07)	0.04
Time to full weight-bearing				
Nonunion	—	—	0.36 (0.18-0.74)	<0.01
Osteosynthesis: intramedullary nail only	—	—	0.27 (0.09-0.77)	0.02
Adjuvant radiation therapy	—	—	0.42 (0.16-1.08)	0.07

*The values are given as the hazard ratio, with the 95% CI in parentheses.

TABLE E-2 Multivariate Cox Regression Analysis for the Time to Failure

Covariates	All Localizations		Lower Extremity	
	Hazard Ratio*	P Value	Hazard Ratio*	P Value
First analysis				
Patient age of eighteen years or more	5.66 (1.25-25.68)	0.03	8.23 (1.03-66.03)	0.05
Osteosynthesis of the bridging plate(s)	0.13 (0.02-0.98)	0.05	0.19 (0.02-1.48)	0.11
Second analysis				
Patient age of eighteen years or more	5.57 (1.18-26.32)	0.03	7.45 (0.91-61.28)	0.06
Diaphyseal localization within the bone piece	1.78 (0.53-6.02)	0.36	2.72 (0.55-13.46)	0.22
Third analysis				
Patient age of eighteen years or more	5.65 (1.21-26.27)	0.03	6.45 (0.79-52.67)	0.08
Allograft length of ≥15.0 cm	1.91 (0.58-6.37)	0.29	6.01 (0.74-49.04)	0.09
Fourth analysis				
Diaphyseal localization within the bone piece	2.85 (0.86-9.47)	0.09	3.70 (0.77-17.87)	0.10
Osteosynthesis of the bridging plate(s)	0.11 (0.01-0.82)	0.03	0.17 (0.02-1.35)	0.09

*The values are given as the hazard ratio, with the 95% CI in parentheses.

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TABLE E-3 Overview of Literature on Intercalary Allografts

Data	Reference			
	Ortiz-Cruz[14] (1997)	Frisoni[20] (2012)	Aponte-Tinao[13] (2012)	Muscolo[15] (2004)
No. of patients	104	101	83	59
Localization				
Femur	38%	100%	100%	68%
Tibia	37%	—	—	32%
Humerus	18%	—	—	—
Radius	3%	—	—	—
Fibula	3%	—	—	—
Ulna	3%	—	—	—
Follow-up*	67 (24-220)	112 (24-238)	61 (24-182)	60† (24-264)
Fixation type				
Plates	93%	90%	65%	—
Intramedullary nail	7%	10%	19%	33%
Screws	—	—	16%	16%
Plates and screws	—	—	—	52%
Intramedullary nail and plate	—	—	—	—
Overall complications	—	—	46%	—
Specific complications				
Infection	12%	—	1%	5%
Fracture	17%	27%	16%	7%
Nonunion	30%	47%	24%	15%
Failure	14%	24%	18%	15%
Details	More complications with adjuvant therapy, no clear influence of osteosynthesis type	26% hybrid grafts; age and allograft length adversely related to outcome	More nonunions after intramedullary nail fixation and in diaphyseal junctions	More nonunions in diaphyseal junctions

*The values are given as the median, with the range in parentheses, in months. †The values are given as the mean, with the range in parentheses, in months. ‡This value was not reported for intercalary allografts specifically.

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TABLE E-3 (*continued*)

Reference				
Donati[16] (2000)	Zimel[18] (2009)	Cara[17] (1994)	Gerrand[19] (2003)	Current Study (2013)
39	38	23	20	87
72%	100%	61%	25%	51%
28%	—	35%	30%	39%
—	—	4%	45%	8%
—	—	—	—	2%
—	—	—	—	—
—	—	—	—	—
—†	84† (14-231)	35 (12-75)	54 (10-134)	84 (25-262)
59%	8%	78%	—	71%
15%	92%	4%	—	9%
—	—	—	—	6%
26%	—	—	—	—
—	—	17%	—	14%
—	—	42%	—	76%
0%	18%	17%	10%	14%
30%	3%	9%	0%	29%
55%	16%	15%	15%	40%
15%	39%	12%	10%	17%
29% of femoral and 73% of tibial reconstructions were hybrid grafts	Allograft-prosthesis comparison for risk of local recurrence; total population: 85 patients, 47 endoprostheses	Deceased patients excluded	All reconstructions reinforced with pressurized intramedullary cement	—