



The association between body mass index and the severity of proximal humerus fractures: Effect on fracture union and soft tissue healing

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Target group

- Obesity to musculoskeletal problems.
- Incidence of proximal humerus fractures.
- Osteoporosis in the elderly.
- Low-energy trauma - mechanical fall.
- **Postmenopausal females.**



Study design

- 5-Year period, 1752 patients

- Females >45 years
- Good health status
- No mental health issues
- Not diabetic
- Nor neuromuscular weakness
- Not requiring a walking aid
- No history of falls or fractures

822 met the inclusion criteria

- Classified according to their BMI

- Neer classification

- 82 patients underwent ORIF

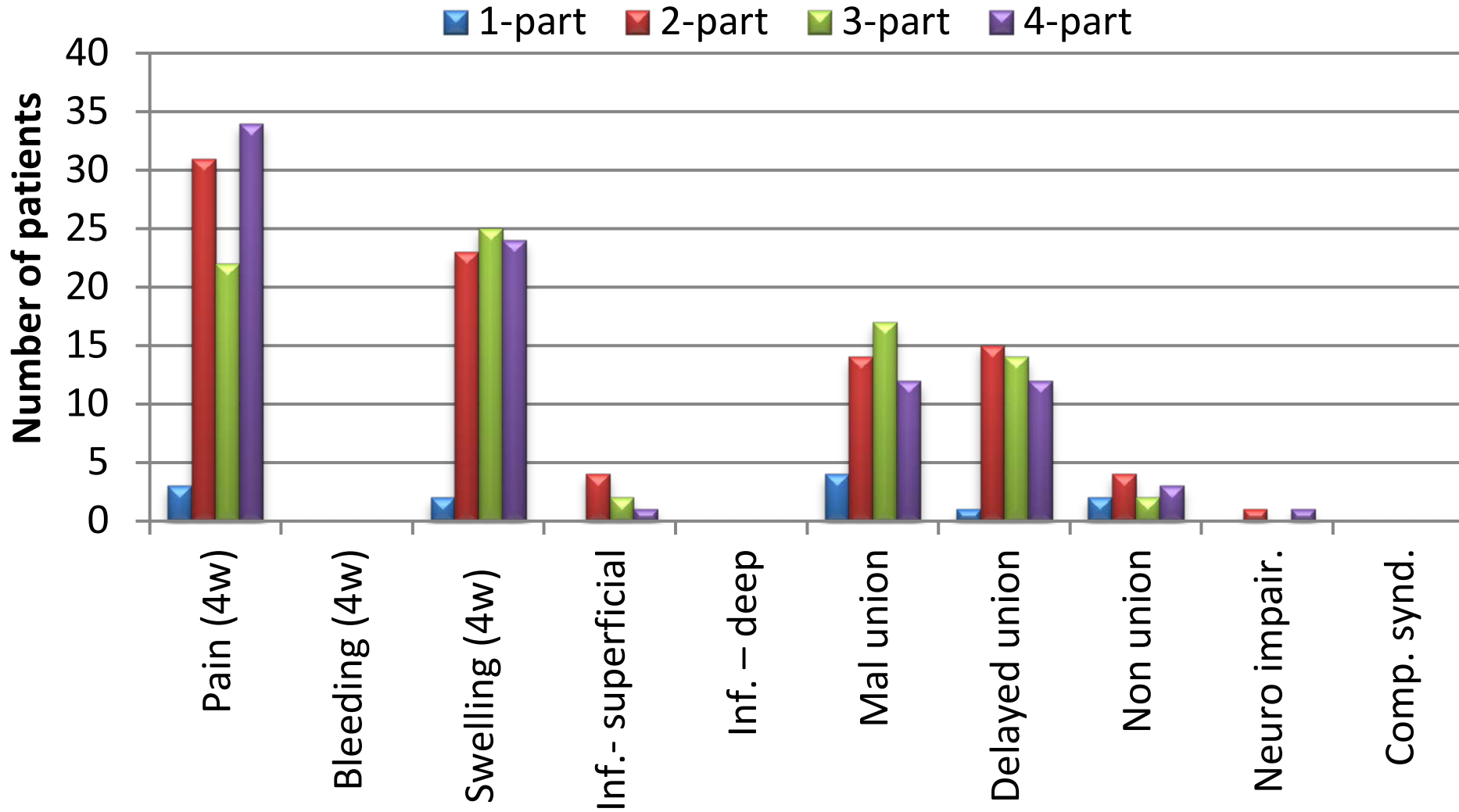


	1-part fracture	2-part fracture	3-part fracture	4-part fracture
Underweight (n=6)	6	-	-	-
Normal weight (n=156)	22	78	54	2
Overweight (n=552)	6	342	68	136
Obese (n=108)	5	29	43	31

Body mass index (4 categories) of the cohort and the fractures sustained as per the Neer classification system.

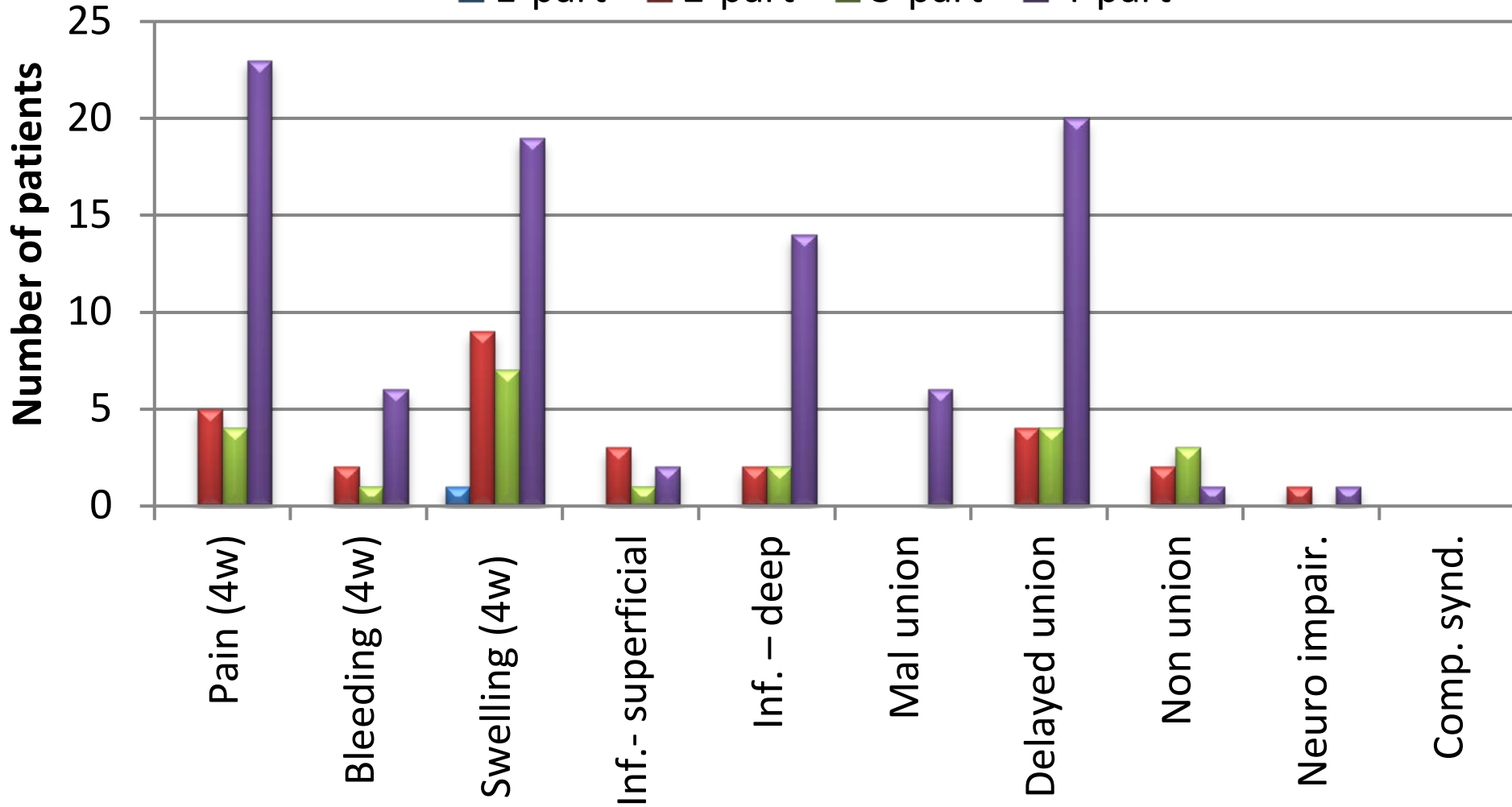
	1-part	2-part	3-part	4-part	1-part	2-part	3-part	4-part
	n = 34	n = 423	n = 150	n = 102	n = 5	n = 26	n = 15	n = 67
	Conservatively-treated				Surgically-treated			
Wound healing								
Mean (weeks)	3	3	3	3	3	3	4	4
Min-Max	2-3	2-4	2-4	2-3	2-4	2-4	2-5	2-5
Standard Dev.	±1	±1	±1	±1	±1	±1	±2	±2
Time to union								
Mean (weeks)	9	9	12	11	10	9	14	14
Min-Max	8-9	8-9	12-13	11-13	8-10	8-10	12-15	12-15
Standard Dev.	±1	±1	±1	±1	±1	±2	±1	±2

Conservatively-treated sub-group



Surgically-treated sub-group

1-part 2-part 3-part 4-part



Obesity

- Traditional thoughts - **reduced bone quality**
- Starvation – fracture
- Obesity - **osteoclastic microenvironment**
 - Bone and calcium metabolism
- Adipose tissue - **hormonal effect**
- Location of **fat deposition**
- Rate of fractures per skeletal site

Conclusion

- **Severity of the fracture is increased**
 - Overweight - Obese
 - Postmenopausal females
- **Surgical fixation in 3-part, 4-part fracture**
 - Delay in fracture union
 - Increase wound healing problems.

Thank you

Questions?