



Risk Factors In Proximal Humerus Fractures: Males Vs. Females

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Fractures of the proximal humerus

- 2nd most common
- 10% of all fractures
- Osteoporotic
- Postmenopausal women
- Public health concern



Risk factors

- Body mass / physical activity
- Hx of fracture / falls
- IDDM / Alcohol / poor vision

Our study aims to

Identify additional risk factors



Study design

- 5-Year period, 2317 patients
- Retrospective data collection

- Demographics
- Medical, drug history, family Hx
- Physical activity / walking aids
- Tobacco / Alcohol
- Hx of falls and fractures



Study design

- Males (477), Females (1840)
- Neer classification system: parts and displacements
- Mechanical fall in 94%
- 177 had ORIF
- Follow up for a minimum 24 months

Males vs. Females

- Risk factors
- Time to wound healing and time to union
- Post injury / postoperative complications
- Range of motion 4-6/52 and mobility at last review

Risk factors (Male:Female 1:4)

>65 years of age (RR 1.57, CI 95% 1.49-1.78)

Diabetes type I (RR 2.45, CI 95% 2.21-2.63)

Hypothyroidism (RR 1.89, CI 95% 1.64-2.09)

Chronic smoking (RR 1.87, CI 95% 1.8-2.21)

Mental health problems (RR 1.7 CI 95% 1.65-1.74)

Fragility (RR 2.68, CI 95% 2.42-2.81)

Recurrent falls (RR 3.43, CI 95% 3.25-3.67)

Risk factors (Female:Male 4:1)

>55 years of age (RR 3.27, CI 95% 3.05-3.51)

Diabetes type I (RR 2.11, CI 95% 1.84-2.26)

Hypothyroidism (RR 2.47, CI 95% 2.12-2.74)

High body mass index (RR 3.87, CI 95% 3.61-3.92)

Fragility (RR 2.89, CI 95% 2.62-3.28)

Recurrent falls (RR 3.56, CI 95% 3.33-3.89)

Previous fracture (RR 2.61, CI 95% 2.19-2.73)

	Males	Males	Females	Females
	Conservative	Surgical	Conservative	Surgical
<i>Excluded (DM, Thyroid, BMI, MHP, Smoking)</i>				
Patients No.	358	43	1367	95
<i>Time to wound healing</i>				
Mean (weeks)	6	7	6	8
Min-Max	3-8	4-9	4-9	5-10
St. Dev.	±2	±2	±1	±1
<i>Time to fracture union</i>				
Mean (weeks)	11	14	12	16
Min-Max	10-14	12-19	9-14	11-20
St. Dev.	±1	±2	±2	±3

	Males	Males	Females	Females
	Conser.	Surgical	Conser.	Surgical
<i>Excluded (DM, Thyroid, BMI, MHP, Smoking)</i>				
Patients No.	358	43	1367	95
Pain (4w)	22	3	48	8
Bleeding (4w)	0	1	0	2
Swelling (4w)	14	4	37	7
Infection- sup.	2	1	8	10 $p<.001$
Infection - deep	3	9 $P<.001$	7	2
Mal union	2	0	3	0
Delayed union	9	1	22	3
Non union	2	1	11 $P<.001$	6 $p<.001$
NV impairment	1	0	2	0
Comp. syndrome	0	0	0	0

	Males	Males	Females	Females
	Conser.	Surgical	Conser.	Surgical
<i>Excluded (DM, Thyroid, BMI, MHP, Smoking)</i>				
Patients No.	358	43	1367	95
Satisfactory RoM	288	36	1118	73
Mobility last R/V				
Same	312	35	1163	77
Worse	3	2	10	4

Conclusion

- Common risk factors: DM I, hypothyroidism, recurrent falls and fragility
- Male: Mental health problems / tobacco smoking
- Female: Previous fracture / high BMI
- Time to fracture union is increased in females
- Infection: Superficial in females, Deep in males
- Non-union incidence increased in females
- No difference when it comes to range of motion / satisfactory joint mobility

Thank you

Questions?