Rib Fractures and Pain Management

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GENESYS

Edwin Smith Papyrus



Edwin Smith Papyrus

- 27 head injuries (cases #1-27)
- 6 throat and neck injuries (cases #28-33)
- 2 injuries to the clavicle (collarbone) (cases #34-35)
- 3 injuries to the arm (cases #36-38)
- 8 injuries to the sternum (breastbone) and ribs (cases #39-44)
- 1 tumor and 1 abscess of the breast (cases #45-46)
- 1 injury to the shoulder (case #47)
- 1 injury to the spine (case #48)

Case Forty-Two:

Instructions concerning a sprain in the ribs of his breast.

- Examination: If thou examinest a man having a sprain in the ribs of his breast, (and) he suffers in the ribs of his breast, not having a dislocation, (and) it is not broken while that man continues to suffer with it and shudders exceedingly.
- Diagnosis: Thou shouldst say concerning him: "One having a pain in the ribs of his breast. An ailment which I will treat."
- Treatment: Thou shouldst bind it with ymrw; thou shouldst treat it afterwards with honey every day until he recovers.

Case Forty-Three:

Instructions concerning a dislocation of the ribs of his breast.

- Examination: If thou examinest a man having a dislocation of the ribs of his breast, (and) thou findest that the ribs of his breast are projecting and their heads are ruddy, while that man suffers continually with swellings in his two sides.
- Diagnosis: Thou shouldst say concerning him: "One having a dislocation in the ribs of his breast. An ailment which I will treat."
- Treatment: Thou shouldst bind it with ymrw; thou shouldst treat it afterwards with honey every day, until he recovers.

Case Forty-Four:

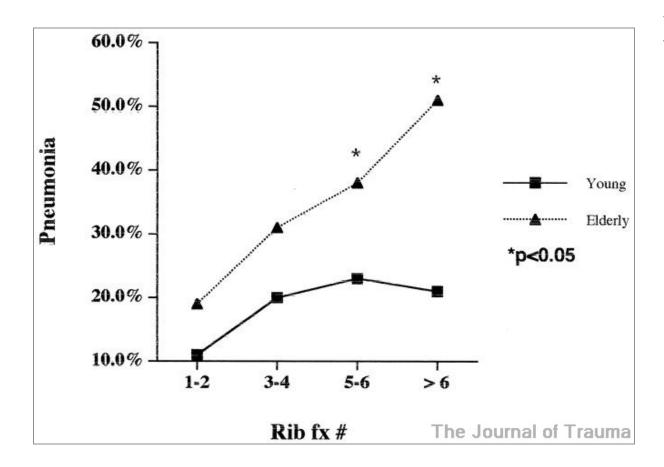
Instructions concerning a break in the ribs of his breast.

Examination: If thou examinest a man having a break in the ribs of his breast, over which a wound has been inflicted; (and) thou findest that the ribs of breast crepitate under thy fingers.

Diagnosis: Thou shouldst say concerning him: "One having a break in the ribs of his breast, over which a wound has been inflicted. An ailment not to be treated."

RIB FRACTURES

- PEOPLE DIE FROM RIB FRACTURES
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Rib Fractures in the Elderly

Bulger, Eileen M.; Arneson, Matthew A.; Mock, Charles N.; Jurkovich, Gregory J. The Journal of Trauma. 48(6):1040-1047, June 2000.

FIG 2. Relationship between pneumonia and number of rib fractures. Increasing pneumonia rates as the number of rib fractures increased were most notable for the elderly group.

Rib Fractures in the Elderly

Bulger, Eileen M.; Arneson, Matthew A.; Mock, Charles N.; Jurkovich, Gregory J. The Journal of Trauma. 48(6):1040-1047, June 2000.

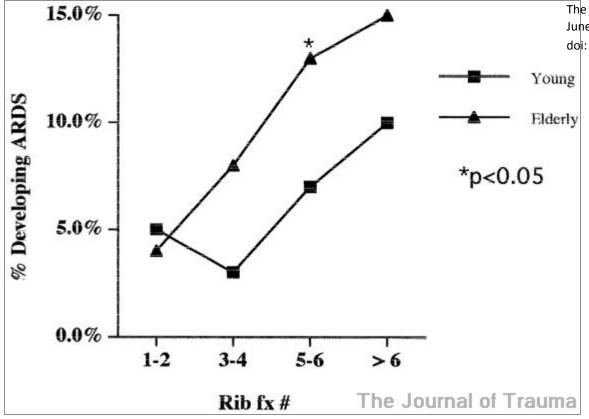
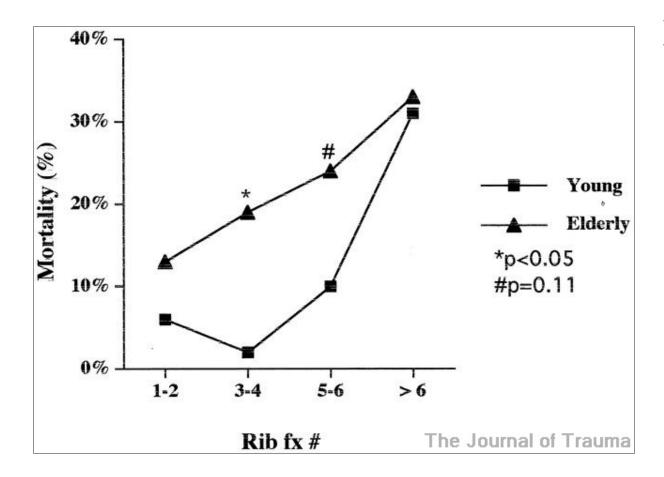


FIG 3. Relationship between development of ARDS and number of rib fractures.



Rib Fractures in the Elderly

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FIG 4. Relationship between mortality and number of rib fractures. Increasing number of rib fractures was associated with increased mortality in both groups with a nearly linear increase in the elderly group.



Rib Fracture Mortality and Age

	65+ years		<65 years		Odds Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
Bergeron	22	113	27	292	0.9%	2.37 [1.29, 4.37]	
Bulger	22	277	10	187	0.8%	1.53 [0.71, 3.30]	+-
Lee b	45	818	52	1633	2.5%	1.77 [1.18, 2.66]	
Lien	194	5079	251	13777	9.8%	2.14 [1.77, 2.59]	
Sharma	86	480	109	1136	4.0%	2.06 [1.52, 2.79]	-
Shorr	17	46	66	469	0.6%	3.58 [1.86, 6.88]	
Stawicki	1738	8648	2190	19207	81.5%	1.95 [1.82, 2.09]	•
Total (95% CI)		15461		36701	100.0%	1.98 [1.86, 2.11]	•
Total events	2124		2705				
Heterogeneity: Chi ² =	5.06, df=	6 (P = 0)	1.54); 2=	0%			0.02 0.1 1 10 50
Test for overall effect:	Z= 21.67	(P < 0.0	00001)				<65 years 65+ years

Rib Fracture Mortality 3 or more RFs

	3+ RFs		<3 RFs		Odds Ratio		Odds Ratio			
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-H, Fixed, 9	5% CI	
Flagel	2222	19969	1494	25397	86.4%	2.00 [1.87, 2.14]				
Lee b	97	2477	1837	103016	6.1%	2.24 [1.82, 2.76]		-	-	
Lien	43	3018	15	2691	1.2%	2.58 [1.43, 4.65]		-	_	
Liman	12	214	1	259	0.1%	15.33 [1.98, 118.85]		-	•	\longrightarrow
Sharma	174	1208	94	1075	6.3%	1.76 [1.35, 2.29]		-		
Total (95% CI)		26886		132438	100.0%	2.02 [1.89, 2.15]		•		
Total events	2548		3441					1		
Heterogeneity: $Chi^2 = 6.53$, $df = 4$ (P = 0.16); $I^2 = 39\%$									50	
Test for overall effect:	Z = 21.83	(P < 0.0	00001)				0.02	<3 RFs 3+		30

Mortality with Preexisting condition

	PEC		No Pi	No PEC		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
Alexander	3	31	0	31	6.6%	7.74 [0.38, 156.36]	
Barnea	8	49	6	60	67.0%	1.76 [0.57, 5.46]	-
Elmistekawy	4	12	5	33	26.4%	2.80 [0.61, 12.95]	 •
Total (95% CI)		92		124	100.0%	2.43 [1.03, 5.72]	•
Total events	15		11				
Heterogeneity: Chi ² = 0.92, df = 2 (P = 0.63); I^2 = 0% 0.02 0.1 1 10 50							
Test for overall effect:	Z = 2.03	(P = 0.0)	04)				No PEC PEC

Mortality with Pneumonia

	Pneumonia		No pneumonia		Odds Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
Bergeron	18	49	31	336	33.6%	5.71 [2.87, 11.37]	
Elmistekawy	3	7	4	32	5.5%	5.25 [0.84, 32.63]	
Harrington	6	56	27	1072	16.1%	4.64 [1.83, 11.76]	
Svennevig	21	96	29	556	44.8%	5.09 [2.76, 9.38]	
Total (95% CI)		208		1996	100.0%	5.24 [3.51, 7.82]	•
Total events	48		91				
Heterogeneity: Chi ^z =	0.13, df=		0.02 0.1 1 10 50				
Test for overall effect:	Z = 8.09 (No pneumonia Pneumonia				

Treatment Rib Fractures

- Rib Blocks PNTX rate 8.5% per patient JTrauma. 2001 Sep;51(3):536-9.
- Epidural analgesia improves outcome after multiple rib fractures. Surgery. 2004 Aug;136(2): 426-30

• Extrapleural bupivacaine for amelioration of multiple rib fracture pain. J Trauma. 1995 Jan;38(1):22-7

Genesys Trauma Services

	2009-2010	2009-2010 Epidural	2011-2012	2011-2012 ON-Q
Vent Days	0.7	0.8	0.2	0.6
ICU Days	2.6	4.2	1.8	3.9
Hospital Days	6.3	8.3	4.5	6.8
Average ISS	11.8	13	11	12.8
Average Age	64	64	66	70
Pneumonia Rate	3%	18%	2%	10%
Total Patients	180	33	214	46
ICU Admissions	101		117	

^{*} Above Data Reflects All Trauma Patients With 2 Or More Rib Fractures

Genesys Trauma Services

