
**The Second Israel – Lebanon War
The Clinical Experience**

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Clinical Experience - RMC

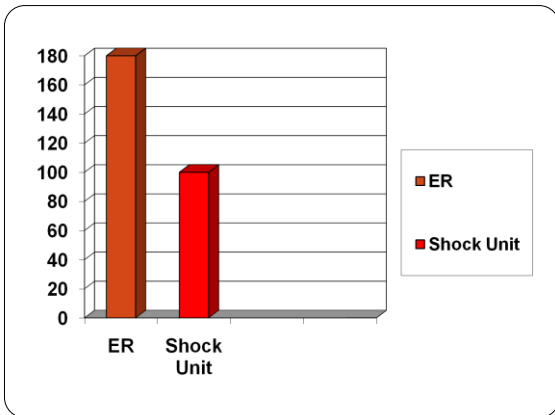
15/08/2006 -- 12/07/2006

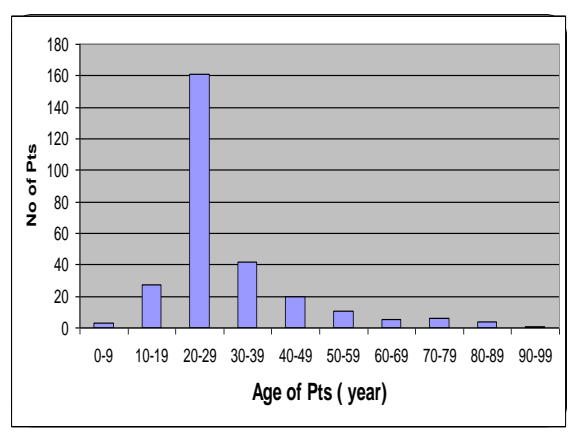
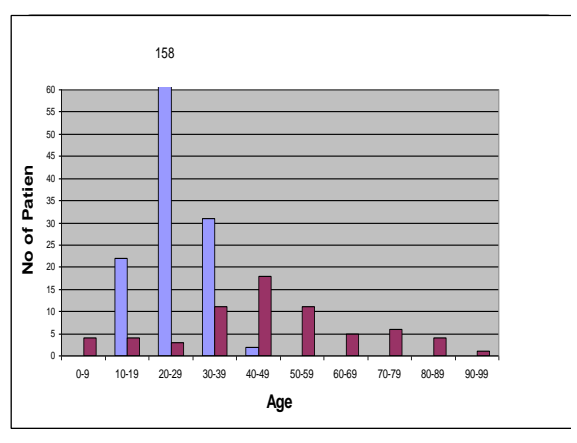
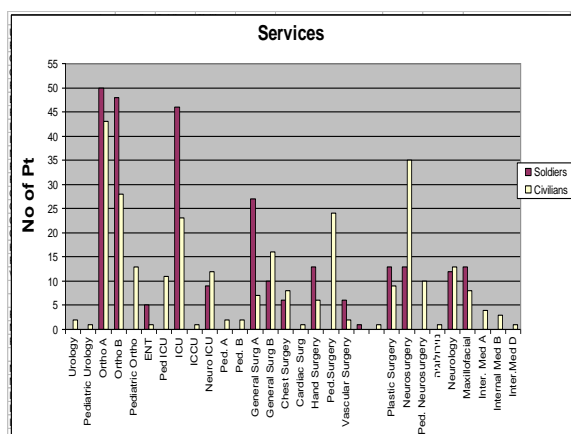
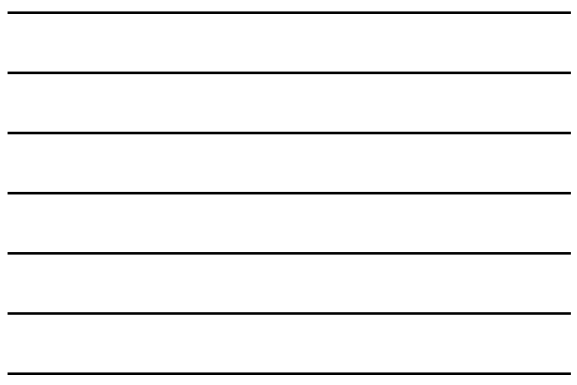
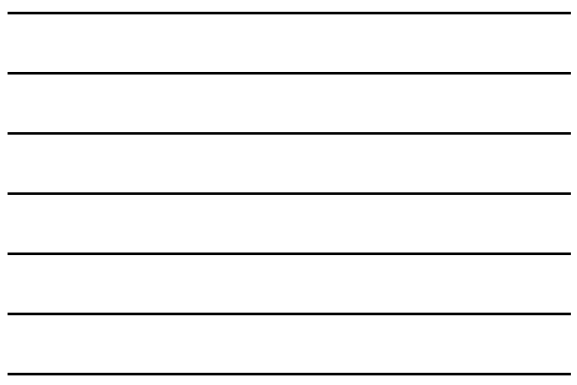
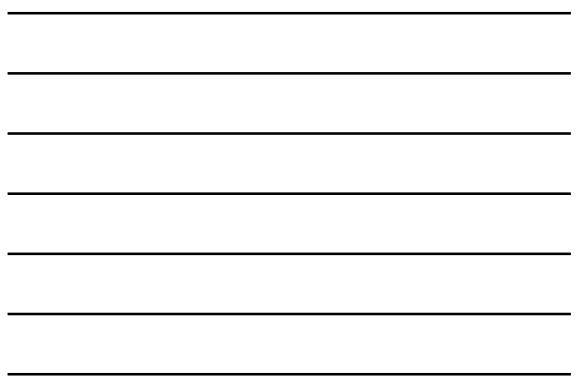
No of wounded pts

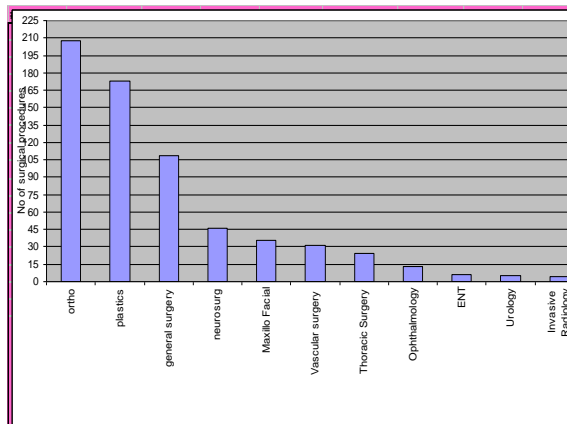
849

Soldiers : 328

Civilians : 521







Injured soldiers evacuated to RAMBAM Medical center summer 1982

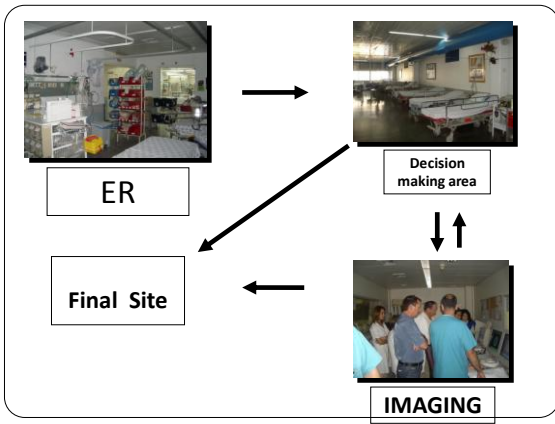
Site of injury	Casualties (n=694) (%) 1982	Casualties (n=266) (%) 2006
Burns	174 (25.1%)	25 (9.3%)
Head	104 (15.8%)	53 (20%)
Face	133 (19%)	65 (24%)
Neck	37 (5.9%)	11(4%)
Chest	123 (18.7%)	52 (19.5%)
Abdomen	112 (16.4%)	35 (13%)
Spine	7 (1.2%)	10 (3.7%)
Extremities	465 (67.1%)	242 (90 %)

Tal Or E, Hana Geva, Moshe Michelson.1991

Casualties admitted to RAMBAM medical center during two military conflicts

ISS	Soldiers 2006 @ N=213	2006 Civilians N=68	soldiers 1982 # N= 694
1-8	146(68.5%)	36 (52.2%)	325 (46.8%)
9-15	41(19.2%)	15 (23.9%)	226 (32.5%)
16-24	18(8.4%)	7 (10.4%)	56 (8%)
25+	8 (3.7%)	9 (13.4%)	87 (12.5%)

#June 6th to Sept 20th 1982 ,@ July 12th to August 15th 2006



Tourniquet Use

- 11 Wounded soldiers

Average time (min) 188
 Range (min) 35 - 420

ER Thoracic procedures

- 1 ER Thoracotomy
- 12 Chest drain insertion
 - 1 Bilateral
 - 11 Unilateral

Use of imaging techniques.

Imaging Modalities

Imaging studies

<p><u>2006</u></p> <ul style="list-style-type: none"> ● US (FAST) ● Plain films ● CT ● CTA ● Angiography 	<p><u>1982</u></p> <ul style="list-style-type: none"> ● US not utilized ● Plain films ● Fluoroscopy ● CT – learning stage ● Angiography
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U.S

- 102 Pts

Soldiers : 78 (76.5%)

Civilians : 24 (23.5%)

(Male 98, Female 4)

FAST Results correlated to CT and Laparotomy

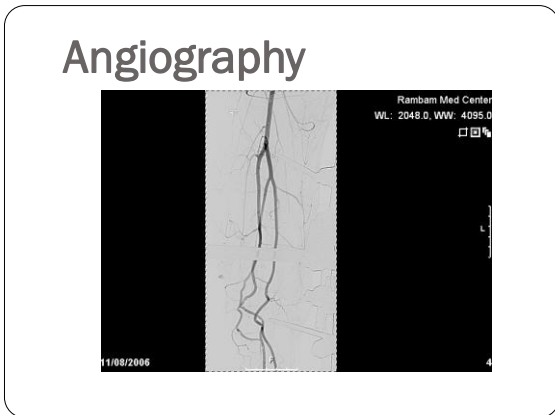
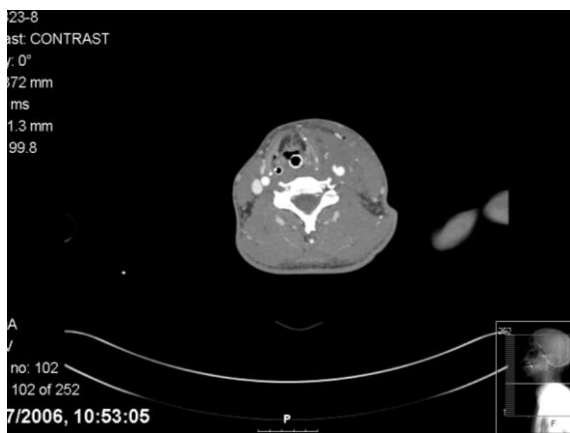
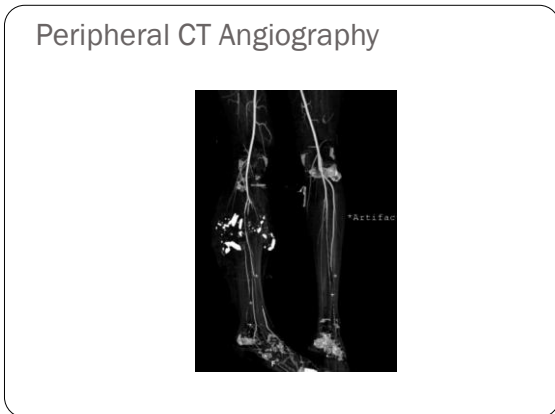
<u>FAST</u>	<u>TP</u>	<u>TN</u>	<u>FP</u>	<u>FN</u>
<u>Soldiers (78)</u>	13	60	1	4
<u>Civilians (24)</u>	2	20	1	1
<u>Total (102)</u>	15	80	2	5

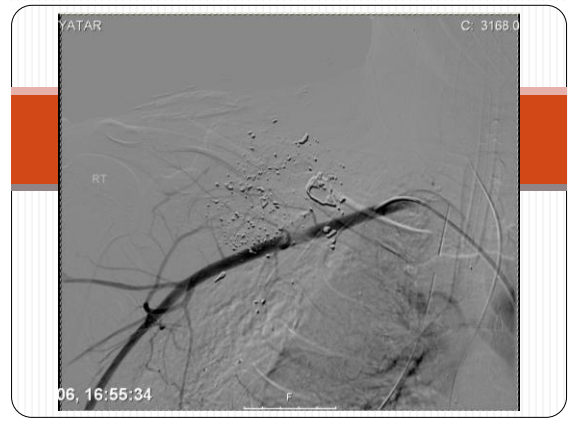
FAST compared with CT and Laparotomy

<u>FAST</u>	<u>Sensitivity %</u>	<u>Specificity %</u>	<u>PPV %</u>	<u>NPV %</u>	<u>Accuracy %</u>
Soldiers	76.5	98.4	92.9	93.7	94
Civilians	76.6	95.2	67.6	95.2	91.6
Total	75	97.6	88.2	94.1	93.1

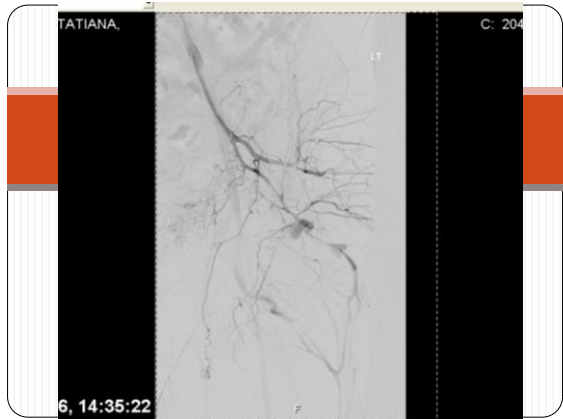
Imaging Modalities

Number of wounded who underwent CT
173 (42%)









Vascular Trauma

Vascular Trauma

39 Vascular Injuries (7.6%)

Soldiers : 33 (10.8%)
 Civilians : 6 (3%)

Incidence of Combat Vascular Trauma : 0.2-4%
(DeBakey M, Rich N, Mattox W)

Recent reports from Iraq : 6.8%
(Clause, Stames)

Vascular Trauma

<u>Mean</u>	<u>Range</u>
• Age (year) 29	20 – 53

• Average time from injury – hospital : 6.54 hrs

24% > 10 hrs.
 4% > 20 hrs.

Vascular Trauma

Injuries According to Anatomy

	<u>Arteries</u>	<u>Veins</u>
Head & Neck	6 (15%)	1 (8%)
Abdomen & Pelvis	5 (13%)	2 (17%)
Upper Extremities	10 (26%)	2 (17%)
Lower Extremities	18 (46%)	7 (58%)
Total	39 (100%)	12 (100%)

Mean ISS 16 !!!

Vascular Trauma

Vascular Repair Employed

Interposition Graft	15 (38.5%)
End to End Anastomosis	9 (23%)
Patch/Lateral Repair	6 (15.5%)
Ligation	3 (7.5%)
Observation	1 (2.5%)
Endovascular	5 (13%)

No synthetic grafts or patches

World Statistics of Vascular Injuries

extremities are injured in **50-80%**
harboring a mortality rate of **2.5%-10%**

Amputation rate

- **WWII** (no vascular reconstruction) 60%
- **Korean War** (start of vascular reconstruction) 13%
- **Vietnam** 12%
- **Croatia & Chechnya** 10%
- **Iraq** 9%
- **Ireland** 5%

Vascular Trauma

Results

	Lebanon 82" <u>June-August (3 months)</u> 87 pts.	Lebanon 06" <u>July-August (1 month)</u> 39 pts
Mortality	1%	0%
Amputation	2%	0%
Thrombosis	9%	5%
Infection	39%	24%

Hematologic resuscitation

Casualties admitted to 3 hospitals during July 12th to August 15th 2006

Medical Center	Total number of patients	Pt's with anxiety	Wounded Pt's (hospitalized)	Pt's transfused	Pt's receiving massive transfusion
Rambam	842	338 (10)	504 (289)	60	21
Ziv	1558	420	1138 (415)	32	4
Western Galilee	1805	937	868 (195)	15	1

	Referrals wounded (hospitalized)	Patients Requiring blood (% of referrals)	Packed RBCs	Fresh frozen plasma	Cryo-precipitate	Pt's
Total	504 (289)	60 (12%)	463	413	266	258
Soldiers	295 (233)	48 (16%)	409	352	246	240
Civilians	209 (56)	12 (6%)	54	61	20	18

Median products received according to Injury Severity Score. (MEAN)						
	PULSE	CRYSTALLOIDS	PC	FFP	PLAT	CRYO
ISS<16 (N=34)	91 (163)	1000 (97)	4 0-17	1.5 0-18	0 0-12 M(1.9)	0 0-20 M(3.2)
ISS≥16 (N=26)	110.29 (22)	3000 (21)	7 (0-45) P=0.026	13 (0-54) P=0.002	0 0-48 M(7.4)	0 0-40 M(6.1)

34 PATIENTS WITH ISS< 16 HAD BLOOD
26 PATIENTS WITH ISS> 16 HAD BLOOD
Results are presented as median and range

TRANSFUSION- ISS MEDIAN 17 (6-75) MASSIVE								
N=21	HB	PLT X10 ⁹ /L	B.E.	PH	H ₂ CO ₃	INR	PTT	FIBRINOGEN
ER (RANGE)	10.6 (7.3-13.7)	262 84-464	-5.8 -22-0.4	7.318 6.92-7.5	20 7.4-25	1.26 1.12-2.2	33" 24-57	N.D
1H-2H	8 6.9-11.5	122 78-257	-3 -15 --2	7.28 7.01-7.34 N=3	22 13 -24	1.55 1.24-2.31	44" 23-89	119 62-183
H4-H8	9.9 6.6-15.1	120 84-173	-1.6 -7.8 -+10	7.355 7.2-7.4	22.6 18 - 35	1.35 1.03-2.33	41" 30 - 53	181 102 - 245
24H	10.52 7.9-14.4	98 40-213	0.7 -2.2-+6.4	7.42 7.29-7.49	25.4 20.3-31.2	1.27 1.01-1.47	38.9 30.7-43.9	272 49-358

Summary

- Prolonged Evacuation Time To Medical Facility.
- High Numbers of Patients with Hypovolemic Shock .

Summary

- High numbers of Occular Injuries
- High number of Vascular Injuries
- Few soldiers with head injury

Summary

- Extensive Use for Imaging Techniques (CTS, US, Invasive Radiology)
- Multi – disciplinary Care