

4. Results (A)

Table 4-1 a frequency table shows upper limb fracture according to gender

Gender	Frequency
Male	155
Female	145
Total	300



Table 4 - 2 frequency table show upper limb fracture according to causes

Causes	Frequenc y
RTA	166
Fall down stretch hand	58
Violence	37
Fall from height	39
Total	300.0



Figure 4 - 2 show upper limb fracture in respect to causes

Table 4 - 5 show upper limb fracture according to type

Type of fracture	Frequency
Scapula	9
Humeral neck	9
Humeral shaft	44
Elbow	15
Humerus condyles	5
Forearm	59
Green stick	21
Colles	53
Smith's	10
scaphoid	10
Bernett's	14

Metacarpal & phalanges	11
Clavicle	40
Total	300.0

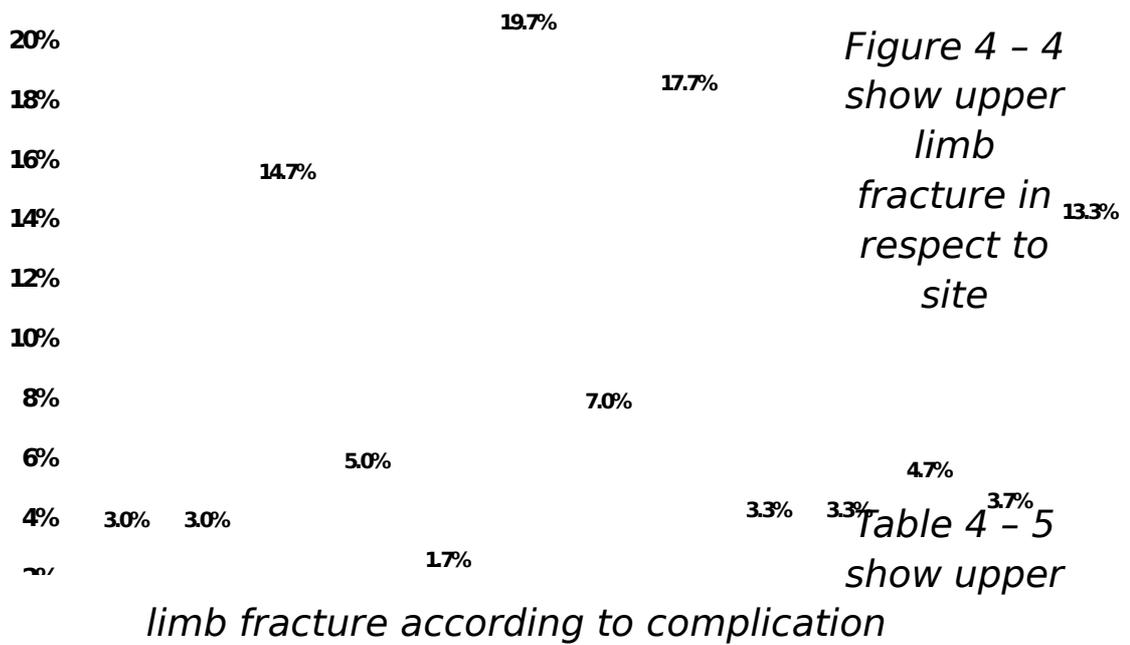


Figure 4 - 3 show upper limb fracture in respect to type

Table 4 - 4 show upper limb fracture according to site

Site	Frequency
Shoulder	49
Humerus	59
Forearm	92
Elbow	15
Wrist	51
Carpal	11
Metacarpal	5
Phalanges	18

Total	300
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Complications	Frequency
Malunion	154
Neurovascular injury	30
Non - union	79
Infection	7
Myositis ossificans	2

Post traumatic arthritis	15
Loss of motion	7
Contracture	4
Tendon rupture	2
Total	300

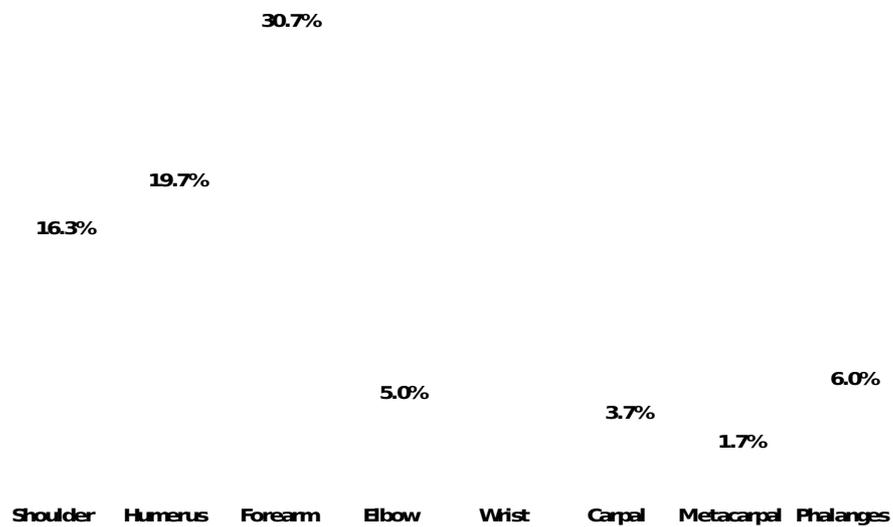


Figure 4 - 5 show upper limb fracture in respect to complication

Table 4 - 6 show upper limb fracture according technique

Technique	Frequency
AP	267
Lateral	31
Oblique	2
Total	300.0

0.7%
10.3%

89.0%
Figure 4- 6 show
upper limb
fracture in
respect
technique

AP Lateral Oblique

Table 4 - 7 show upper limb fracture according to film size

Film size	Frequency
C	104
B	89
A	107
Total	300.0

35.7%

34.7%

29.7%

6
C B A

Figure 4 - 7 show upper limb fracture in respect to film size

Table 4 - 8 show upper limb fracture according to age group

Age group	Frequency
0-9	36
10-19	96
20-29	80
30-39	61
40-49	14
50-59	9
60-69	1
70-79	2
80-90	1
Total	300

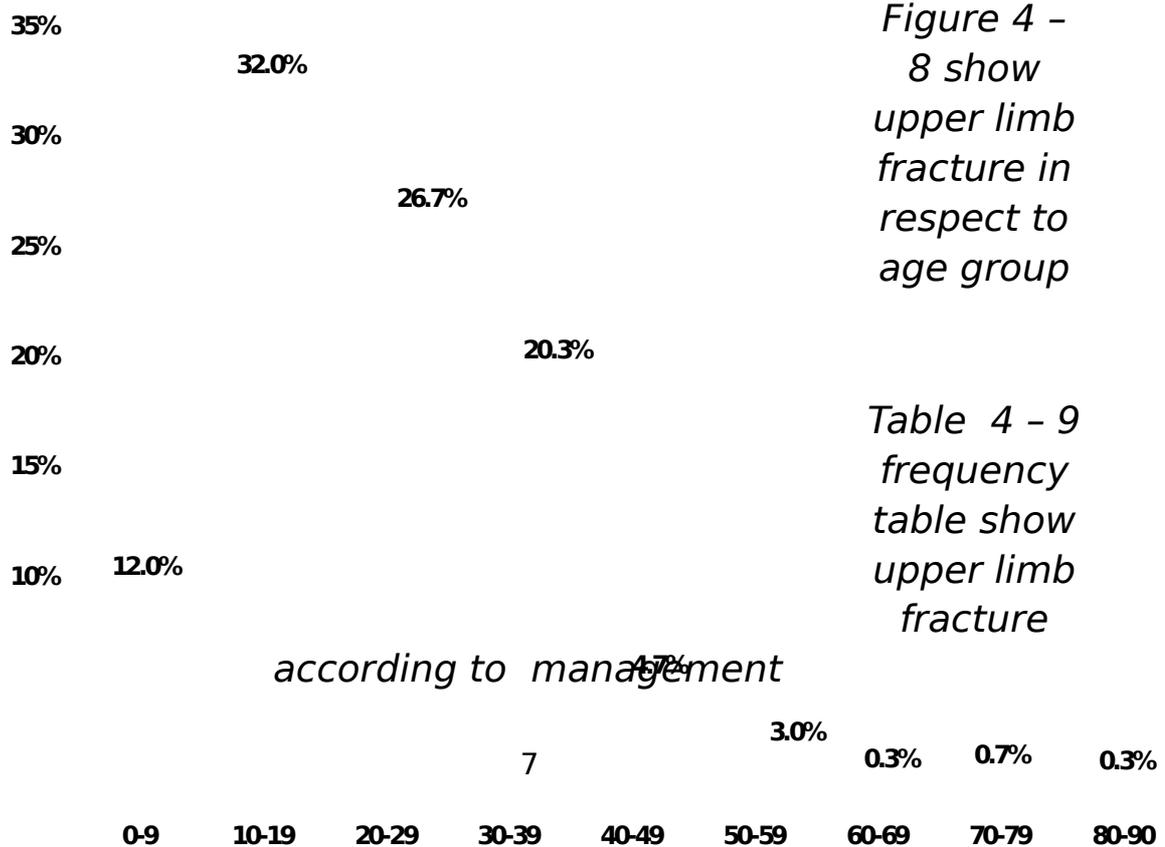


Figure 4 - 8 show upper limb fracture in respect to age group

Table 4 - 9 frequency table show upper limb fracture

according to management

Management	Total
No operative use cast immobilization	174
Operative in comminuted fracture	110
Open Reduction in unstable fracture	16

Causes Technique Cross tabulation

Causes	Technique			Total
	AP	Lateral	Oblique	
RTA	145	21		166
fall down on hand	54	4		58
Violence	35		2	37
Fall from height	33	6		39
	267	31	2	300

Type Fracture Technique Cross tabulation

Type	Technique			Total
	AP	Later al	Obliqu e	
scapula	7	2	0	9
humeral neck	9	0	0	9
humeral shaft	44	0	0	44
elbow	13	2	0	15
Humerus condyles	5	0	0	5
forearm	51	8	0	59
green stick	19	2	0	21
colles	37	16	0	53
smith's	9	1	0	10
scaphoid	10	0	0	10
bernett's	14	0	0	14
metacarpal & phalanges	9	0	2	11
clavicle	40	0	0	40
	267	31	2	300

Site Technique Cross tabulation

Site	Technique			Total
	AP	Lateral	Oblique	
shoulder	47	2	0	49
humerus	59	0	0	59
forearm	79	13	0	92
elbow	13	2	0	15
wrist	37	14	0	51
carpal	11	0	0	11
metacarpal	5	0	0	5
phalanges	16	0	2	18
	267	31	2	300

Management * Technique Cross tabulation

Management	Technique			Total
	AP	Lateral	Oblique	
1	158	14	2	174
2	96	14	0	110
3	13	3	0	16
	267	31	2	300

Complication Technique Cross tabulation

Complication	Technique			Total
	AP	Lateral	Oblique	
1	137	17		154
2	28	2	0	30
3	66	11	2	79
4	7	0	0	7
5	2	0	0	2
6	14	1	0	15
7	7	0	0	7
8	4	0	0	4
9	2	0	0	2
		31	2	300

Film_Size Technique Cross tabulation

Film size	Technique			Total
	AP	Lateral	Oblique	
C	94	10	0	104
B	72	17	0	89
A	101	4	2	107
	267	31	2	300

Age Group Technique Cross tabulation

Age Group	Technique			Total
	AP	Lateral	Oblique	
1-9	34	2		36
10-19	87	9		96
20-29	71	7	2	80
30-39	51	10		61
40-49	11	3		14
50-59	9			9
60-69	1			1
70-79	2			2
80-90	1			1
	267	31	2	300

Causes Film _Size Cross tabulation

Causes	Film _Size			Total
	C	B	A	
RTA	57	47	62	166
fall down on hand	17	24	17	58
Violence	18	4	15	37
Fall from height	12	14	13	39
	104	89	107	300

Type fracture Film _Size Cross tabulation

Type Fracture	F_Size			Total
	C	B	A	
scapula	3	6		9
humeral neck		4	5	9
humeral shaft	1	3	40	44
elbow	1	13	1	15
humerus condyles		1	4	5
forearm		11	48	59
green stick	6	11	4	21
colles	25	27	1	53
smith's	6	3	1	10
scaphoid	9		1	10
bernett's	14			14
metacarpal & phalanges	3	6	2	11
clavicle	36	4		40
	104	89	107	300

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Site Fracture _Size Cross tabulation

SITE	F_Size			Total
	C	B	A	
shoulder	39	10	0	49
humerus		8	51	59
forearm	16	24	52	92
elbow	2	13	0	15
wrist	21	28	2	51
carpal	10	1	0	11
metacarpal	0	5	0	5
phalanges	16	0	2	18
	104	89	107	300

Management Film _size Cross tabulation

Management	Film Size			Total
	C	B	A	
1	59	45	70	174
2	39	37	34	110
3	6	7	3	16
	104	89	107	300

Complication Film Size Cross tabulation

Complication	F_Size			Total
	C	B	A	
1	57	43	54	154
2	12	6	12	30
3	22	33	24	79
4	6	1	0	7
5		1	1	2
6	6	4	5	15
7	1	1	5	7
8	0	0	4	4
9	0	0	2	2
	104	89	107	300

Age Group Film Size Cross tabulation

Age Group	F_Size			Total
	C	B	A	
1-9	20	11	5	36
10-19	35	33	28	96
20-29	14	11	55	80
30-39	24	22	15	61
40-49	7	6	1	14
50-59	3	5	1	9
60-69	1	0	0	1
70-79	0	1	1	2
80-90	0	0	1	1
	104	89	107	300

Type Fracture Causes Cross tabulation

Type Fracture	Causes				Total
	RTA	fall down on hand	Violence	Fall from height	
scapula	4	3		2	9
humeral neck	3	3	1	2	9
humeral shaft	20	8	8	8	44
elbow	13	1		1	15
Humerus condyles	4			1	5
forearm	37	10	6	6	59
green stick	9	3	1	8	21
colles	29	21	1	2	53
smith's	8	1	1		10
scaphoid	2	3	3	2	10
bernett's	9		4	1	14
metacarpal & phalanges	6	3	2		11
clavicle	22	2	10	6	40
	166	58	37	39	300

Site Causes Cross tabulation

SITE	Causes				Total
	RTA	fall down on hand	Violence	Fall from height	
shoulder	26	5	10	8	49
Humerus	27	11	10	11	59
forearm	55	16	7	14	92
elbow	13	1		1	15
wrist	29	19	1	2	51
carpal	2	4	3	2	11
metacarpal	4	1			5
phalanges	10	1	6	1	18
	166	58	37	39	300

Management Causes Cross tabulation

Management	Causes				Total
	RTA	fall down on hand	Violence	Fall from height	
1	94	32	26	22	174
2	59	25	11	15	110
3	13	1		2	16
	166	58	37	39	300

Complication Causes Cross tabulation

Complication	Causes				Total
	RTA	fall down on hand	Violence	Fall from height	
1	91	28	16	19	154
2	13	6	7	4	30
3	49	17	8	5	79
4	3	1	1	2	7
5	2				2
6	4	5	2	4	15
7	1		1	5	7
8	1	1	2		4
9	2				2
	166	58	37	39	300

Age Group Causes Cross tabulation

Age Group	Causes				Total
	RTA	fall down on hand	Violence	Fall from height	
0-9	14	3	8	11	36

10-19	62	11	11	12	96
20-29	46	16	9	9	80
30-39	31	17	7	6	61
40-49	8	4	1	1	14
50-59	3	5	1		9
60-69		1			1
70-79	1	1			2
80-90	1				1
	166	58	37	39	300

Type fracture Management Cross tabulation

Type Fracture	Management			Total
	1	2	3	
scapula	8	1		9
humeral neck	8	1		9
humeral shaft	28	16		44
elbow	2	12	1	15
Humerus condyles	4	1		5
forearm	39	16	4	59
green stick	11	7	3	21
colles	20	28	5	53
smith's	3	5	2	10
scaphoid	7	3		10
bernett's	11	2	1	14
metacarpal & phalanges	9	2		11
clavicle	24	16		40
	174	110	16	300

Site Management Cross tabulation

Site	Management			Total
	1	2	3	
shoulder	32	17		49
Humerus	40	19		59
forearm	53	30	9	92
elbow	3	11	1	15
wrist	19	27	5	51
carpal	9	2		11
metacarpal	4	1		5
phalanges	14	3	1	18
	174	110	16	300

Complication Management Cross tabulation

Complication	Management			Total
	1	2	3	
1	100	46	8	154
2	19	10	1	30
3	41	35	3	79
4	1	5	1	7
5	2			2
6	5	7	3	15
7	4	3		7
8	2	2		4
9		2		2
	174	110	16	300

Age group Management Cross tabulation

Age Group	Management			Total
	1	2	3	
1-9	19	15	2	36
10-19	63	26	7	96
20-29	40	39	1	80
30-39	37	18	6	61
40-49	8	6		14
50-59	4	5		9
60-69	1			1
70-79	2			2
80-90		1		1
	174	110	16	300

Type Fracture Complication Cross tabulation

Type fracture	Complication									Total
	1	2	3	4	5	6	7	8	9	
scapula	6	2	1	0	0	0	0	0	0	9
humeral neck	3		3	0	1	2	0	0	0	9
humeral shaft	16	11	6	0	0	2	5	3	1	44
elbow			13	0	0	1			1	15
Humerus condyles	2	1		0	0	0	1	1		5
forearm	37	2	16	1	0	3	0	0	0	59
green stick	16	1	2	0	0	2	0	0	0	21
colles	24	2	21	0	1	4	1	0	0	53
smith's	7	1	2		0		0	0	0	10
scaphoid	7		1	1	0	1	0	0	0	10

bernett's	9		5	0	0	0	0	0	0	14
metacarpal & phalanges	5	1	5	0	0	0	0	0	0	11
clavicle	22	9	4	5						40
	154	30	79	7	2	15	7	4	2	300

Site Complication Cross tabulation

Site	Complication									Total
	1	2	3	4	5	6	7	8	9	
shoulder	28	11	5	5						49
Humerus	22	12	8		1	4	6	4	2	59
forearm	60	4	21	1		6				92
elbow			14			1				15
wrist	24	2	20		1	3	1			51
carpal	8		1	1		1				11
metacarpal	2	1	2							5
phalanges	10		8							18
	154	30	79	7	2	15	7	4	2	300

Age Group Complication Cross tabulation

Age group	Complication									Total
	1	2	3	4	5	6	7	8	9	
0-9	25	4	4	2		1				36
10-19	42	13	27	4		5	1	3	1	96

20-29	43	6	2 2	1		2	4	1	1	80
30-39	29	6	1 9		2	4	1			61
40-49	8		4			1	1			14
50-59	6		2			1				9
60-69	1									1
70-79		1				1				2
80-90			1							1
	154	30	7 9	7	2	1 5	7	4	2	300

Type Fracture Age Group Cross tabulation

Type fracture	Age group									Total
	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-90	
scapula	1		1	6				1		9
humeral neck		1	2	2	1	2		1		9
humeral shaft	1	8	24	10	1					44
elbow	3	12								15
Humerus condyles		2	3							5
forearm		28	24	6					1	59
green stick	16	5								21
colles	1	2	9	28	9	4				53
smith's		4	4	2						10
scaphoid			6	3		1				10
bernett's		6	4	2	1	1				14
metacarpal & phalanges		2	3	2	2	1	1			11
clavicle	14	26								40
	36	96	80	61	14	9	1	2	1	300

Site Age Group Cross tabulation

Site	Age Group									Total
	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-90	
shoulder	15	26	1	6				1		49
humerus	1	13	28	12	2	2		1		59
forearm	16	36	28	8	3				1	92
elbow	3	11	1							15
wrist	1	2	10	28	6	4				51
carpal			5	3	1	2				11
metacarpal		2	1	1	1					5
phalanges		6	6	3	1	1	1			18
	36	96	80	61	14	9	1	2	1	300

Type Fracture Site Cross tabulation

Type fracture	Site									Total
	shoulder	Humerus	forearm	elbow	wrist	carpal	metacarpal	phalanges		
scapula	9	0	0	0	0	0	0	0	0	9
humeral neck	0	9	0	0	0	0	0	0	0	9
humeral shaft	0	43	0	1	0	0	0	0	0	44
elbow	0	1	0	14	0	0	0	0	0	15
humerus condyles	0	5	0	0	0	0	0	0	0	5
forearm	0	1	58	0	0	0	0	0	0	59
green stick	0	0	21	0	0	0	0	0	0	21
colles	0	0	6		47	0	0	0	0	53
smith's	0	0	7		3	0	0	0	0	10
scaphoid	0	0	0	0	1	9	0	0	0	10
bernett's	0	0	0	0	0	0	0	14		14

metacarpal & phalanges	0	0	0	0	0	2	5	4	11
clavicle	40	0	0	0	0	0	0	0	40
	49	59	92	15	51	11	5	18	300

4 - Discussion (B)

From the table 4 - 1 the researcher found that the upper limbs fracture frequency at male more than at female .The frequency 155 , the female frequency 145.

From table 4 - 2 the result show that the road traffic accident was the main causes of fractures with frequency 166 from the sample under study which was high incidence from all causes , fall down was the second causes with frequency 39 and the last causes with low frequency 37 was violence from table 4 - 3 and according to type of fracture the forearm fracture take the highly frequency 59 , then collie’s fracture came at the second grade with 53 frequency , then the humeral shaft fracture frequency , the clavicle fracture frequency 40 , than the green stick fracture at children with 21 frequency and this type of fracture was the most type of fracture after clavicle fracture also the subracondylar fracture with 15 frequency.

The metacarpal phalanges take 11 frequency , the scaphoid and smith’s fracture with 10 frequency , the scapula and neck of humerus frequency 9, the lowest

frequency type of fracture were the humerus condyles with 5 frequency .

From the graph 4 - 3 the high percentage at forearm fracture 19.7% , the colle's fracture was 17.7% , humerus shaft fracture was 14.7% ,the clavicle fracture percentage 13.39 % and green stick fracture 7 percent , the elbow fracture take 15 percent the lowest percent fracture the humerus condyles fracture with 5 percent.

From table 4 - 5 the result show that the main complication, occur at all upper limb fracture was the malunion of fracture take the high frequency 154, then the non union frequency 79 also the neurovascular injury frequency 30, infection was one of the complication with frequency 15 , then the myositis ossificans frequency 7 , the post traumatic arthritis frequency 7 , loss of motion complication 4 frequency , the contracture and tendon rupture was complication with frequency 2.

From table 4 - 9 the non operative management uses cast immobilization take high frequency 58 , then the operative management in comminuted fracture with frequency 36.7 , then the open reduction in unstable fracture with open reduction internal fixation ORIF with plates .

From table 4 - 6 the most technique use was the anteroposterior and lateral to confirm the fracture at most causes but oblique technique in some type of fracture was effective.

From table 4 - 7 the film size used at upper limbs fractures A size take 107 frequency then the small size C size with frequency 104 , the B size frequency 89 .

From table 4 - 8 the age group of child takes the highest frequency of fracture 96, the old group takes 80 frequencies, then the older patient 61 frequency the elderly group take 9 frequencies only. The peak of fractures occur at the age group from (10 - 19), (20 - 29) and (30 - 39) then the percentage decline to the other group.

5. 1 Conclusion:

The main finding of the study could be summarized in the following :

The Road traffic accident was the main causes of upper limbs fracture 55.3% from other causes of fracture.

The percent of fracture at male more than female . the forearm fracture take the high frequency and percentage 19.7%.

The collar's fracture occur at old patient with 17.7 percentage , green stick fracture occur at child group with 7.0 percentage also the clavicle fracture occur at child more than adult

- Humerus shaft fracture occur at the old age with 14.7 percent .
- Subra condylar fracture occur at the child with 5 percent .
- The complication occurs had high risk due to un union, infection.

The management by the non - operative by using of cast plaster take 58 percent.

The Conclusion of the study, the incidence of upper limbs fracture should be reduce of according to the causes so the road traffic accident by increase the driver attend, the driver should be well trained., the wet and soft floor should be avoided especially for elderly, increase number of streets and bridges so reduce road traffic accident.

Common type of fracture and correlation.

at united state the motor vehicle accidents are a significant causes of morbidity and mortality in 2006, more than 84.7% case treated and released and 29.7% treated in trauma center more than 58% were made by peoples aged (18 - 44) years.

Common type of motor vehicle accident at upper limb with 41.7%.

Common type of upper limb fracture at England forearm fracture occurs by sporting.

More common in women than men.

Common type of upper limb fracture in Western Australia occur by bicycle crashes with 22%.

5 .2 Recommendations:

The conclusion of the study, the incidence of upper limbs fracture should be reducing according to causes so the road traffic accident (RTA).

Should be reduce by increase the driver attend, the driver should be well trained, the wet and soft floor should be well avoided especially the elderly parsons, also increase number of streets and bridges to reduce road traffic accident.

- The department should be equipped with high modalities computerize tomography (CT) and magnetic resonance imaging (MRI) and Fluoroscopic machine.
- There should be connection between the traffic police and emergency department at hospitals.

- For the future suggestion the researcher suggest that the study can be generalized for all fracture at all the body at all hospitals.

5 - 3 Suggestion for a future:

From the result of the researcher suggest that the study can be generalized for all fracture at the body at all Hospitals.

References

- 1- Stewart C. Bushong, Radiologic Science for Technologists
Physics, Biology, and protection, 7th ed, Mosby H.S company, London,
UK P = 314, 420
- 2- Richards Snell. Clinical Anatomy for Medical Students.(year)
6th ed, Publisher, City, Country pp 200, 250).
- 3- Basic Anatomy and Physiology for Radiographers Third
edition, MRE Dean/TET west.

- 4- Guyton and Hall (2001), Text Book of Medical physiology 10th edition, Publisher ,City India (p = 400, 415).
- 5- Orthopaedics and Fractures T-Duck worth, third edition
- 6- K.C. Clark, positioning in Radiography 1981, 11 ed, Lows Kreel Oxford, London .UK p = 320, 460).
- 7- Kenneth 1. Bontrager, text book of radiographic positioning and related anatomy, 2001, 5th ed, Mosby, America, p = 90, 100, 113).
- 8- Steven. B. Dowd – Elwin R. Nelson, practical Radiation protection and Applied Radiobiology, 2nd ed, 1999, United States of America.
- 9- Glenda J. Bryan, Diagnostic Radiography, 1974, 2nd .ed, Churchill Living stone, New York , USA p = 301.
- 10- Margaret Mary Hunkel, Radiography essentials, 2002, 1st ed, Wob Saunders company, London, UK, p = 215 – 303.
- 11- Muir's textbook of pathology thirteenth edition. Roderick NM Masc Sween and Keith Whaley.
- 12- Anatomy of upper limb. <http://www.Szoted.U.Szeged.hu/radiology/Anatomy>. Accessed on 14.5.2009
- 13- Education and training: Irish medical Council Publication. [Http://www. Medical Council.ie/eandlt.htm](http://www.MedicalCouncil.ie/eandlt.htm). Accessed on 14.5.2009



Fig Fracture of the mid-shaft of clavicle



Fig. segmental humeral fracture treated with a intramedullary nail

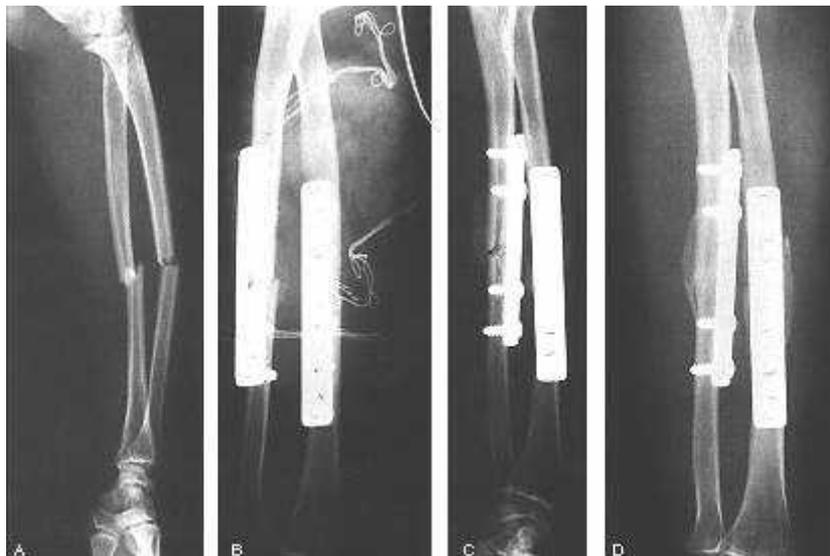


Fig. fractured radius and ulna treated with plating of both bones

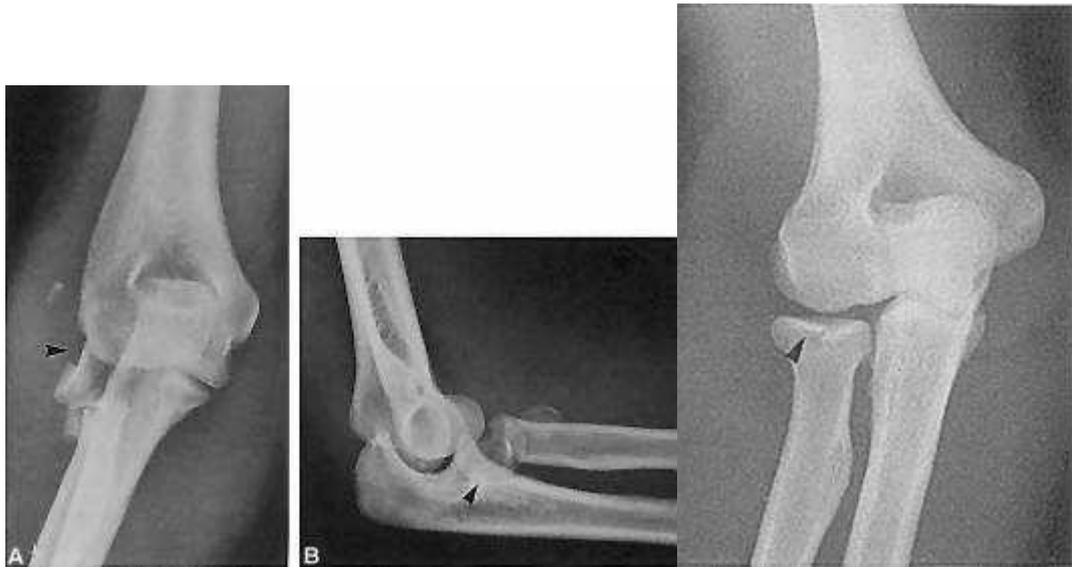


Fig. Masons grade B and C radial head fractures





Fig. Galeazzi Fracture Dislocation of the Forearm





Fig. Colle's Fracture



Fig. Smith's Fracture



Fig. supracondylar fracture of the humerus in an adult

