RESULTS

ASSESMENT OF THE RESULTS OF SURGERY

Duration of the Follow Up:

The duration of follow up ranged from twelve to fifty six months (12-56) with an average of 27.69±15.75 months. Fig (65) Table (22).

Table (22): Duration of follow up and percentage of each.

Duration in Months	Number of patients	Percentage
50-59	4	11.4%
40-49	5	14.3%
30-39	7	20%
20-29	5	14.3%
10-19	14	40%

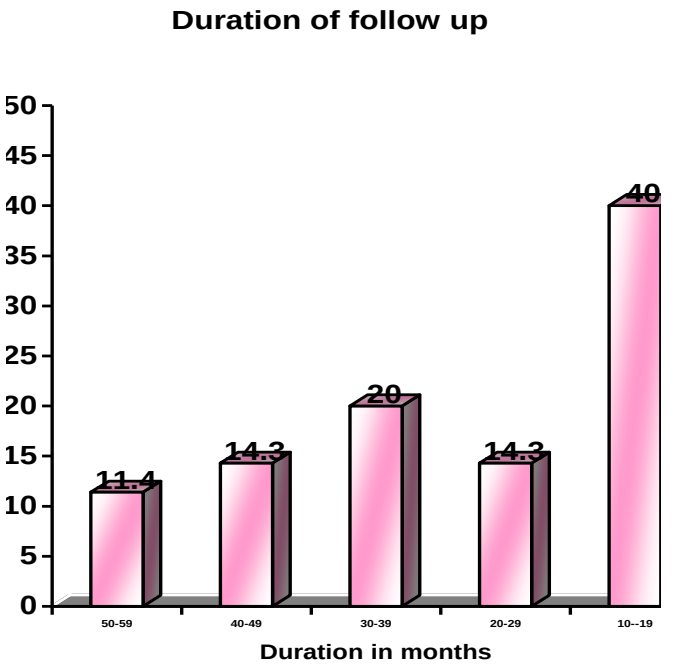


Fig (65) Duration of follow up and percentage of each.

The final results of the study:

At the end of our study it was found that 27 patients (77.1%) were graded satisfactory result, 16 of them (59.3%) was excellent, while the other 11 cases (40.7%) were good. On the hand 8 patients (22.8) had unsatisfactory results, 5 of them (62.5%) were poor while 3 only (37.5%) were fair. Fig(66) Table (23)

Table (23): Distribution of the studied patients regarding net result.

	Frequency	
	No.	**%**
Satisfactory	**27**	**77.1**
Excellent	16	45.7
Good	11	31.4
Unsatisfactory	**8**	**22.9**
Fair	3	8.6
Poor	5	14.3
Total	**35**	**100.0**

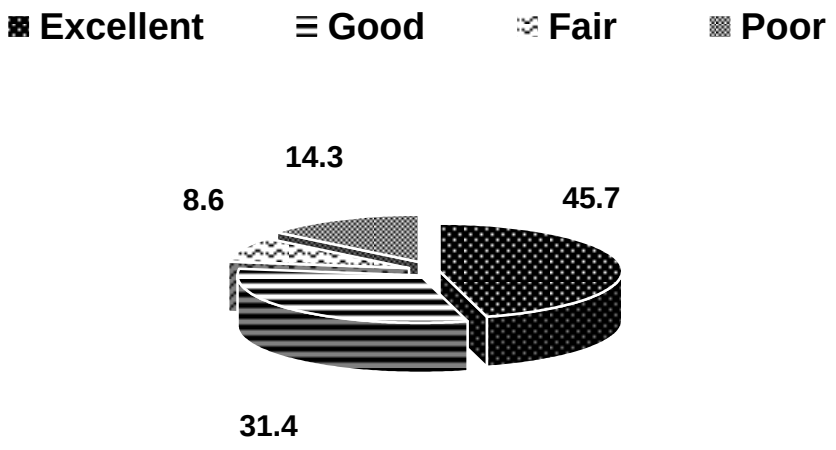


Fig (66): Distribution of the studied patients regarding net result.

Analysis of Postoperative Recurrence of the instability:

Eight patients (22.7%) out of 35 patients had recurrence of instability symptoms.

One patient (12.5%) sustained recurrence after a forceful fall on outstretched hand and needed hospitalization for reduction, he never had a dislocation or subluxation later on but on clinical examination he had a positive apprehension test.

The other seven patients (87.5%) had the recurrence without forceful event and during usual daily or overhead activities; of them only two patients (25%) had complete dislocation and needed hospitalization for reduction while five patients (62.5%) had only subluxation that reduces spontaneously and were never to the hospital for reduction.

Two (25%) out of the 8 recurrent cases were manual workers and sustained the recurrence after joining their jobs while the other six (75%) patients were involved in sport activity and sustained recurrence during a game .

All the cases of recurrence occurred in the group of patients who were involved regularly in sports or heavy duty jobs.

Relation between net results and demographic data:

In satisfactory patients the mean age was 25.59±5.02 while in the unsatisfactory patients the mean age was 23.0±2.78, there was a significant decrease in age in unsatisfactory patients than that of satisfactory patients (p=0.03). Fig (67)Table (24).

Sex distribution in both satisfactory and unsatisfactory patients was matched, i.e. there was no significant difference between the satisfactory and unsatisfactory patients regarding sex (p=0.42). Fig (67) (Table24).

Table (24): Relation between end results and both age and sex.

	Satisfactory "n=27"		**Unsatisfactory "n=8"**
Age			
Range	19-36		20-26
Mean	25.59		23.0
S.D.	5.02		2.78
t		1.98	
p		0.03*	
Sex			
Male	25 (92.6%)		8 (100.0)
Female	2 (7.4%)		0 (0.0)
X^2		0.63	
p		0.42	

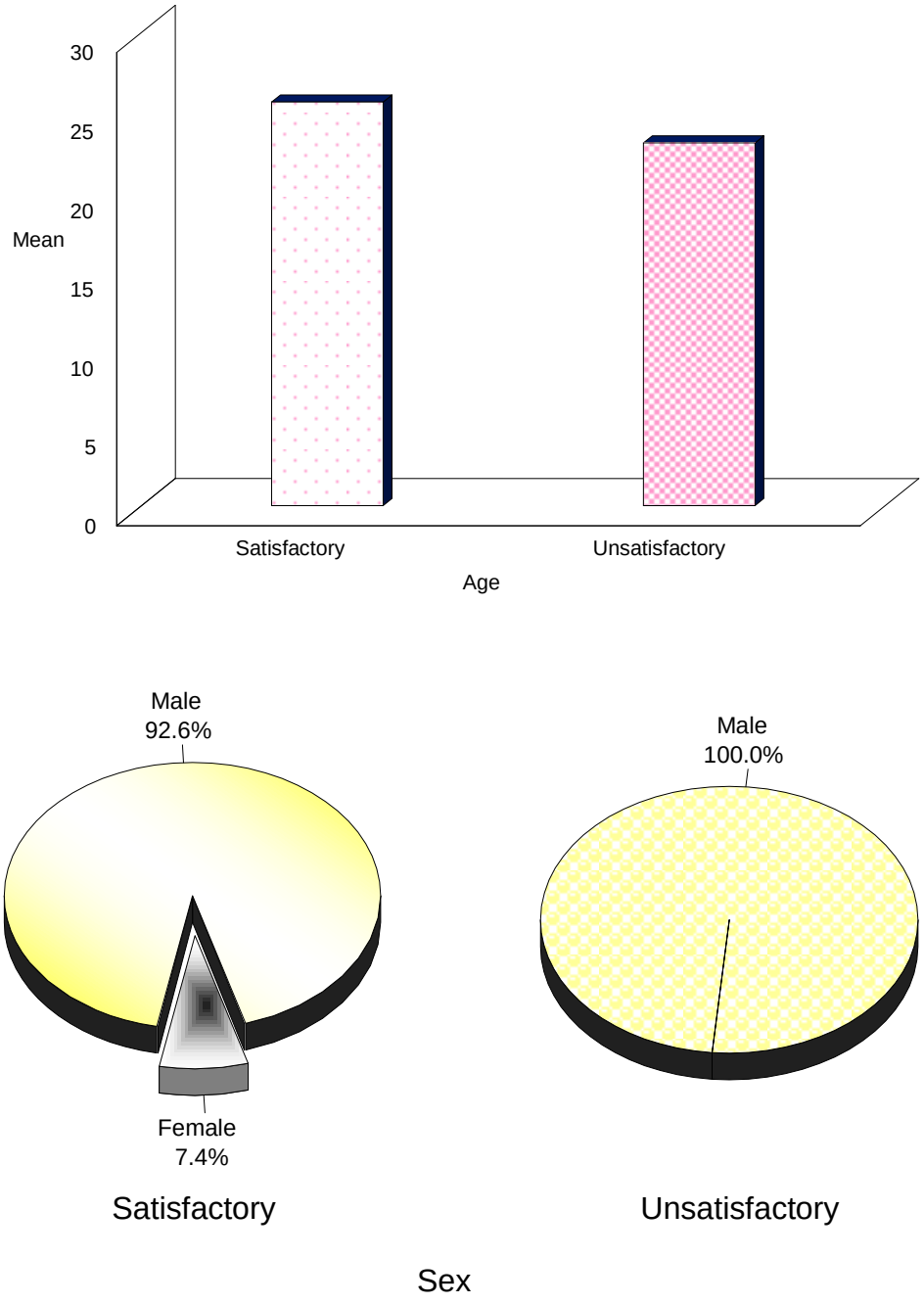


Fig (67) Relation between end results and both age and sex.

Relation between net result and number of dislocation and side affected:

The mean number of dislocation in the patients with satisfactory results was 6.93±4.97, while in the patients with unsatisfactory results was 12.5±6.35, there was a significant increase in the number of dislocation in patients with unsatisfactory results than the other patients with satisfactory result (p = 0.023) Fig (68) Table (25).

There was no significant relation between the side affected and the net results, the satisfactory and unsatisfactory patients matched regarding side affected. Fig (68)(Table 25).

Table (25): Relation between net results and number of dislocation and side affected.

	Satisfactory "n=27"	**Unsatisfactory "n=8"**
No. of dislocation		
Range	3-25	5-23
Mean	6.93	12.5
S.D.	4.97	6.35
t	2.06	
p	0.023	
Side		
Right	18 (66.7%)	6 (75.0%)
Left	9 (33.3%)	2 (25.0%)
$\mathbf{X^2}$	0.206	
p	0.62	

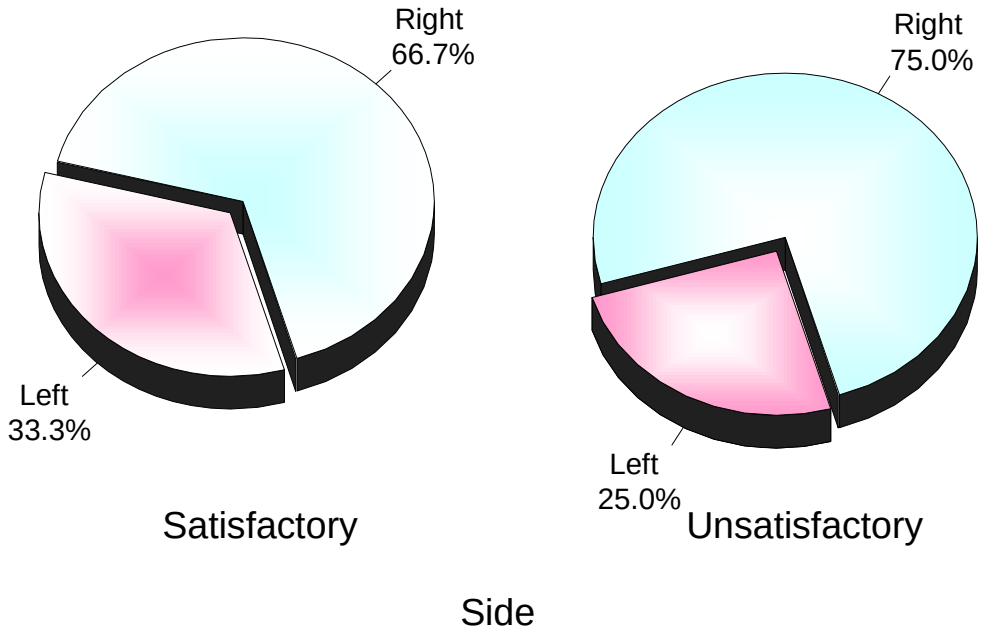


Figure (68): Relation between net results and number of dislocation and side affected.

Relation between the net results and grade of translation (in the anterior drawer test):

There was a highly significant relation between the grade of translation and the net results, all the unsatisfactory patients (100%) has a grade 3 of translation, while only 1 case (3.7%) of satisfactory patients has grade 3 (p = 0.0001). Fig (69)(Table 26)

Table (26): Relation between net results and Grade of Translation

	Satisfactory "n=27"	**Unsatisfactory "n=8"**
Grade of translation		
Grade 1	6 (22.2%)	0 (0.0)
Grade 2	20 (74.1%)	0 (0.0)
Grade 3	1 (3.7%)	8 (100.0)
t	29.1	
p	0.0001*	

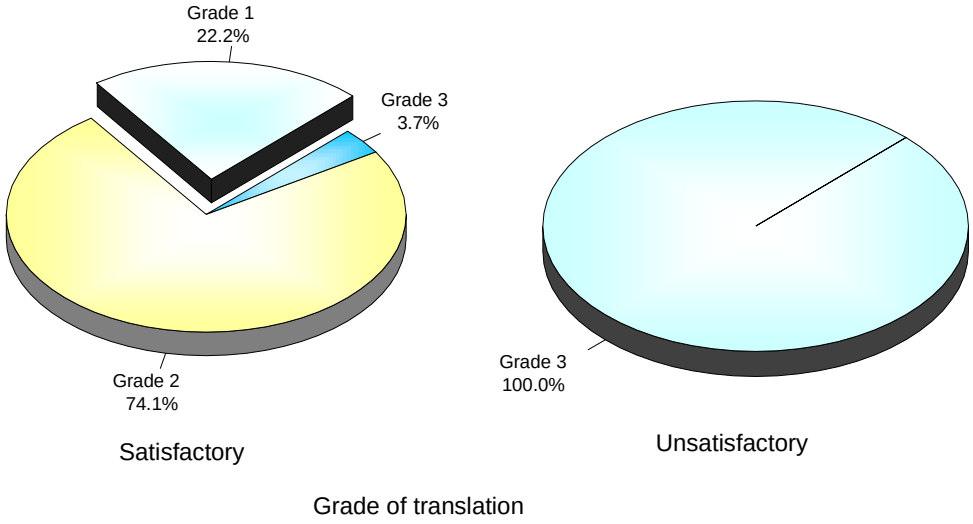


Fig (69): Relation between net results and Grade of Translation

Sports:

Out of the 12 patients who were involved in sport activities, only two patients were able to resume their normal sporting activities, four patients were back to sports but not as before while six patients were never able to resume sporting activities of those are the six patients who sustained recurrence of the instability postoperatively. From statistical analysis of the final results it was noticed that all the cases of recurrence occurred in the group of patients who were involved regularly in sports or heavy duty jobs and this was statistically significant p=0.03. (Table27)

Table (27): Relation between involvement in sports or heavy duty jobs preoperatively and the net result**.**

	Involvement in Sports and heavy duty jobs		**Not involvement in sports or heavy duty jobs**	
	No.	**%**	**No.**	**%**
Excellent	7	36.8	9	56.3
Good	4	21.1	7	43.7
Fair	3	15.8	0	0.0
Poor	5	26.3	0	0.0
	19		16	
X^2	8.88			
p	0.03*			

*** Significant difference at $p \leq 0.05$**

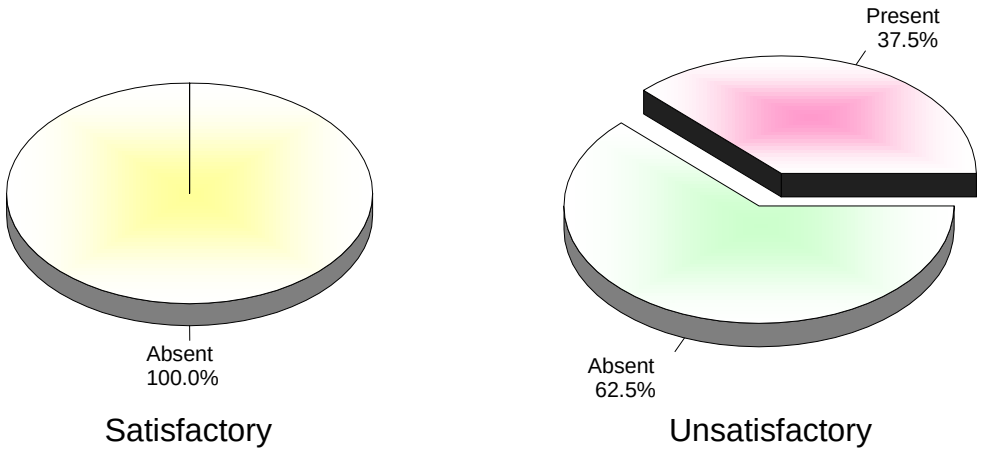
Muscle Power:

Relation between the net results and affection of muscle power:

In the studied group of patients it was found that there were 3 cases suffering from muscle weakness, all these cases had an unsatisfactory results, while satisfactory group had no evidence of preoperative muscle weakness (p = 0.0002). Fig (70) Table 28)

Table(28): Relation between net results and Affection of the muscle power.

Affection of the muscle power	Satisfactory "n=27"	Unsatisfactory "n=8"
Present	0 (0.0%)	3 (37.5%)
Absent	27 (100.0)	5 (62.5%)
t	11.07	
p	0.0002*	



Fig(70): Relation between net results and Affection of the muscle power.

Postoperative Range of Motion:

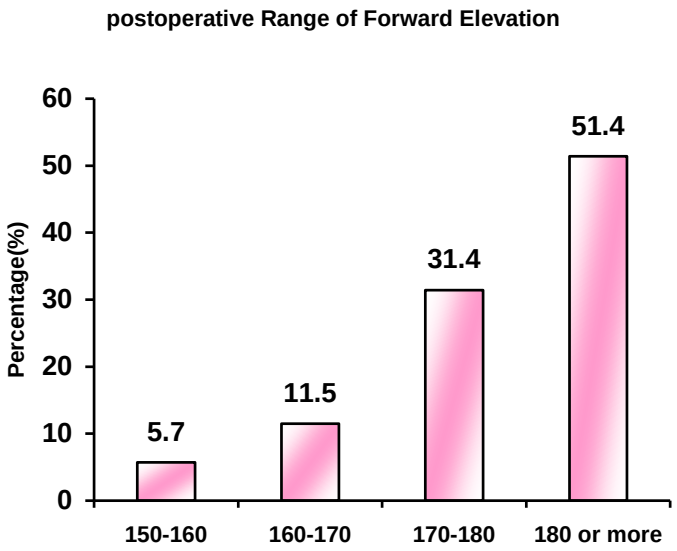
The range of motion was reassessed postoperatively regarding forward elevation, external and internal rotation (with the shoulder in 90º of abduction) every two weeks after removal of the initial arm sling then assessed and recorded at the final follow up visit.

Forward Elevation:

The range of forward elevation at the final assessment varied from 150 degrees to more than 180 degrees with a mean of 177.71±6.46 degrees. Fig (71)(Table 29)

Table (29): Postoperative ranges of forward elevation and percentage of each group.

Range of Forward Elevation	No of Patients	Percentage
150°-160°	2	5.7%
160°-170°	4	11.5%
170°-180°	11	31.4%
≥180°	18	51.4%



Fig(71): Postoperative ranges of forward elevation and percentage of each group.

External rotation:

The external rotation range of motion at the final assessment ranged from 60° up to 90° with a mean of 83.71±8.43°.(Table 30)

Table (30): Postoperative ranges of external rotation and percentage of each group.

Range of External Rotation	No of Patients	Percentage
60°-70°	1	2.9%
70°-80°	5	14.3%
80°-90°	9	25.7%
90°or more	20	57.1%

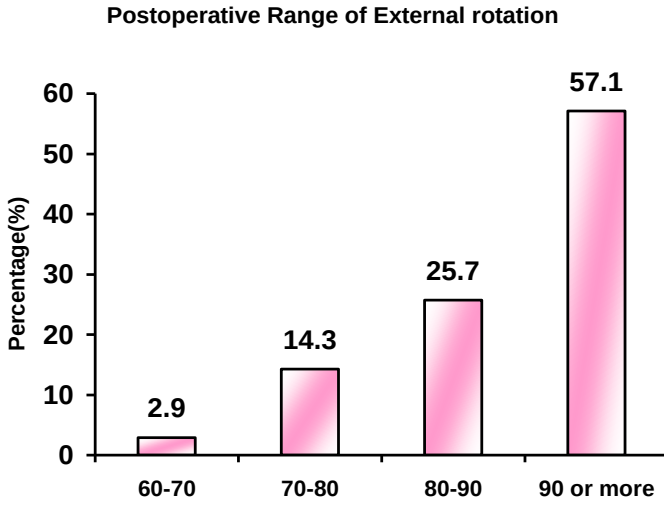


Fig (72): Postoperative ranges of external rotation and percentage of each group.

Internal rotation:

The internal rotation range of motion at the final assessment ranged from 70° up to 90° with a mean of 87.43 ±5.05°.(Table 31)

Table (31): Postoperative ranges of internal rotation and their percentage.

Range of Internal Rotation	No of Patients	Percentage
70°-80°	1	2.9%
80°-90°	7	20%
90° or more	27	77.1%

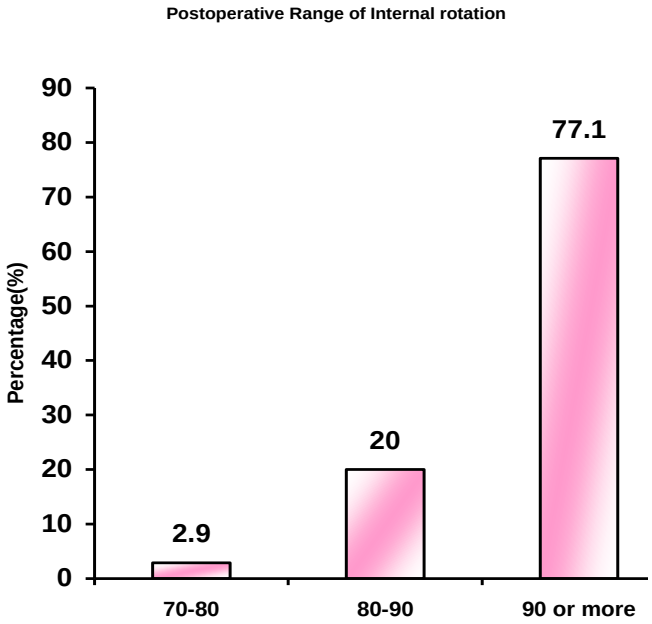


Table (73): Postoperative ranges of internal rotation and their percentage.

Statistical analysis of the previous data showed that there was a significant improvement in the ranges of shoulder forward elevation, external rotation and internal rotation postoperatively as compared to the preoperative values. (p=0.002, 0.00013 and 0.0012 respectively). (Table32)

Table (32): Comparison between pre and post operative range of motion**.**

	Pre-operative	**Post-operative**	**p-value**
F-elevation			
Range	150-180	150-180	0.002*
Mean	172.00	177.71	
S.D.	9.64	6.46	
E-rotation			
Range	50-90	60-90	0.00013*
Mean	66.57	83.71	
S.D.	11.36	8.43	
Int-rotation			
Range	50-90	70-90	0.0012*
Mean	80.29	87.43	
S.D.	10.43	5.05	

*** Significant difference at $p \leq 0.05$**

Relation between the net results and pre-operative range of motion and function score. (Table 33)

a. Range of forward elevation:

Range of forward elevation in satisfactory results was 174.07±8.44 while it decrease by significant value in unsatisfactory results to 165.0±10.69 (p=0.023).

b. Range of external rotation:

Range of external rotation in satisfactory results was 68.89±11.5 while in unsatisfactory results group was 58.75±6.41, these difference was statistically significant (p = 0.031).

c. Range of internal rotation:

Range of internal rotation in patients with satisfactory results was higher than in unsatisfactory result by a significant difference, it was 84.74±10.07; 75.35±7.22 respectively (p = 0.021).

d. Score of pre-operative function:

The mean of pre-operative function score was 32.78±7.25 in patients with satisfactory results, while in unsatisfactory patients it was 25.62±7.76, this difference was statistically significant (p 0.021). Fig (74) Table (33)

Table (33): Relation between net result and preoperative range of forward elevation, range of external rotation and range of internal rotation and preoperative function score

	Satisfactory "n=27"	**Unsatisfactory "n=8"**
Forward elevation		
Range	150-180	150-180
Mean	174.07	165
S.D.	8.44	10.69
t	2.09	
p	0.023*	
External rotation		
Range	50-90	50-70
Mean	68.89	58.75
S.D.	11.55	6.41
t	1.98	
p	0.031*	
Internal rotation		
Range	50-90	70-90
Mean	84.74	75.35
S.D.	10.07	7.22
t	2.09	
p	0.021	
Score of pre op. function.		
Range		
Mean	20-40	20-35
S.D.	32.78	25.625
	7.25	7.76
t	1.98	
p	0.021*	

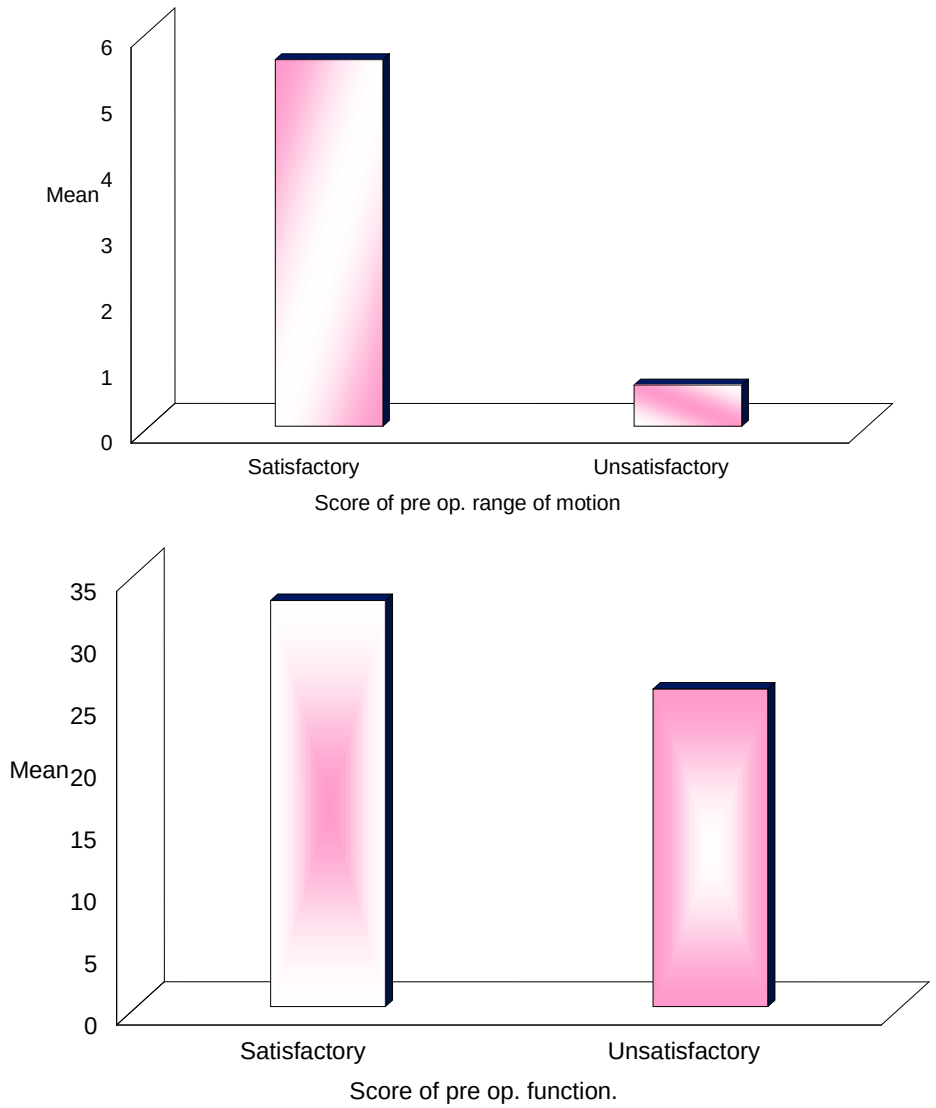


Figure (74): Relation between net result and score of pre operative range of motion and function.

Postoperative scoring of the patients

The modified Rowe scale (O,Neil 1999) was used for assessment of the results of this study. (Table-34)

Table (34): The Modefied Rowe Scoring System for Shoulder Instability

Pain:(10 points)	
• None	10
• Moderate	5
• Severe	0
Stability:(30 points)	
• Negative Apprehension, Anterior Drawer tests and no Subluxation.	30
• Negative Apprehension, Anterior Drawer tests but with sense of discomfort with the arm in the abducted externally rotated position.	15
• Positive Apprehension and / or Anterior Drawer tests or sense of Subluxation.	0
Motion:(10 points)	
• Full range of motion.	10
• As much as 25% loss in any plane of movement.	5
• More than 25% loss in any plane of movement.	0
Function:(50 points)	
• No limitation in sports or work; patient is able to throw baseball and football and can swim.	50
• No limitation in work but not the same in sports.	40
• No limitation in work but not able to resume sports.	35
• Moderate limitation in work and no sports.	20
• Marked limitation in work and sports.	0

Maximum score 100 points

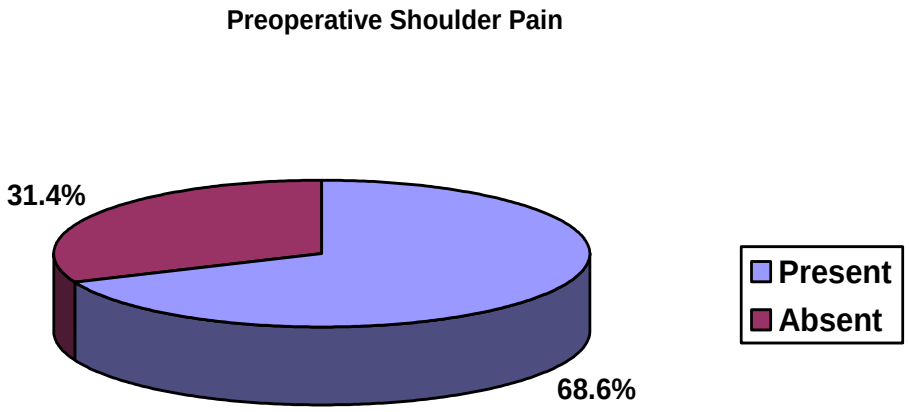
Excellent = 90-100 points **Good = 70-89 points**

Fair = 40-69 points **Poor = 39 points or less**

1. Shoulder Pain:

Pre operative Pain

Twenty four patients complained of moderate anterior shoulder pain (68.6%) and were given 5 points each, while eleven (31.4%) patients didn't complain of shoulder pain in between the attacks of dislocation and were given 10 points each while no patients complained of severe shoulder pain. The mean points for preoperative pain were 6.57±2.36 points out of 10



Fig(75): Incidence of presence of preoperative shoulder pain Post operative pain

Eight patients (22.9%) had moderate residual anterior shoulder pain post operatively and were given 5 points each while 27(77.1%) patients had no postoperative pain and were given 10 points each while no patients complained of severe shoulder pain. The mean points for postoperative pain were 8.86 ±2.13 points out of 10. There was a statistically significant improvement in the shoulder pain postoperatively, p = 0.002. Fig (76)

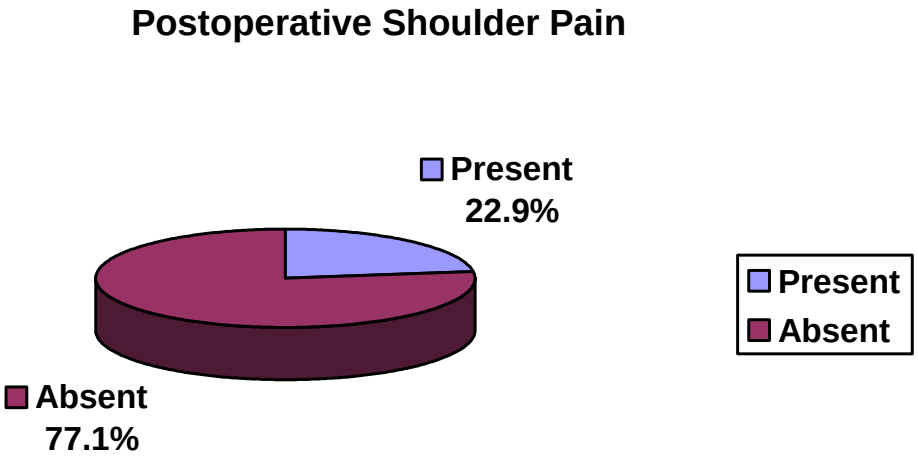


Fig (76): Incidence of presence of post operative shoulder pain

2. Stability:

Pre operative stability

All patients had positive apprehension and anterior drawer tests preoperatively and were given 0 points out of 10.

Postoperative stability

Eight patients (22.9%) had recurrent subluxation or dislocation post operatively with positive anterior drawer and/ or apprehension tests and they were given 0 points out of 30. Three patients(8.6%) had negative apprehension and anterior drawer tests but with pain on abduction and/ or external rotation and were given 15 points each while 24 patients(68.5%) had negative apprehension and no sense of subluxation and were given 30 points each. The mean points for postoperative stability were 21.86 ±12.78 out of 30 points. There was a statistically significant improvement in the shoulder stability postoperatively, p = 0.00001. Fig (77)

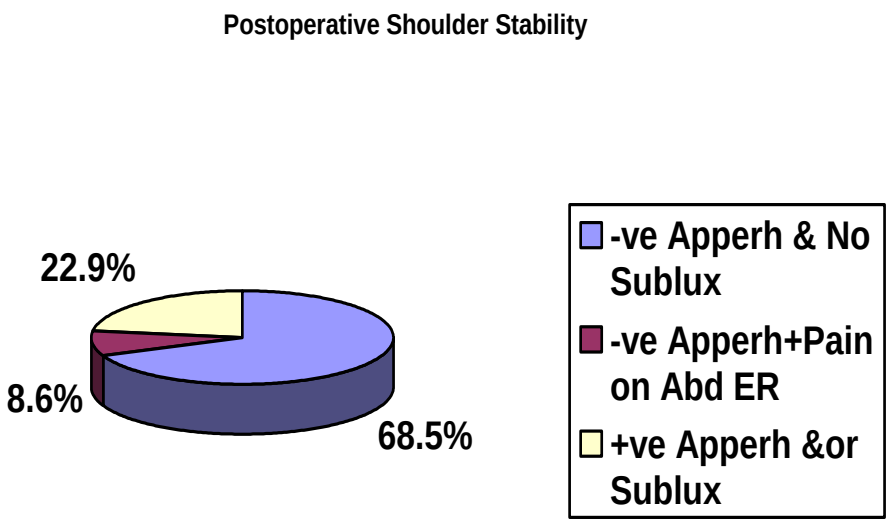


Fig (77): distribution of postoperative shoulder stability

3. Range of Shoulder Motion:

Preoperative ROM

Seven patients (20%) had full ROM and were given 10 points each, Seventeen patients (48.6%) had less than 25% loss of ROM and were given 5 points each while eleven patients (31.4%) had more than 25% loss of ROM and were given 0 points each . The mean points for preoperative ROM were 4.43 ± 3.59 out of 10 points Fig (78).

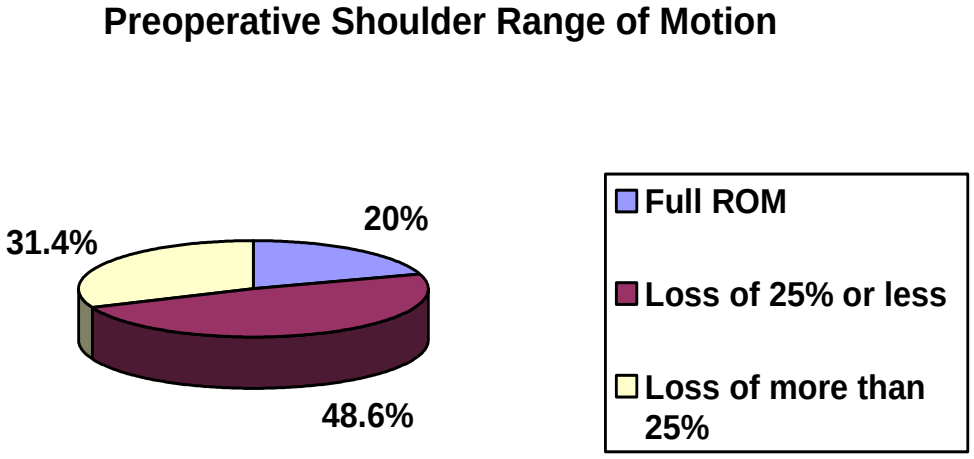


Fig (78): distribution of preoperative range of shoulder motion

Postoperative ROM

Twenty one patients (60%) had full ROM and were given 10 points each, while fourteen patients (40%) had less than 25% loss of ROM and were given 5 points each and no patients had more than 25% loss of ROM. The mean points for postoperative ROM were 8.00 ±2.49 out of 10 points. There was a statistically significant improvement in the shoulder ROM postoperatively, p = 0.00032. Fig(79)

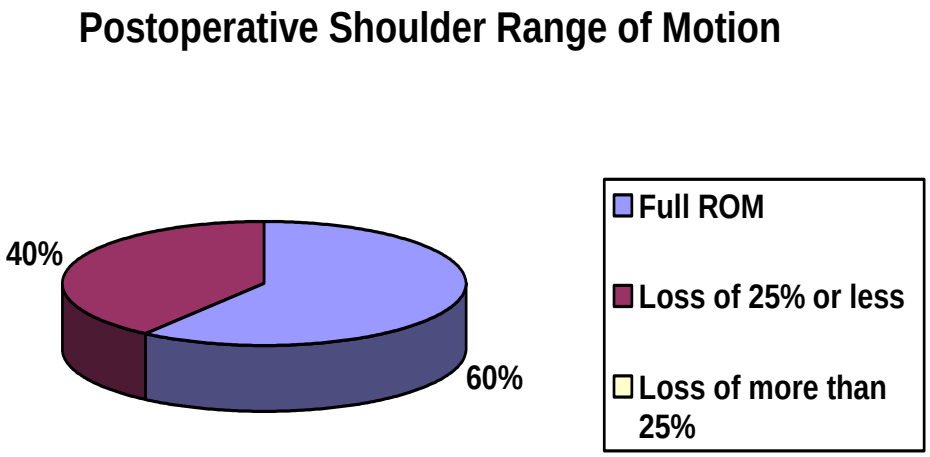


Fig (79): distribution of postoperative range of shoulder motion

4. Shoulder Function:

Preoperative function

Six patients (17.1%) had no limitation at work and could practice some sports but not the same as previously, each was given 40 points. Eighteen patients (51.4%) had no limitation at work but could not practice sports with 35 points given each. Eleven patients (31.5%) had moderate limitation at work and could not practice sports, each was given 20 points. The mean points for preoperative function were 31.14 ± 7.87 out of 50 points. Fig (80)

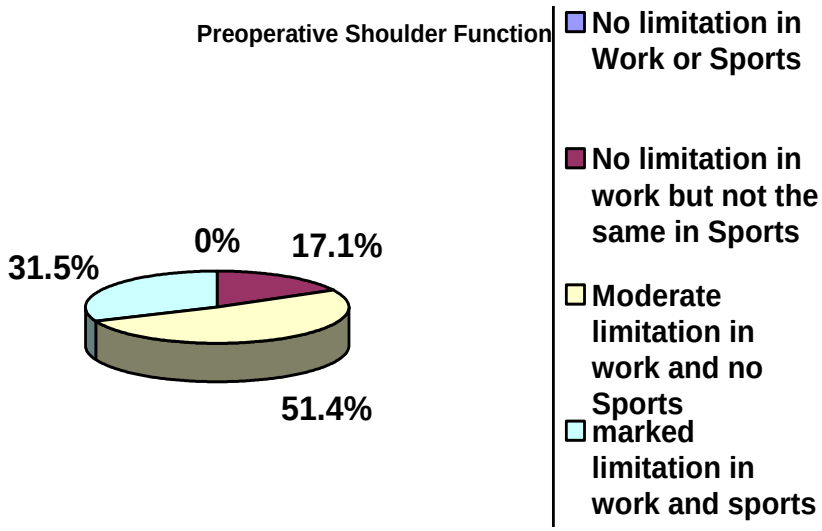


Fig (80): distribution of preoperative shoulder function

Postoperative function

Eight patients (22.9%) had no limitation at work and were able to practice sports with no limitation, each was given 50 points. Sixteen patients (45.8%) had no limitation at work and could practice some sports but not the same as previously, each was given 40 points. Six patients (17.1%) had no limitation at work but could not practice sports, with 35 points given each. Five patients (14.2%) had moderate limitation at work and could not practice sports, each was given 20 points. The mean points for preoperative function were 38.57 ± 9.20 out of 50 points. There was a statistically significant improvement in the shoulder function postoperatively, p = 0.004. Fig (81)

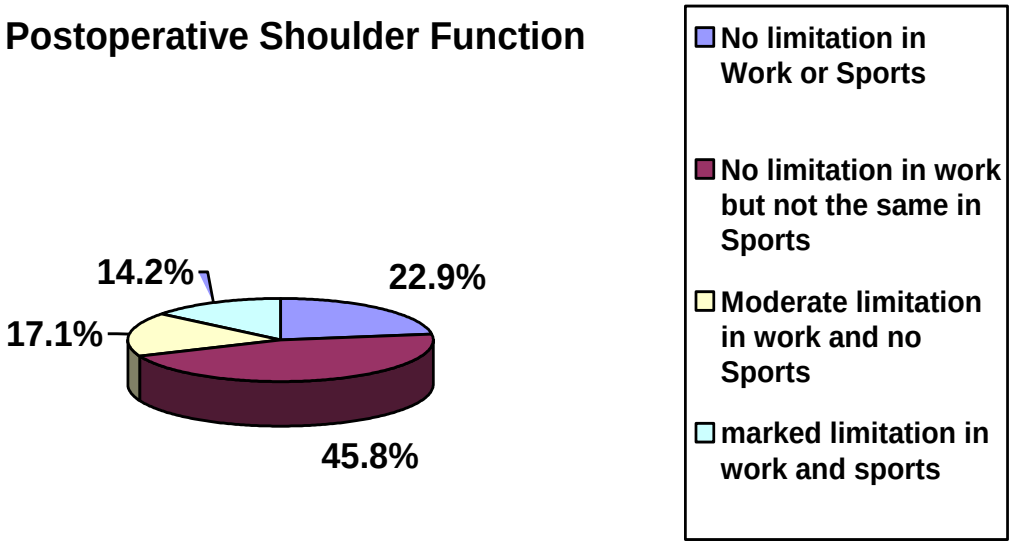


Fig (81): distribution of postoperative shoulder function

The average score

The mean of preoperative total score was 41.86 ± 10.09 points, while the average of post operative total score was 77.57 ± 24.08 points out of 100.

Preoperatively, 25 (71.4%) patient were fair, while 10 (28.6%) patients were poor.

Postoperatively, 16 (45.7%) patients were excellent, 11 (31.4%) patients were good, 3 (8.6%) patients were fair while 5 (14.3%) were poor. There was a statistically significant improvement in the average score postoperatively, p = 0.00005. (Table-35)

Table (35): Comparison between pre and post operative patient scoring.

	Pre-operative	Post-operative	p-value
Pain			
Range	5-10	5-10	
Mean	6.57	8.86	0.002*
S.D.	2.36	2.13	
Stability			
Range	0-0	0-30	0.00001*
Mean	0.00	21.86	
S.D.	0.00	12.78	
ROM			
Range	0-10	5-10	0.00032*
Mean	4.43	8.00	
S.D.	3.59	2.49	
Function			
Range	20-40	20-50	
Mean	31.14	38.57	0.004*
S.D.	7.87	9.20	
Total			
Range	5-60	30-100	
Mean	41.00	77.57	0.00005*
S.D.	11.43	24.08	

* Significant difference at $p \leq 0.05$

Time of return to normal activities:

Time of return to normal activity ranged from 10 to 16 weeks with a mean of 11.68 ± 1.76, 8 patients (22.9%) were back to normal activities by the 10th week, 15 patients (42.9 %) by the 11th week, 5 patients (14.3%) by the 12th week, 2 patients (5.7%) by the 13th week, 2 patients (5.7%) by the 14th week, 1 patient (2.8%) by the 15th week and 2 patients (5.7%) by the 16th week. (Fig-82)

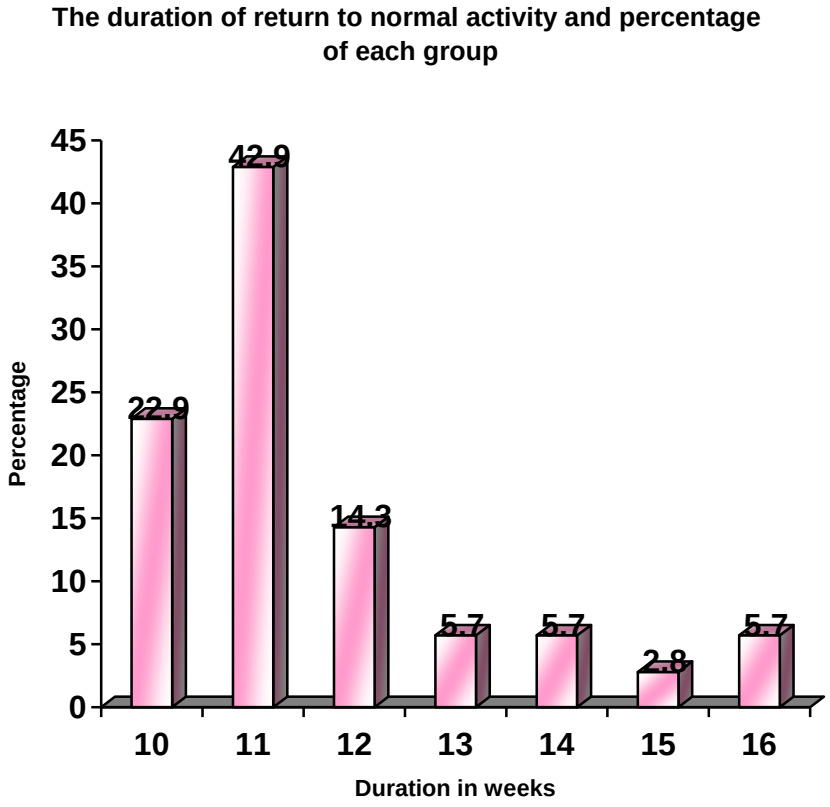


Fig (82): The duration of return to normal activity

Complications:

Recurrence of instability:

Eight patients (22.7%) out of 35 patients had recurrence of instability symptoms.

Keloid formation:

Only one patient had a keloid formation at the surgical wound site.

Residual Shoulder pain:

Eight patients (22.9%) had moderate residual anterior shoulder pain post operatively of those 7 patients had recurrence of dislocation while the last patient had a painful keloid at the site of the operative scar.

Fragmentation of the coracoid process:

The osteotomized coracoid was fragmented during screw application in one patient (2.9%) and was fixed back in position with non absorbable suture. This patient had recurrence of the dislocation later on and the MRI done later showed absence of tendinous attachments to the coracoid process.