RESULTS

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ARTHROSCOPIC FINDING :

1 . Joint cavity :

At arthroscopy, only one case [3.3 %] was diagnosed with loose.body in the joint cavity. It was oval in shape and 1/2 x 1 cm in size, not diagnosed by X-ray due to its radiolucency . By arthroscopic examination, this loose body was separated from the posterior part of the humeral head and indicated by a small notch space. Synovial reaction was recorded in 3 shoulders [10 %]. Focused examination of that synovial reaction assured that it was not of rheumatoid origin, pigmented villonodular synovitis, gouty arthritis, nor even crystal synovitis but the picture was of typical traumatic synovitis in origin[located in the anterior and superior part, reddish brown in color, and shows vascular villi]. This is might be due to repeated trauma due to recurrent dislocation. No case with biceps tendon affection was chosen where it was always healthy and intact.

2 . Humeral head :

The humeral heads were intact of no cartilage cracks, fissure, change in color, ulceration, pannus formation, nor osteophytes, and well contoured except one case, where the loose body was separated from a marginal posterior part of the humeral head. There was no case with synovial reflection over the humeral head. As regard to Hill-Sach's lesion, which is a compression fracture of the posterior humeral head[and either superior or inferior, proximal or distal] following anterior dislocation with different size, depth, and shape [linear, oval, or rounded], it was

present in great variety in 24 shoulders [80 %]. This lesion must be differentiated from the normal posterior bare spot on the back of the humeral head near the synovial reflection.

3 . Glenoid :

The glenoid surface also was intact with no fissures, change in color, ulceration, pannus formation, nor osteophytes in twenty five shoulders [83.3 %] , while the glenoid margins were found eroded at the site of labral separation in three cases [10 %], and a small cartilaginous nodules at the same site were recorded in two shoulders [6.7 %].

4 . Labrum :

Labral tears were varied greatly in both site and shape. According to Bankart's classification, type 1 where the labrum and ligaments were together and in juxtaposition to the glenoid [but with thinned labrum] in two shoulders [6.7 %] , type 2 where the labrum and ligaments were together, but separated from the bony glenoid in six shoulders [20 %] , type 3 where the labrum and ligaments were not together; labrum in juxtaposition, but the ligaments were separated in nine cases [30 %] , type 4 where the labrum and ligaments not together; labrum was separated from the glenoid, but the ligaments were intact and in juxtaposition in five shoulders [16.7 %] , type 5 the labrum and ligaments not together; labrum torn and separated, plus ligaments were torn and separated in six shoulders [20 %] , type 6 both labrum and ligaments were absent in 2 cases [6.7 %].

	Joint Cavity		Labrum	Humeral Head	Glenoid Surface			Anterior Capsule			
Cases	Loose Body 3.3 %	Synovial Reaction 10 %	Condition of the labrum	Hill-Sach Lesion 80 %	Glenoig Surface Intact 83.3 %	Eroded Margin 10 %	Cartilage Nodule 6.7 %	Humeral Detach-ment 6.7 %	Ligament Separation 66.7%	Intact Capsule 6.7 %	Torn Ant. Wall 20 %
1	+	-	separated	+	-	-	+	-	+	-	-
2	-	+	thinned	-	+	-	-	-	-	+	-
3	-	+	absent	-	+	-	-	-	-	-	+
4	-	+	separated	-	+	-	-	-	+	-	-
5	-	-	torn	+	+	-	-	-	-	-	+
6	-	-	separated	+	-	+	-	-	+	-	-
7	-	-	torn	+	+	-	-	+	-	-	-
8	-	-	intact	+	+	-	-	-	-	-	-
9	-	-	torn	+	+	-	-	-	+	-	-
10	-	-	separated	+	-	-	+	-	+	-	+
11	-	-	intact	+	-	+	-	-	+	-	-
12	-	-	separated	+	+	-	-	-	+	-	-
13	-	-	torn	+	+	-	-	-	+	-	-
14	-	-	intact	+	+	-	-	-	+	-	-
15	-	-	separated	+	+	-	-	-	+	-	-
16	-	-	intact	+	+	-	-	-	+	-	-
17	-	-	separated	+	+	-	-	-	+	-	-
18	-	-	torn	+	+	-	-	-	+	-	-
19	-	-	intact	+	+	-	-	-	-	-	+
20	-	-	torn	+	+	-	-	-	+	-	-
21	-	-	separated	+	+	-	-	+	-	-	-
22	-	-	absent	+	-	+	-	-	+	-	-
23	-	-	thinned	+	+	-	-	-	-	-	+
24	-	-	intact	+	+	-	-	-	-	+	-
25	-	-	separated	+	+	-	-	-	+	-	-
26	-	-	separated	+	+	-	-	-	+	-	-
27	-	-	intact	+	+	-	-	-	+	-	-
28	-	-	intact	-	+	-	-	-	+	-	-
29	-	-	separated	-	+	-	-	-	+	-	-
30	-	-	intact	-	+	-	-	-	+	-	-

ARTHROSCOPIC FINDINGS

5 . Anterior wall [capsule] :

The glenohumeral ligaments were detached from either the glenoid, humerus, both, or within the substance of the ligament. There were two shoulders [6.7 %] with intact ligaments as in Bankart type 1, twenty shoulders [66.7 %] with separation of the glenoid as in Bankart type 2, 3, and 4 (nine of them [30 %] had also humeral separation), six shoulders [20 %] with torn ligaments as in Bankart type 5, and two shoulders [6.7 %] with only humeral detachment. Consequently, the large pouch where the head of the humerus escapes during dislocation was found in Bankart type 2, 3, 4, and 5 , where the glenohumeral ligament was separated from the glenoid margin and this was present in twenty six shoulders [86.7 %].

CLINICAL RATING :

Clinical rating, used to assess this new technique pre- and post-operatively, mentioned by Rowe et al 1978 which described points for stability (50 units), motion (20 units), and function (30 units) [table].

1 . Stability :

a . No recurrence, subluxation, nor apprehension :

If there were no recurrence, subluxation, nor dislocation, this would be scored 50 units. This 50 units were given to the well stable shoulders with no apprehension, subluxation, nor dislocation and if one of these was present,the 50 units would be divided as follow; 30 units for the presence of apprehension only, 20 units for the presence of subluxation only , and 0 unit for recurrence . So ,

Scoring System	Excellent	Units	Good	Units	Fair	Units	Poor	Units
Stability	**No recurrence no apprehension no subluxation**	50	**No recurrence mild apprehen. no subluxation**	30	**No recurrence moderate appr. no subluxation**	20	**Recurrence marked appr.**	0
Motion	**100% ext. rot. 100% elevation 100% int. rot.**	20	**75% ext. rot. 100% elevation 100% int. rot.**	15	**50% ext. rot. 75% elevation 75% int. rot.**	10	**No ext. rot. 50% elevation 50% int. rot.**	5
Function	**No limitation on work or sport no discomfort**	30	**Mild limitation on work &sport min. discomfort**	25	**Moderate limit. on work & sport moderate pain**	10	**Marked limit. chronic pain**	0
Total		100		70		40		5

RATING SHEET FOR BANKART REPAIR

(From Rowe CR, Patel D, Southmayd WW : Method of results evaluation for Bankart repair of recurrent anterior dislocation of the shoulder. *J Bone Joint Surg* 60A, 1978).

if a patient had no recurrence but had apprehension, he should be scored from the 30 units(according to the degree of apprehension), and if subluxation was present also, scoring with the another 20 units should be made. All this were applied to the patients postoperatively only, because preoperatively all the patients had recurrent dislocation for at least three times, so they got 0 units for the whole divisions of stability because recurrence was accompanied by apprehension and subluxation. Applying this rating system to the patients, whom operated upon for arthroscopic repair, showed that ; all the patients had no recurrence, apprehension, nor subluxation except one case, so scored 48.3 units [96.7 %].

b . Apprehension :

If this was **not** present in complete elevation and external rotation excellent result would be recorded and scored 30 units. Apprehension was divided into three degrees , mild moderate, and marked. Every degree was scored from that 30 units. Preoperatively, all the patients had apprehension with different degrees while postoperatively no case had apprehension.

If apprehension was **mild** when placing the arm in elevation and external rotation, a good result would be recorded and 20 units would be scored.

If it was **moderate** during elevation and external rotation, a fair result would be recorded and 10 units would be scored.

If it was **marked** during elevation or extension, a poor result would be recorded and zero units would be scored.

c . Subluxation :

If it was absent, this would be a success and scored 20 units. Preoperatively, all the patients had anterior subluxation while postoperatively all the patients were free of subluxation.

d . Recurrent dislocation :

If it was present, this would be a failure and scored 0 units. Preoperatively, all the patients had recurrent dislocation for at least three times.

2 . Motion :

a . 100 % of normal external rotation, internal rotation, and elevation was an excellent result and scored 20 units. Preoperatively, all the patients could not reach this degree. Postoperatively, twenty patients achieved this score [66.7 %].

b . 75 % of normal external rotation, elevation, and internal rotation was a good result and scored 15 units. Preoperatively, three patients could reach this score [10 %]. Postoperatively, nine patients achieved this score [30 %].

c . 50 % of normal external rotation and 75 % elevation and internal rotation was a fair result and scored 10 units. Preoperatively, fifteen patients achieved this score [50 %]. Postoperatively, no shoulder reach this score.

d . 50 % of normal elevation and internal rotation; no external rotation was a poor result and scored 5 units. Preoperatively, twelve patients achieved this score [40 %] and postoperative one only [3.3 %].

3 . Function :

a . No limitation in work; little or no discomfort [performs all work and sports; no limitation in overhead activities; shoulder strong in lifting] was an excellent result and scored 30 units. Preoperatively, all the patients had different

degrees of limitation and discomfort. Postoperatively, twenty patients had no limitation nor discomfort [66.7 %].

b . Mild limitation and minimum discomfort [mild limitation in work and sports; shoulder strong] was a good result and scored 25 units. Preoperatively, no patient had that good result. Postoperatively, nine patients achieved this score [30 %].

c . Moderate limitation and discomfort [moderate limitation doing overhead work and heavy lifting, unable to throw, severe hard in tennis, or swimming; moderate disabling pain] was a fair result and scored 10 units. Preoperatively, twenty one patients had moderate limitation of function [70 %]. Postoperatively, one shoulder achieved this score [3.3 %].

d . Marked limitation and pain [marked limitation ,unable to perform overhead work and lifting; cannot throw, play tennis, or swimming; chronic discomfort] was a poor result and scored 0 unit. Preoperatively, nine patients achieved this score [30 %]. Postopratively, no shoulder had marked limitation.

PREOPERATIVE RESULTS

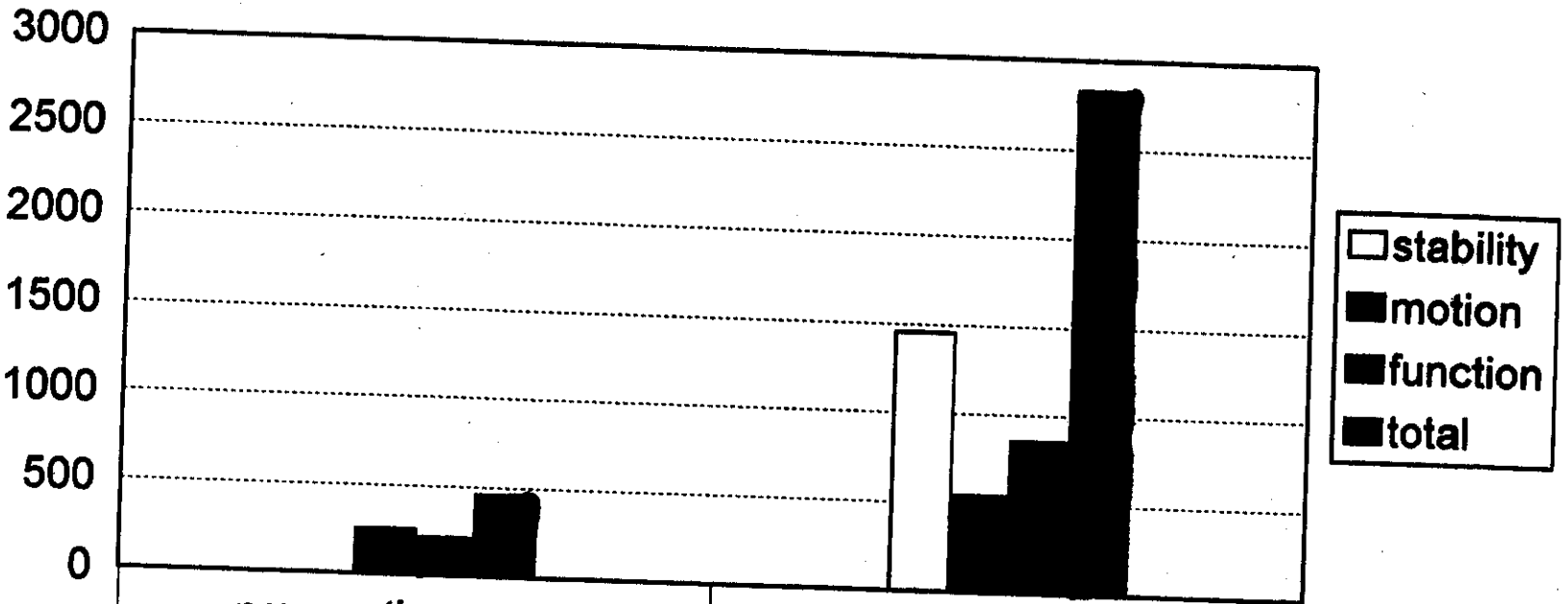
STABILITY			MOTION			FUNCTION			RESULTS
SCORE	CASES	TOTAL SCORE	SCORE	CASES	TOTAL SCORE	SCORE	CASES	TOTAL SCORE	TOTAL SCORE
50 units excellent	0	0	20 units excellent	0	0	30 units excellent	0	0	0
30 units good	0	0	15 units good	3	45	25 units good	0	0	45
20 units fair	0	0	10 units fair	15	150	10 units fair	21	210	360
0 unit poor	30	0	0 unit poor	12	60	0 unit poor	9	0	60
1500	30	0	600	30	255	30	30	210	456 x 100 / 3000 = 15.5%

POSTOPERATIVE RESULTS

STABILITY			MOTION			FUNCTION			S
SCORE	CASES	TOTAL SCORE	SCORE	CASES	TOTAL SCORE	SCORE	CASES	TOTAL SCORE	TOTAL SCORE
50 units excellent	29	1450	20 units excellent	20	400	30 units excellent	20	600	2450
30 units good	0	0	15 units good	9	135	25 units good	9	225	360
20 units fair	0	0	10 units fair	0	0	10 units fair	1	10	10
0 unit poor	1	0	0 unit poor	1	5	0 unit poor	0	0	5
1500	30	1450	600	30	540	30	30	853	2825/30 x100= 94.2 %

COMPARISON BETWEEN POST- AND PRE- OPERATIVE RESULTS

Comparison between pre- and post-operative results



	preoprative results	postoperative results
stability	0	1450
motion	255	540
function	210	853
total	456	2825

Cases	STABILITY				MOTION				FUNCTION				-lts
	Exce. 50 units	Good 30	Fair 20	Poor 0	Exce. 20	Good 15	Fair 10	Poor 5	Exce. 30	Good 25	Fair 10	Poor 0	
1	0	0	0	0	0	15	-	-	0	0	10	-	25
2	0	0	0	0	0	15	-	-	0	0	10	-	25
3	0	0	0	0	0	15	-	-	0	0	10	-	25
4	0	0	0	0	0	0	10	-	0	0	10	-	20
5	0	0	0	0	0	0	10	-	0	0	10	-	20
6	0	0	0	0	0	0	10	-	0	0	10	-	20
7	0	0	0	0	0	0	10	-	0	0	10	-	20
8	0	0	0	0	0	0	10	-	0	0	10	-	20
9	0	0	0	0	0	0	10	-	0	0	10	-	20
10	0	0	0	0	0	0	10	-	0	0	10	-	20
11	0	0	0	0	0	0	10	-	0	0	10	-	20
12	0	0	0	0	0	0	10	-	0	0	10	-	20
13	0	0	0	0	0	0	10	-	0	0	10	-	20
14	0	0	0	0	0	0	10	-	0	0	10	-	20
15	0	0	0	0	0	0	10	-	0	0	10	-	20
16	0	0	0	0	0	0	10	-	0	0	10	-	20
17	0	0	0	0	0	0	10	-	0	0	10	-	20
18	0	0	0	0	0	0	10	-	0	0	10	-	20
19	0	0	0	0	0	0	0	5	0	0	10	-	15
20	0	0	0	0	0	0	0	5	0	0	10	-	15
21	0	0	0	0	0	0	0	5	0	0	10	-	15
22	0	0	0	0	0	0	0	5	0	0	0	0	5
23	0	0	0	0	0	0	0	5	0	0	0	0	5
24	0	0	0	0	0	0	0	5	0	0	0	0	5
25	0	0	0	0	0	0	0	5	0	0	0	0	5
16	0	0	0	0	0	0	0	5	0	0	0	0	5
27	0	0	0	0	0	0	0	5	0	0	0	0	5
28	0	0	0	0	0	0	0	5	0	0	0	0	5
29	0	0	0	0	0	0	0	5	0	0	0	0	5
30	0	0	0	0	0	0	0	5	0	0	0	0	5
TOTAL	0	0	0	0	O	45	150	60	0	0	210	0	465

THE DETAILED RESULTS

COMPLICATIONS

COMPLICATIONS DUE TO ARTHROSCOPY :

1 . Intraoperative Complications :

A . Nerve injury : either direct nerve injury or traction neuropraxia. There was no case with nerve injury due to attention to position, manipulation, distension, and traction of the shoulder joint.

B . Vascular injury : All the patients were away of this complication because this new procedure is simple and of no special instrumentation.

C . Damage to intraarticular structures : Owing to the simplicity of that technique no case with cartilage scarring was recorded.

D . Distension complications : a . Extravasation; no joint had this complication.

b . Fluid leakage; this complication was met with in only one shoulder [3.3 %] and subsided within a week.

c . Synovial edema; this subside within 24 hours.

E . Broken instruments : There were no special instruments to deal with inside the shoulder joint, so there was no case with broken instruments.

D . Inadequate Visualization : this can be corrected by the use of 1 mg of epinephrine per 1000 ml of saline.

2 . Immediate Postoperative Complications :

A . Deep venous thrombosis : this is a very rare complication, and no limb had this complication.

B . Inflammation : a . Infection : no case with shoulder joint infection was recorded.

b . Inflammatory synovial fluid :it is the result of serous proteins and neutrophils into the joint fluid. These components may have a deleterious effect upon the absorbable sutures used inside the joint, so these materials were not used in repair.

TECHNIQUAL COMPLICATIONS :

1 . Stitch sinus : Seven shoulders of the operated cases had suffered from stitch sinus [fig.41]. These sinuses were first noticed after 10 to 15 weeks after the operation, and were not responding to different antibiotics administration [determined by culture and sensitivity]. The only way to stop this infection was removal of the stitches. These infected stitches were removed after their appearance. A program of physiotherapy, which was mentioned before, was started and continued till the patients got most of their range of motion. All those patients did not develop recurrent dislocation or subluxation, following the removal of the stitches, but they were suffered from a little limitation in motion [recorded in the results]. No recurrence of infection, following removal of the infected stitches, returns back..

This complication occurred in the first seven cases where the silk sutures [polyfilament] were used. Later on, after using Porline sutures [monofilaments], no patient with stitch sinus was recorded.

2 . Recurrent dislocation : Only one case was recorded due to an epileptic fit convulsion. Unfortunately, this fit occurred after the removal of adhesive plaster [25 days from the operation] and during sling application. The patient was on

Figure 41.

regular treatment for epilepsy and had no fits for 6 months before the operation,following personal missing of his specific drug intake. Six months later, it was decided to treat that complication surgically for fear of the possibility of repeated epileptic fits. Putti-Platt accompanied by Bristow operations [for rigid fixation] were the procedure of choice. The patient was kept in adhesive bandage for 6 weeks and given his antiepileptic drugs allover the period of follow up to avoid the probability of farther recurrence of any epileptic fits. This case could be considered as a bad selection but it was included in the results.

3 . Tugging feeling : Eighteen patients experienced an anterior to posterior tugging feeling in the operated shoulder until 6 weeks, at which time they usually felt a mild posterior " popping event ". This is due to muscle wasting following prolonged immobilization. This feeling gradually disappeared after starting the physiotherapy and regaining of the shoulder muscles power.

CASES	STITCH SINUS	DISLOCATION	TUGGING FEELING
1	+	-	-
2	+	-	-
3	+	-	-
4	+	-	-
5	+	-	-
6	+	-	-
7	+	-	-
8	-	-	+
9	-	-	+
10	-	-	+
11	-	-	-
12	-	-	+
13	-	-	-
14	-	-	+
15	-	-	+
16	-	-	-
17	-	-	+
18	-	-	+
19	-	-	-
20	-	-	+
21	-	+	-
22	-	-	+
23	-	-	+
24	-	-	+
25	-	-	+
26	-	-	+
27	-	-	+
28	-	-	+
29	-	-	+
30	-	-	+
TOTAL	7	1	18

COMPLICATIOS