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THE RESULTS OF OPERATIVE TREATMENT FOR RECURRENT DISLOCATION OF THE GLENO-HUMERAL JOINT

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In the Scandinavian countries the Eden-Hybbinette operation (Eden 1918, Hybbinette 1932) and its modifications (Palmer-Widen 1948, Lange 1951) are widely used in the treatment of recurrent dislocation of the gleno-humeral joint. In Finland, F. Langenskiöld (1939), Hublin (1946) and v. Hellens (1947) have published series treated by the Eden-Hybbinette technique. In v. Hellens's series collected from several hospitals in this country, recurrence was noted in 15 per cent; in Hublin's series the frequency was 6 per cent. In Sweden, Hindmarsh & Lindberg (1967) reported the results of 120 operations by Palmer-Widen's modification; there was only one recurrence.

The present study is an analysis of the results in a series of recurrent dislocations of the gleno-humeral joint, operatively treated.

PATIENTS

The series consists of 95 recurrent dislocations of the gleno-humeral joint that were operatively treated in 93 patients at the Department of Orthopaedics and Traumatology, University Central Hospital, Helsinki, during the period 1950–1967. There were two cases of posterior dislocation.

There were 65 men and 28 women. The right shoulder joint was involved in 56 patients, the left in 35 and both shoulder joints in 2. Eighty-seven patients were right-handed, 6 were left-handed. The shoulder joint of the dominant upper extremity was the object of treatment in 58 cases and that of the non-dominant one in 37 cases.

The age distribution appears in Table 1. The mean age at the time of the operation was 31 years; the youngest patient was 16, the oldest 52.

Table 1. Age distribution

Age	Total	Women	Men
10-19	13	5	8
20-29	30	6	24
30-39	30	9	21
40-49	17	5	12
50-59	3	2	1
Total	93	27	66

Table 2. Interval between the first traumatic dislocation and the operation

Interval (years)	No. of cases*
1- 5	57
6-10	16
Over 10	22
Total	95

* A case = one shoulder joint.

The interval between the first traumatic dislocation and the operation appears in Table 2.

The first traumatic dislocation had been reduced under anaesthesia in 42 cases and without anaesthesia in 29, whereas in 24 spontaneous reduction had occurred or the dislocation had been reduced by the patient himself or by a layman.

After the first dislocation the upper limb had been immobilized for less than 3 weeks in 75 cases, for 3 weeks in 10 cases, and for more than 3 weeks in 10 cases.

Dislocation had occurred preoperatively 10 times or less in 41 cases and more frequently in the remainder. Major trauma had been the cause in 4 cases, whereas in 13 cases the dislocation had sometimes been spontaneous and sometimes due to trauma. In 78 cases the dislocation had invariably been spontaneous. Five patients were epileptics. The dislocation had been reduced by a doctor under anaesthesia in 28 cases, by the patient himself or by a layman in 35 cases, and either by a doctor or the patient himself in 32 cases.

Before the operation, mobility of the shoulder joint was good in 70 cases. In 10 cases the joint was painful. In one case a lesion of the ulnar nerve due to dislocation was observed preoperatively.

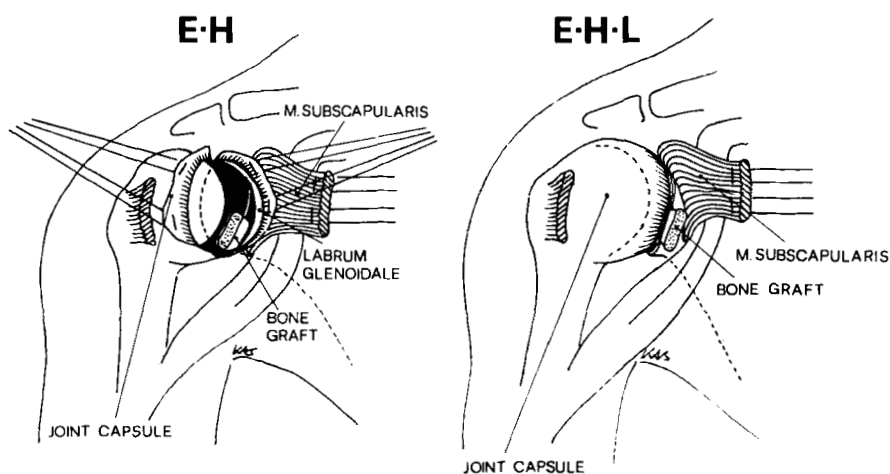


Figure 1. In the Eden-Hybbinette type of operation a bone graft was taken from the iliac crest and placed partly intra-articularly into a subperiosteal pocket. In the Eden-Hybbinette-Lange operation the bone graft was inserted extra-articularly.

Table 3. Operations performed

Operative technique	No. of cases
Eden-Hybbinette	51
Eden-Hybbinette-Lange	33
Putti-Platt	7
Others (Bankart and Eden-Hybbinette-Lange for posterior dislocation, Nicola and Oudard)	4
Total	95

OPERATIVE TECHNIQUE AND POSTOPERATIVE TREATMENT

The operations performed appear in Table 3.

In the *Eden-Hybbinette* group (*E-H*) the mean age was 28 years. The bone graft was taken from the iliac crest in all cases (Figure 1). Postoperative immobilization was effected by means of a thoraco-brachial plaster cast in 4 cases and by a Velpeau bandage in 47 cases. The duration of immobilization was less than 4 weeks in 23 cases, 4 weeks in 15 cases and more than 4 weeks in 13 cases. In one case

wound infection occurred, but the end result was good. No other operative complications were seen.

Active controlled mobilization was begun less than 4 weeks after the operation in 20 cases, after 4 weeks in 20 cases, and after more than 4 weeks in 11 cases.

In the *Eden-Hybbinette-Lange group (E-H-L)* the mean age was 29 years. The bone graft was taken from the tibia in 4 cases and from the iliac crest in 29 cases (Figure 1). Postoperative immobilization was effected by means of a thoracobrachial plaster cast in 24 cases and by a Velpeau bandage in 9 cases. The duration of immobilization was less than 4 weeks in 6 cases, 4 weeks in 13 cases and more than 4 weeks in 14 cases.

In the *Putti-Platt group* (Osmond-Clarke 1948) the mean age was 20 years. Postoperative immobilization was effected by a Velpeau bandage.

RESULTS

All patients were summoned to a follow-up examination, which was done in 57 cases (60 per cent) 1–16 years after operation, the average time of observation being 7 years and 4 months. With regard to 16 cases (16 per cent), information concerning the operative result was obtained by means of a questionnaire. The end results can thus be reviewed in 73 cases (77 per cent).

The patients' subjective views regarding the end results as indicated at follow-up examination and in questionnaires are shown in Table 4. The average time of observation was 7 years and 6 months after E-H operation and 7 years after E-H-L operation. Two of the patients operated on by the E-H method and one of the E-H-L group had changed their occupation because of the condition of the shoulder joint.

At follow-up the condition of the muscles of the shoulder was considered good in 26 out of 30 cases operated on by the E-H method and in 21 out of those 22 operated on by the E-H-L technique. Fair muscular condition was noted in 4 and one of the patients, respectively.

The movements of the shoulder joint after these two operations are shown in Figure 2. Forward flexion and outward rotation with the arm in abduction were better in the E-H series, whereas backward extension, horizontal extension and inward rotation both with the arm at the side and in abduction were better in the E-H-L series. Five cases of

Table 4. Patients' estimations of the end result as indicated at follow-up examination and in questionnaires

Estimation	Operation performed	
	Eden-Hybbinette 40 cases	Eden-Hybbinette-Lange 25 cases
General view		
good	26	23
better than before operation	9	2
poor	5	—
Movements of the shoulder joint		
good	26	25
fair	12	—
poor	2	—
Pain in the shoulder		
painless	26	20
painful	14	5
Working ability		
good	32	24
impaired	8	1

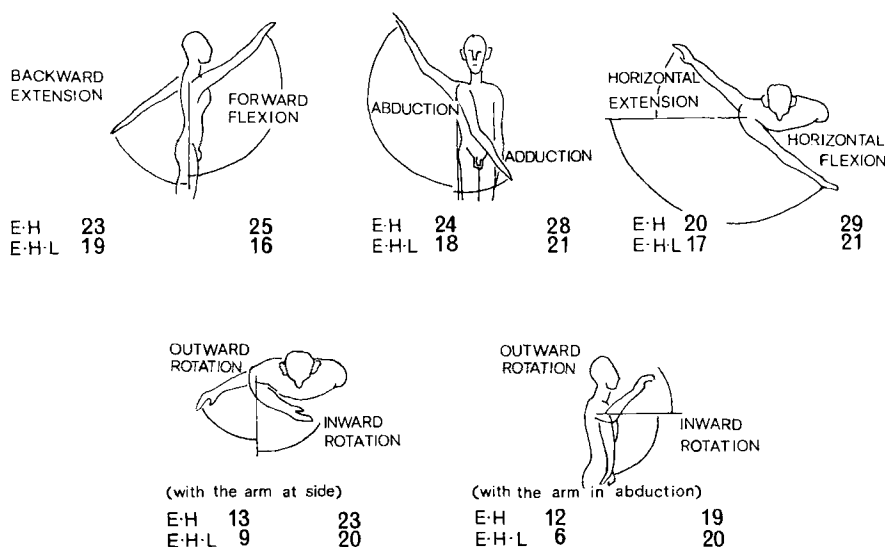


Figure 2. Movements of the shoulder joint after 30 Eden-Hybbinette and 22 Eden-Hybbinette-Lange operations. The latter group showed better results. Numbers indicate cases with complete movement in question,

each group had the full range of movements comparable to other joints. A bilateral congenital case operated on by the E-H method had full movements but redislocations.

The position of the bone graft in the radiogram taken at follow-up is indicated in Table 5 separately for the cases in the E-H and in the E-H-L group. Osteoarthritis of the gleno-humeral joint was observed radiographically in 6 out of 52 cases operated on by the E-H or E-H-L method.

Table 5. Position of the bone graft radiographically at follow-up examination

Position of the bone graft	Eden-Hybbinette 30 cases	Eden-Hybbinette-Lange 22 cases
In place	27	21
Not in place	2	1
Not visible	1	—

After E-H operation redislocation occurred in 5 cases. These cases were as follows: A bilateral congenital case, who had dislocations immediately and again 5 years after the operation. One of the three epileptics, who had the first redislocation half a year after the operation, had a relapse after a subsequent Putti-Platt operation as well. A wrecked alcoholic had the first redislocation 1 year after the operation. One patient had a spontaneous redislocation 3 years after the operation, but had no recurrence during the following 4 years.

Of the 17/30 cases operated on according to E-H 1–5 years after the first dislocation, 4/5 had full range of gleno-humeral movements at the follow-up but of the 13/30 cases operated on later only 1/5 had as good results. The respective numbers in the E-H-L series were 11/22, 2/5 and 11/11, 3/5. In the other cases the trend was similar.

Two years after an E-H-L operation one patient had a new trauma and redislocation while serving in the army. Thereafter he again had recurrent dislocations. One epileptic was included in this series.

The five E-H cases with full range of gleno-humeral movements belong to the series of the 22/30 cases immobilized postoperatively for four weeks at the most. Two of the 11/22 cases operated on according to E-H-L and immobilized postoperatively at most four weeks had full range of gleno-humeral movement. Of the 11/22 cases immobilized more than 4 weeks, full range of movement was obtained in three. In the other cases the trend was similar.

In the patients operated on by the Putti-Platt technique, both outward rotation and inward rotation were more limited than in the other two groups, but the other movements were better. One epileptic was included in this series.

The results of other operations (Bankart and E-H-L for posterior dislocation, Nicola and Oudard) are not discussed in detail because of the scarcity of the cases.

DISCUSSION

On the basis of this study no conclusion can be drawn as to why a traumatic gleno-humeral dislocation is sometimes followed by spontaneous dislocations. In 24 out of 95 cases the first dislocation had been spontaneously reduced or was reduced by the patient himself or by a layman. After the first dislocation the upper limb had been immobilized for less than 3 weeks in 75 cases.

Minor technical variations in the operations have occurred owing to the fact that there were many surgeons. When evaluating the results this factor does not seem to be of decisive significance. It is considered most essential to place the bone graft properly. On the other hand, the follow-up results indicate that the position of the bone graft is of no major importance. The postoperative immobilization was followed in our cases by active controlled mobilization. It is difficult to measure the value of after-treatment, but we believe that it has an essential significance in these cases. However, the range of movement was better in cases immobilized no more than four weeks than in those where immobilization period was longer. The end-results were better in cases operated on within 1-5 years after the first dislocation than in cases operated on later.

When comparing the results in the cases treated either by the Eden-Hybbinette or by the Eden-Hybbinette-Lange technique, it appears that the end results in the latter group were both subjectively and objectively better. After operation the joint movement was most often slightly limited, particularly in outward rotation. This limitation seems to avail to prevent redislocation. The Eden-Hybbinette-Lange technique proved to be more reliable than the Eden-Hybbinette method. The frequency of osteoarthritis was strikingly low, i. e. only 11 per cent, while Hindmarsh & Lindberg (1967) reported a frequency of 70 per cent. Summing up, it may be stated that the operative treatment is worthy of recommendation. The Eden-Hybbinette-Lange technique seems to give serviceable results in a high percentage of cases.

SUMMARY AND CONCLUSIONS

The series consists of 95 operatively treated cases of recurrent dislocation of the gleno-humeral joint in 93 patients. The significance of age, time interval between the first traumatic dislocation and the operation, the surgical technique, and the immobilization period are examined. Fifty-one Eden-Hybbinette operations, 33 Eden-Hybbinette-Lange operations, 7 Putti-Platt and 4 other types of operations were performed. Of the patients 57 arrived to the follow-up examination. In 16 cases, information was obtained by means of a questionnaire. The average observation period was over 7 years.

When comparing the Eden-Hybbinette and Eden-Hybbinette-Lange techniques, the latter was found to give both subjectively and objectively better end results. Good results were also obtained in cases operated on by the Putti-Platt method. In addition to the surgical method, early timing of the operation and the early postoperative mobilization contributed favourably to the end results.

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