

LATE RESULTS OF RECURRENT DISLOCATION OF THE SHOULDER JOINT AFTER OPERATIVE TREATMENT BY ORELL'S METHOD

By

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In 1940 *Orell* described a new operative method for the treatment of recurrent dislocation of the shoulder. By means of specially designed instruments a wedge-shaped *os purum*¹ lamella is driven into the anterior surface of the shoulder joint, close to the *lambrum glenoidale*, though *extracapsularly*. The method is very simple. The incision causes the patient very little trouble; it leaves a small scar, no muscles or tendons have to be divided, and the convalescence is short.

To find out whether dislocations are prevented by this method I have followed up all the 23 patients operated on by *Orell's* method in this department up to and including 1949. One patient who had moved elsewhere replied by questionnaire. The rest were re-examined with roentgen control in this hospital by the writer.

CASE RECORDS

Case 1. Record no. 5/40. A man aged 31 year. First dislocation (traumatic) in 1930. Some 50 dislocations previous to operation in 1940. Post operative course free from complications. Follow-up 10 years after operation. He had had recurrent dislocation 1 year after operation, but no subsequent recurrence. Re-operation was not performed. *Mobility:* combined abduction 150°. External rotation (from medium position with the upper arm close to the body and the forearm pointing straight forward) 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 2. Record no. 42/40. A woman aged 37 years. First dislocation (traumatic) in 1928. Some 100 dislocations previous to operation in 1940. Postoperative course free from complications. Follow-up 10 years after operation. No recurrent disloca-

¹ Chemically purified bone from calves.

tion, but slight weakness and instability of the arm. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 3. Record no. 84/41. A man aged 19 years. First dislocation (spontaneous) in 1938. Some 25 dislocations previous to operation in 1941. Postoperative course free from complications. Follow-up 9 years after operation. No recurrent dislocation. Normal strength of the arm. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 4. Record no. 131/41. A woman aged 20 years. First dislocation (spontaneous) in 1939. Four dislocations previous to operation in 1941. Postoperative course free from complications. Follow-up by questionnaire 9 years after operation. No recurrence. The patient was fully satisfied with the result; normal strength of the arm.

Case 5. Record no. 76/41. A man aged 25 years. First dislocation (traumatic) in 1939. Four dislocations previous to operation in 1941. Postoperative course free from complications. Recurrence 1 year after operation. Re-operation by *Nicola's* method. Follow-up 9 years after first operation. There had been no further recurrence. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 6. Record no. 43/42. A man aged 48 years. First dislocation (traumatic) in 1940. About 15 dislocations previous to operation in 1942. Postoperative course free from complications. Follow-up 8 years after operation. No recurrence. The patient was afraid of stretching the arm upwards because of a feeling of partial dislocation. *Mobility*: combined abduction 160°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was fixed but situated very far down (not ideal); it had not been transformed into new bone.

Case 7. Record no. 39/42. A man aged 28 years. First dislocation (traumatic) in 1938. Some 10 dislocations previous to operation in 1942. Postoperative course free from complications. Follow-up 9 years after operation. No recurrence. Normal strength of the arm. The patient was able to practise sports. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was in position but there was a marked absorption zone round the attachment in the bone. The graft had not been transformed into new bone.

Case 8. Record no. 113/42. A man aged 22 years. First dislocation (traumatic) in 1940. Six dislocations previous to operation in 1942. Postoperative course free from complications. Follow-up 8 years after operation. No recurrence. Normal strength of the arm. The patient was able to practise sports. *Mobility*: combined abduction 180°. External rotation 45°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 9. Record no. 185/42. A man aged 23 years. First dislocation (traumatic) in 1941. Five dislocations previous to operation in 1942. Postoperative course free from complications. Recurrence 11 years after operation while swimming, without special injury. Before recurrence there had been no complaints; normal strength of the arm. Re-operation by *Putti-Platt's* method. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues. *Mobility* 8 years after first operation (before recurrence): combined abduction 180°. External rotation 45°.

Case 10. Record no. 27/42. A man aged 32 years. First dislocation (injury at sports) in 1933. Some 100 dislocations previous to operation in 1942. Postoperative course free from complications. Follow-up 8 years after operation. No recurrence. Normal strength of the arm. *Mobility*: combined abduction 180°. External rotation

90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 11. Record no. 87/42. A man aged 17 years. First dislocation (epileptic) in 1941. Six dislocations previous to operation in 1942. Postoperative course free from complications. Recurrence 1 year after operation during another epileptic seizure. Re-operation in the same year. Follow-up 8 years after first operation. No recurrence after second operation. *Mobility:* combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was fractured some months after operation and subsequently absorbed.

Case 12. Record no. 21/43. A woman aged 40 years. First dislocation (traumatic) in 1939. Two dislocations previous to operation in 1943. Postoperative course free from complications. Recurrence 6 months after operation. Re-operation by *Nicola's* method. Follow-up 7 years after first operation. No recurrence after second operation. *Mobility* combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was in position, partly absorbed.

Case 13. Record no. 7/43. A man aged 22 years. First dislocation (traumatic) in 1940. Three dislocations previous to operation in 1943. Postoperative course free from complications, but increasing rigidity of the shoulder. Follow-up 10 years after operation. No recurrence, but marked rigidity of the joint. *Mobility:* combined abduction 80°. Total rotation 10°. Radiographic evidence of marked osteoarthritis of the shoulder joint. At re-operation the *os purum* graft was found in the joint.

Case 14. Record no. 241/43. A woman aged 27 years. First dislocation (injury at sports) in 1936. Some 50 dislocations previous to operation in 1943. Postoperative course free from complications. Follow-up 7 years after operation. No recurrence. Normal strength of the arm. *Mobility:* combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was completely absorbed.

Case 15. Record no. 161/44. A woman aged 20 years. First dislocation (spontaneous while washing her neck) in 1943. Two dislocations previous to operation in 1944. Postoperative course free from complications. Follow-up 6 years after operation. No recurrence. Normal strength of the arm. The patient was able to practise sports. *Mobility:* combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was situated far down; it is uncertain whether it was fixed or not.

Case 16. Record no. 159/44. A woman aged 26 years. First dislocation (spontaneous) in 1920. Some 20 dislocations previous to operation in 1944. Postoperative course free from complications. Follow-up 6 years after operation. No recurrence. Normal strength of the arm. *Mobility:* combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues.

Case 17. Record no. 504/45. A woman aged 42 years. First dislocation (traumatic) in 1941. About 10 dislocations previous to operation in 1945. Postoperative course free from complications. Recurrence 1 month after operation, without special injury. Follow-up 5 years after operation. No further recurrence. No re-operation. *Mobility:* combined abduction 135°. External rotation 30°. Radiographic evidence of slight osteoarthritis. The graft was in position; it had not been transformed into new bone. There was an absorption zone round the attachment.

Case 18. Record no. 357/46. A man aged 29 years. First dislocation (traumatic) in 1941. Ten dislocations previous to operation in 1946. Postoperative course free from complications. Follow-up 4 years after operation. No recurrence. Normal

strength of the arm. *Mobility*: combined abduction 180°. External rotation 30°. No radiographic evidence of osteoarthritis. The graft was in position; it had not been reconstructed.

Case 19. Record no. 416/46. A man aged 22 years. First dislocation (traumatic) in 1942. Some 50 dislocations previous to operation in 1946. Postoperative course free from complications. Follow-up 6 years after operation. No recurrence, but persistent instability of the joint with tendency to partial dislocation. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was lying free in the soft tissues. Reoperation in 1952 because of the instability, with implantation of a new bone graft by *Orell's* method. The joint became stable and there was no recurrence.

Case 20. Record no. 387/46. A boy aged 11 years. First dislocation (spontaneous) in 1945. Some 20 dislocations previous to operation in 1946. Postoperative course free from complications. Follow-up 4 years after operation. No recurrence. Normal strength of the arm. The patient was able to practise sports. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was completely absorbed.

Case 21. Record no. 443/47. A man aged 27 years. First dislocation (traumatic) in 1946. Five dislocations previous to operation in 1947. Postoperative course free from complications. Follow-up 3 years after operation. No recurrence. *Mobility*: combined abduction 180°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was absorbed.

Case 22. Record no. 171/48. A man aged 39 years. First dislocation (traumatic) in 1934. Fourteen dislocations previous to operation in 1948. Postoperative course free from complications. Recurrence in 1952 in a game with balls. *Mobility* at follow-up examination before the recurrence: combined abduction 160°. External rotation 90°. No radiographic evidence of osteoarthritis. The graft was fractured and lay free in the soft tissues.

Case 23. Record no. 245/49. A man aged 31 years. First dislocation (traumatic) in 1944. Four dislocations previous to operation in 1949. Postoperative course free from complications. Follow-up 3 years after operation. No recurrence. Slight weakness of the arm, but the patient was very satisfied with the result. *Mobility*: combined abduction 180°. External rotation 10°. No radiographic evidence of osteoarthritis. The graft was in position; it had not been transformed into new bone.

Of the 23 patients 7, or 30 per cent, had had recurrence. However, a closer study of these seven cases shows that in one of them the dislocation recurred 1 month, in another 12 months after operation, but that neither had any subsequent recurrences during an observation period of 10 and 5 years, respectively. Both patients were free from symptoms and in these cases the results may, nevertheless, be said to have been clinically satisfactory. Excluding these two cases, the incidence of recurrence will be 22 per cent. In one case (no. 13) arthritic changes in the shoulder joint occurred postoperatively, the reason being that the bone graft had unintentionally been placed intraarticularly. Apart from this there were no postoperative complications.

A comparison with other methods of operation (several authors' results put together) shows the following figures:

	Recurrence %	Mean %	Total no. of cases
Eden-Hybbinette	0- 6.5	2.5	302
Bankart	0-12.5	2.2	134
Nicola	11-41	22	187
Putti-Platt	6.2		16

It will be seen that the recurrence rate after *Orell's* operation corresponds most closely to that found after *Nicola's* operation and is considerably higher than for *Eden-Hybbinette* and *Bankart*. Since *Orell's* method technically appears to be expedient and also in many respects resembles *Eden-Hybbinette's* operation with its low recurrence rate, the question arises as to the cause of the high percentage of recurrence. The most likely explanation would seem to be that the bone graft used (*os purum*) may have constituted a weak point. At the follow-up examinations it was found that in many cases (16 of 22) the graft had been absorbed or was lying free in the soft tissues, and that it had not been reconstructed and replaced by new bone in any of the cases. Since further research has brought new aspects on the formation of new bone, it should be possible to obtain better results by using a grafting material with greater osteogenetic power, for instance fresh autogenous spongy or compact bone.

Because the technique is simple and the operation is performed without subjecting the patient to any great inconvenience or the shoulder joint to harsh manipulation, the method deserves further trial, but a grafting material with greater osteogenetic power than that of *os purum* should preferably be used.

SUMMARY

Twenty-three patients who had been operated on for dislocation of the shoulder joint by *Orell's* method have been followed up. A recurrence rate of 30 per cent was recorded. The writer considers that the method, nevertheless, should be tested further, with minor modifications of the technique.

RESUME

Trente-trois malades qui ont été opérés pour une dislocation de l'articulation de l'épaule d'après la méthode d'*Orell* ont été réexaminés. On a constaté un pourcentage de récurrence de 30 %. L'auteur considère qu'il convient néanmoins de continuer à essayer cette méthode, mais en apportant de légères modifications à la technique.

ZUSAMMENFASSUNG

Dreiunzwanzig Patienten, die wegen Schulterverrenkung nach Orells Methode operiert worden sind, wurden nachuntersucht. In 30 % der Fälle wurde ein Rezidiv festgestellt. Der Verfasser ist trotzdem der Meinung, dass die Methode mit kleineren technischen Veränderungen weiterhin versucht werden sollte.

REFERENCES

- Jakobsson, Å.*: On recurrent dislocation of the shoulder-joint. Acta Orth. Scandinav. 18, 284, 1949.
- Orell, S.*: The surgical treatment of recurrent dislocation of the shoulder-joint. Surg. Gynec. & Obst. 70, 945, 1940.
- Orell, S. & Petréén, T.*: Anatomical observations in the treatment of recurrent dislocation of the shoulder-joint by bone-grafting. Acta. Chir. Scandinav. 87, 286, 1942.
- Severin, E.*: Anterior and posterior recurrent dislocation of the shoulder. Acta. Orth. Scandinav. 23, 14, 1953.