SHOULDER INSTABILITY

AN ANALYSIS OF FAMILY HISTORY

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A family history of shoulder instability in first-degree relatives was found in 24 of 100 patients who had been operated on for recurrent anterior shoulder instability. The patients with and without a family history were similar in respect of sex ratio, age at first dislocation and age at operation. The initial dislocation was non-traumatic in 22% of the patients with and in 13% of those without a positive family history (p = 0.3). Postoperative recurrence of instability was experienced by 34% of patients with and 33% of those without a family history (p = 0.9). In those with a family history, 13% of the recurrences were dislocations and 87% were subluxations. In patients without a family history 52% of the recurrences were dislocations and 48% were subluxations (p < 0.05). The contralateral shoulder was unstable in 50% of the patients with a family history and in 26% of those without (p = 0.03).

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A congenital basis for recurrent shoulder instability has often been alluded to in the past (Magnuson and Stack 1940; Gallie and Le Mesurier 1948; Townley 1950; Uhthoff and Piscopo 1985; O’Driscoll and Evans 1991), but there has been no comprehensive report of the importance of family history in shoulder instability. Uhthoff and Piscopo (1985) found a loose anterior joint capsule in 23% of fetal specimens examined histologically and concluded that anterior shoulder instability may be congenital. O’Driscoll and Evans (1991, 1993) found that instability was present in the contralateral shoulder in 24% of 192 patients treated by anterior shoulder repair.

Our aim was to analyse the family history of patients operated on for recurrent shoulder instability and to correlate this with the outcome.

PATIENTS AND METHODS

We describe 100 of the 192 patients previously reported by O’Driscoll and Evans (1991, 1993) all of whom had undergone anterior staple capsulorrhaphy, with or without a modified Putti-Platt procedure, between 1967 and 1986. It was difficult to find all the patients after an interval of five years and we therefore accepted 100 as a sufficient sample.

Ligamentous hyperlaxity had been previously tested in all 100 patients five years ago. Hyperlaxity was present if two or more of the following coexisted: hyperextension of the elbows > 5°, MCP joint extension > 90°, genu recurvatum, or the ability to touch the thumb to the ipsilateral forearm.

All 100 patients were contacted by telephone, and 64 were examined at an average of 15 ± 5 years after surgery (6 to 25). There were 79 men and 21 women. The original operation was for recurrent dislocation in 88 cases and for recurrent subluxation in 12. Six patients had bilateral procedures. The age at first dislocation was 21 ± 8 years and the age at the time of operation was 27 ± 10 years. These data are very similar to those for the whole population of 192 patients originally studied five years earlier.

All 100 patients were questioned about their family history and the function of their shoulders. The family history was considered positive if any of their parents, siblings or children had suffered a dislocation which had required reduction by a physician or by a sports trainer.
or by one of the patients in this study (three cases); or if any of their first-degree relatives had undergone a stabilisation procedure. Sixty-four patients were examined at our institution, and radiography was performed using anteroposterior (scapular plane) views in internal and external rotation, trans-scapular lateral views, and West Point axillary views (Rokous, Feagin and Abbott 1972). Shoulder instability was graded by the percentage displacement of the humeral head off the glenoid: grade 0, < 25%; grade I, 25% to 49%; grade II, 50% to 99%; and grade III, 100%.

In addition six patients sent us similar radiographs taken at their local hospitals.

The data were analysed using statistical computer software (Statview II; Abacus Concepts, Berkeley, California). Non-parametric statistics were used for nominal and ordinal data and parametric statistical tests for interval and ratio data.

RESULTS

Twenty-four patients had a positive history of shoulder dislocations in their first-degree relatives. Statistical comparisons between the patients with a positive family history and those without revealed no significant differences of sex, age at initial dislocation, or age at operation. Also, there was no statistical difference with respect to family history for radiographic osteoarthritic changes or Hill-Sachs lesions.

The patients with a positive family history differed significantly from those without such a history in two ways. First, those who experienced instability after the operation were more likely to have subluxations than dislocations. A total of 35 patients had recurrence of symptoms of shoulder instability after surgery. Nine of the 24 patients (37.5%) who had a positive family history had symptoms of instability; eight had recurrent subluxations and one had dislocations. This was significantly different from the 76 patients without a positive family history, 26 of whom (34%) had shoulder instability after the operation, 14 having dislocations and 12 subluxations ($p < 0.05$).

The other difference between the two groups was the prevalence of bilateral instability. Twelve (50%) of the patients with a positive family history experienced bilateral instability compared with only 19 (25%) of the patients without ($p = 0.03$).

There was a slight but not statistically significant difference between the two groups in regard to whether the initial episode of instability was traumatic or not. Five (21%) of the patients with a positive family history had their initial instability as a result of minimal or no trauma compared with nine (12%) of the patients with no family history ($p = 0.3$).

There was no significant difference in the prevalence of ligamentous hyperlaxity between patients with and without a family history: 42% of the patients with and 38% of those without such a history had signs of posterior instability, mostly grade I ($p = 0.5$).

DISCUSSION

Hovelsuis (1982), in an epidemiological study in Sweden, found that of 2092 subjects from the general population 18 (0.9%) had a positive family history of shoulder dislocations but he did not report the prevalence of a positive family history in patients with shoulder instability. Rowe, Patel and Southmayd (1978) found that 27% of 5 patients who had undergone a Bankart procedure had a positive family history of shoulder instability but they did not discuss its prognostic significance. Tibone and Ting (1990) reported only one positive family history in 75 patients with posterior instability. Morrey and Janes (1976) found that 15% of the patients operated on for recurrent anterior shoulder instability had a positive family history. They also found that those with post-operative recurrence of instability had a positive family history twice as often as those without recurrence. They were the first investigators to suggest the prognostic importance of a family history in shoulder instability.

We found a 24% prevalence of a positive family history in patients operated on for anterior instability. Those with or without a family history were not significantly different in regard to the cause of the initial dislocation, the age at which it occurred, the presence or absence of ligamentous hyperlaxity or signs of posterior instability. If some patients have a congenital predisposition to dislocate, one would expect that less trauma would be required to cause the initial dislocation, but this was not so.

Unlike Morrey and Janes (1976), we did not find a higher postoperative recurrence rate in patients with a positive family history. We did find, however, that they were more likely to have recurrent subluxations than true dislocations. Bilateral instability was significantly more common in patients with a positive family history which suggests a genetic predisposition. The postoperative recurrence rate found in this study was higher than that reported by Morrey and Janes (1976) and by O'Driscoll and Evans (1991, 1993). This may be because the period of follow-up was longer in our patients or because the Dutoit staple capsulorrhaphy used in our patients has an unsatisfactorily high failure rate (Howatt, Yabsley and Englund 1989; O'Driscoll and Evans 1991, 1993).

Conclusions

1) There is a high prevalence of a positive family history of shoulder instability in patients operated on for recurrent shoulder instability.
2) Patients with a positive family history of shoulder instability have a higher incidence of bilateral instability.
3) Patients with a positive family history, if they experience recurrence of instability after surgery, are more likely to have subluxations than dislocations.

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REFERENCES


