PATTERNS OF DEGENERATIVE CHANGE IN THE ACROMIOCLAVICULAR JOINT

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A distinctive and consistent pattern of degenerative change was seen in 560 acromioclavicular joints from dry bone skeletons of subjects over 40 years of age. An appreciation of this characteristic configuration is helpful at operation or when introducing a needle into the joint.


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Increasing numbers of arthroscopic procedures are being performed on the acromioclavicular (AC) joint, especially excisional arthroplasty for degenerative disease (Fukuda et al 1986; Gartsman et al 1991; Bigliani, Nicholson and Flatow 1993; Jerosch and Castro 1993). Examination was made of a large number of specimens from museum skeletons to determine if there was a consistent pattern of arthritic change. Although soft-tissue and cartilaginous degeneration has been discussed previously (DePalma 1983; Petersson 1983), the bony changes have not been described.

MATERIALS AND METHODS

Examination was made of the acromioclavicular joints in 280 skeletons of subjects over the age of 40 years from the Terry Collection of the Smithsonian Museum of Natural History in Washington. This collection was made during the early 1900s from individuals whose forebears had been born in America for four generations or more. The specimens are documented for age, gender and race. There were equal numbers of male and female skeletons. Measurement of the obliquity by which the acromial facet deviated from the vertical was performed using a simple goniometer.

RESULTS

In spite of the variability in the configuration of the acromioclavicular joint (Edelson and Taitz 1992), there was a consistent pattern of degenerative change.

On the acromial side there was elongation of the joint in the sagittal plane, principally in the posterior aspect of the acromial facet (Fig. 1). This was seen in both sides in 73%, and when unilateral, the right side was involved in 64%. Anteroposterior elongation was usually accompanied by less pronounced proliferation of osteophytes in the superoinferior plane, notably at the posterosuperior quadrant of the acromial facet (Fig. 2).

On the clavicular side there was broadening and round-

![Fig. 1](image1)

The acromial facets in a 64-year-old male skeleton. There is a typical pattern of degenerative change on the right with a normal appearance on the left.

![Fig. 2](image2)

In a 78-year-old female skeleton there is advanced osteophyte formation at the posterosuperior facet (arrow). An acromial ‘hook’ or spur has also developed at the attachment of the coracoacromial ligament.
ing-off of the distal clavicle principally in an antero-posterior direction conforming to the expanded surface of the acromial facet. These changes resulted in a modified ball-and-socket configuration (Fig. 3).

Minor variations in this pattern were seen depending on the initial anatomy of the AC joint. Although the joint may lie obliquely to the coronal plane (DePalma 1983), only 18% of those in our specimens had a facet inclination of 30° or more from the vertical. The arthritic changes in these oblique joints were similar to those found in the more vertical specimens but there was a tendency for the inferior lip of the acromial facet to be more prominent than the superior margin, and the clavicle was more rounded off on its inferior aspect enhancing the ball-and-socket contour (Fig. 4).

DISCUSSION

Although there have been some studies of movement at the AC joint (Inman, Saunders and Abbott 1944; Ljunggren 1979; Fukuda et al 1986; Rockwood and Young 1990) the mechanics involved are still not understood. Understanding of the consistent pattern of degenerative change, however, will help the surgeon to perform an adequate excision of bone and avoid subsequent impingement. An appreciation of this anatomy also helps in palpating landmarks before introducing a needle into the joint.

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REFERENCES


