



Lateral compartment cartilage changes and lateral elbow pain

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The aim of our study is to document the arthroscopic findings in resistant lateral elbow pain. We have reviewed the findings in a consecutive series of 117 elbow arthroscopies performed on patients with lateral elbow pain resistant to conservative treatment. We found established degenerative changes involving articular cartilage in 68 patients (59%). In 60 of these 68 patients (88%) the degenerative changes were confined to the lateral compartment and contrasted with a normal appearance of the articular cartilage of the medial compartment. Primary lateral compartment arthritis is more common than previously thought, it mostly affects a young population and could easily be misdiagnosed as lateral epicondylitis.

Keywords : lateral elbow pain ; lateral compartmental arthritis ; arthroscopy.

INTRODUCTION

Goodfellow and Bullough first described in 1968 the pattern of articular cartilage wear in the elbow (5). Post-mortem studies carried out on mainly elderly subjects demonstrated that the degree of degenerative change in the elbow is age dependent and involves predominantly the radio-capitellar (lateral) compartment of the joint. The humero-ulnar (medial) compartment remains remarkably well preserved (1,2,3). The significance of these post-mortem findings, in an elderly population, with unknown elbow symptomatology, who died from diverse causes, is unknown. There has been no clinically based *in vivo* study of this subject.

PATIENTS AND METHODS

We studied the recorded data of 117 consecutive elbow arthroscopies performed during a period of 18 months. All patients included had suffered pain for at least six months confined to the lateral aspect of the elbow and resistant to conservative therapy. Conservative treatment included bracing, ultrasound, deep heat and injection with corticosteroids.

There were 70 males and 47 females (fig 1). Age varied from 21 to 80 years (mean 51 years) (fig 2). Most of the symptomatic joints were on the patient's dominant side (67%). Twenty-one patients gave a history of trauma. All 117 patients had had pain confined to the lateral aspect of the elbow. Other symptoms were locking (29), crepitus and stiffness (53).

Using the Kellgren and Lawrence radiological grading, 70 were Grade 0, 12 Grade 1, 10 Grade 2, 15 Grade 3 and 10 Grade 4. In 96 patients the aetiology of pain was unknown and the onset was insidious.

RESULTS

Sixty (51%) patients had significant lateral compartment degenerative changes and only 8 (7%)

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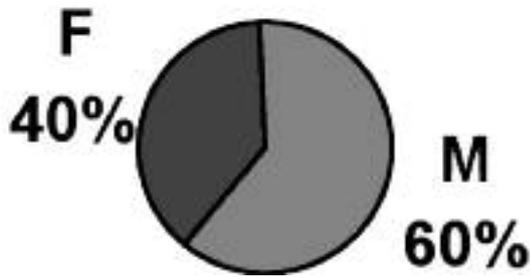


Fig. 1. — Sex distribution

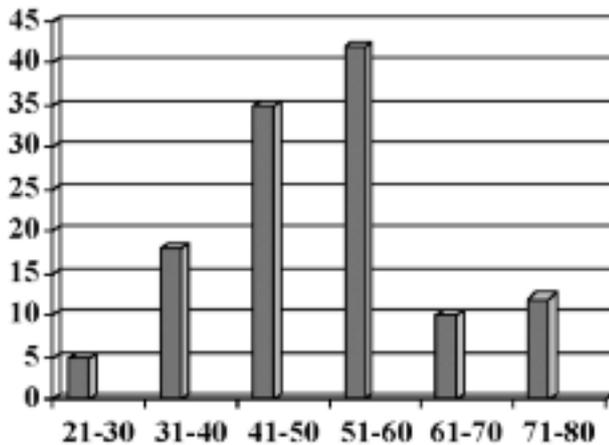


Fig. 2. — Histogram showing the age distribution

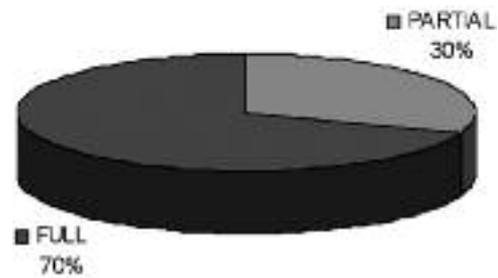


Fig. 3. — Graph showing radial head articular cartilage loss

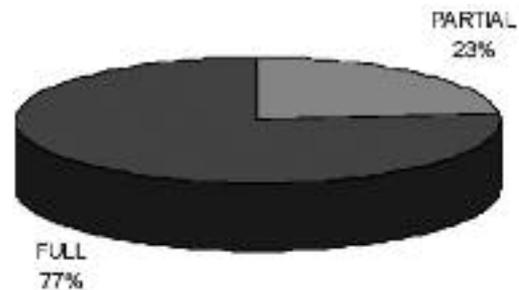


Fig. 4. — Graph showing capitellum articular cartilage loss

had changes in the humero-ulnar compartment. On the radial head side 14 had partial thickness and 32 had full thickness cartilage loss (fig 3). On the capitellar side 11 had partial thickness and 36 had full thickness cartilage loss (fig 4).

The arthroscopic findings of the cartilage changes in patients who gave a history of trauma are given in table I.

Table II summarises the other common pathological findings during the arthroscopy : extensor origin inflammation 42 (36%), radial head plica 21 (18%), synovitis 98(84%), loose bodies 19 (16%), adhesions 5 (4%), osteophytes 16 (14%).

DISCUSSION

The pattern of articular cartilage degeneration in the elbow was first described almost forty years ago

in post- mortem anatomical studies (1). Repeated by others, all studies have shown that advanced degenerative changes can develop in the radio-capitellar (lateral) compartment of an elbow joint in which the humero-ulnar (medial) compartment remains remarkably well preserved (2,3,5). However, as the medical history of the elderly subjects studied was not recorded, the clinical significance of these findings remained unknown.

The most vulnerable area of articular cartilage, and therefore the first area subject to degenerative change, appears to be the medial radial head and the apex of the capitellum (5). These areas are covered with softer articular cartilage (10). Radial loading is increased in extension (7) and these softer areas therefore are more vulnerable during normal carrying. Our arthroscopic findings suggest that lateral compartment degenerative change is a distinct clinical entity which has not previously been demonstrated in a symptomatic, relatively young population. It begins in relatively young patients in whom the x- ray appearance may be normal or near normal.

Table I. — Arthroscopic findings of cartilage loss in the radial head and capitellum in patients with a history of trauma

No.	Age (years)	Cartilage loss Radial head	Cartilage loss capitellum
1	58	Grd0	Grd0
2	51	Grd0	Grd0
3	60	Grd0	Grd0
4	50	Grd2	Grd2
5	70	Grd0	Grd0
6	22	Grd0	Grd0
7	48	Grd0	Grd0
8	50	Grd2	Grd0
9	55	Grd2	Grd0
10	30	Grd0	Grd0
11	40	Grd0	Grd0
12	48	Grd0	Grd0
13	60	Grd2	Grd0
14	45	Grd2	Grd0
15	41	Grd0	Grd0
16	41	Grd0	Grd0
17	45	Grd2	Grd2
18	25	Grd0	Grd0
19	40	Grd0	Grd0
20	38	Grd0	Grd2
21	38	Grd0	Grd2

Table II. — Shows the arthroscopic pathological findings

Degenerative changes	68
Common extensor origin inflammation	42
Radial head plica	21
Synovitis	98
Loose Bodies	19
Adhesions	5
Osteophytes	16

Unicompartmental lateral degeneration of the elbow demands consideration in the investigation and diagnosis of chronic lateral elbow pain. It is likely that in the past, many patients have been misdiagnosed as having chronic lateral epicondylitis. Normal plain radiographs are of no relevance in excluding the diagnosis. Figure 5 demonstrates the arthroscopic findings in a patient with severe lateral compartment degeneration, radiographic appearances are near normal (fig 6). Magnetic resonance imaging demonstrates well thick articular cartilage,



Fig. 5. — Arthroscopic picture of a 42-year-old male showing full thickness cartilage loss over both radial head and capitellum.



Fig. 6. — Radiograph of the same patient showing a well preserved joint.

but is less accurate for thin layers. Specialised techniques for MRI imaging these small areas with sufficient accuracy are not yet widely available (6).

CT arthrography is sometimes useful to delineate the articular cartilage pathology. CT arthrogram is of value in the assessment of the thin cartilage of the elbow (11). In the diagnosis of grade 3 and 4 lesions, the sensitivity/ specificity was 87/94% with CT arthrography (12). In an experimental setting multislice CT arthrography has got a limited value in the diagnosis of grade 2 articular cartilage lesions (12). Neither CT arthrography nor MRI is reliable or accurate enough to be any more effective than plain radiography alone in patients presenting with mechanical symptoms in the elbow (4).

Elbow arthroscopy has a clear role in this case, and should be considered in any resistant and

persistent lateral elbow pain. Several case series of arthroscopic treatment for lateral epicondylitis have commented on the presence of intra-articular pathology discovered at arthroscopy (2,9).

CONCLUSION

The clinical diagnosis of lateral epicondylitis is applied to a variety of pathologies involving the tissues of the lateral compartment of the elbow. This diagnosis is often applied to patients with degenerative changes (osteoarthritis). In our study we found that degenerative changes in the elbow are mainly confined to the lateral compartment.

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