SHORTENING OF THE RADIUS IN THE TREATMENT OF LUNATOMALACIA

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Seven patients with lunatomalacia have been treated by osteotomy to shorten the radius. The final clinical results were good in six out of the seven patients.

Since 1910 when Kienboeck described lunatomalacia, different types of operative treatment have been tried. On the basis of Hultén's theory of minus variation of the ulna (Hultén 1928), osteotomy for the purpose of equalisation has been attempted, either in the form of lengthening the ulna or shortening the radius. The effects of shortening the radius by osteotomy in seven patients with lunatomalacia are discussed.

MATERIALS AND METHODS

A total of seven patients (six men and one woman) were treated for lunatomalacia at the Hjørring Hospital between 1970 and 1976. The mean age of the patients was 37 years (range 25 to 54 years) and the mean follow-up time was 35 months (range 8 to 82 months). The condition was unilateral in all patients, and none reported any previous injury involving the wrist. Before the operation all the patients suffered pain in the wrist after use as well as being tender to palpation. Four patients also suffered pain when resting.

In all cases osteomalacia of the lunate bone was evident radiographically, but the ulna was found to be shorter than the radius in only four patients. Nevertheless all patients, irrespective of the length of the ulna, were treated by osteotomy to shorten the radius. A straight cylinder of bone five millimetres in depth, five centimetres proximal to the radiocarpal joint, was removed from the radius through a dorsal approach using an oscillating saw. Subsequently a stable compression osteosynthesis was performed and the wrist immobilised in a cast for four to six weeks (Figs 1 and 2).

RESULTS

All seven patients were examined for mobility and pain in the wrist and for radiological changes in the lunate bone. Mobility of the wrist was compared with that of the normal wrist and was found to be improved in four patients and unchanged in two patients. One patient remained tender to palpation and had pain after use, but all the patients were relieved of pain at rest (Table 1).

Table 1. A comparison of the wrist before and after the operation to shorten the radius

<table>
<thead>
<tr>
<th>Numbers of patients</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility (degrees):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;60</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>60–120</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>&gt;120</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Palpatory tenderness</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Pain after use</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Pain at rest</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Fig. 1

Figure 1—Radiograph to show lunatomalacia in a patient with no difference in length between the ulna and radius. Figure 2—Radiograph of the same hand eight weeks after operation. The radius has been shortened by approximately five millimetres.
The radiographs at follow-up showed no change in the bone structure in five patients, regression of the degenerative changes in one and progression of these changes in another.

DISCUSSION

Since 1928 when Hultén postulated the theory of minus variation, good results have been reported by several authors after operative lengthening of the ulna (Desenfans 1953; Verbrugge and Verjans 1963; Besutti 1964; Tillberg 1968).

As pointed out by Viernstein and Weigert (1969) and Narakas and Ness (1970) the method for shortening the radius is more simple, and the results are equal to those of lengthening the ulna. Axelsson (1971, 1973) described a method where shortening of the radius was related to the minus variant of the ulna. He recommended division of the oblique dorsal radiocarpal ligament in order to give minimal load on the lunate bone.

In six out of our seven patients good clinical results were achieved by merely shortening the radius.

REFERENCES