Skier’s Thumb
Treatment, Prevention and Recommendations

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Summary

Skier’s thumb is an injury to the ulnar collateral ligament (UCL) of the thumb metacarpophalangeal joint (MCPJ) which has a serious risk of disabling chronic instability if not treated adequately. The lesion most often occurs in skiers when the ski pole forces the thumb to deviate radially. Strapless poles do not decrease the incidence of skier’s thumb, but if skiers are trained to discard the pole during a fall the risk might be reduced. Clinical and anatomical findings and the understanding of the injury mechanism show that stability testing (performed with the joint in full flexion) and additional standard radiographs remain the keystones in decision making in all MCPJ sprains. Protective splinting is advocated in stable, undisplaced avulsion fractures and incomplete ligamentous lesions of the UCL. However, surgery should not be delayed where there are displaced bony avulsion fractures, and where a complete ligamentous rupture is suspected because of a more than 30° stressed radial deviation and more than 20° difference compared with the uninjured side. Controlled active range of motion exercises can usually be started 3 to 4 weeks after the injury or open surgical repair, respectively. Protective splinting is continued until the sixth week and unrestricted use allowed 12 weeks following injury.
Table I. Percentage of injury types according to the classification of Louis et al., as modified by Hintermann et al.

<table>
<thead>
<tr>
<th>Reference</th>
<th>No. of patients</th>
<th>I: undisplaced fracture (%)</th>
<th>II: displaced fracture</th>
<th>III: stable ligament tear</th>
<th>IV: unstable ligament tear</th>
<th>V: volar plate avulsion*</th>
<th>VI: fragment and instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louis[17]</td>
<td>20</td>
<td>35</td>
<td>5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilhelm[10]</td>
<td>356</td>
<td>32</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hocker[9]</td>
<td>155</td>
<td>16</td>
<td>27</td>
<td>57b</td>
<td>57b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hintermann[12]</td>
<td>63</td>
<td>13</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Type V is an avulsion fracture of the volar plate without lesion of the ulnar collateral ligament and has not been included in reports on surgical treatment of skier’s thumb.

b The 57% refers to classes III and IV combined.

Acute injury to the ulnar collateral ligament (UCL) of the thumb metacarpophalangeal joint (MCPJ) is known as ‘skier’s thumb’, as the most common injury mechanism is a fall on the hand which holds the ski pole.[11] It is one of the most frequent injuries in alpine and cross-country skiing, accounting for up to one-third of all skiing injuries of the upper extremity.[12] Optimal hand function in most daily life and sporting activities requires stability of the thumb, and the UCL is most important to stabilise the MCPJ against radial deviation.[3,4] The seriousness of UCL lesions has to be considered in the primary care of all thumb MCPJ sprains, and careful evaluation and adequate treatment are necessary to avoid chronic instability.

1. Anatomy and Injury Mechanism

The anatomy of the thumb MCPJ and its stabilising structures have been described elsewhere.[4-6] Briefly, it is a hinge-like joint mostly capable of motion in flexion and extension, but allowing some radial and ulnar deviation. There is considerable variation in the total amount of flexion/extension (range 5° to 115°) and in the radial deviation which is possible between 0° and 45° if uninjured joints are stressed in slight flexion.[5] The UCL proper runs from the lateral side of the metacarpal head dorsal to the flexion axis to the volar base of the proximal phalanx. It is taut in flexion and relaxed in extension. The opposite is true for the accessory UCL, arising somewhat volarly to the UCL proper at the metacarpal head and inserting at the fibrocartilaginous volar plate.[6] The collateral ligaments are covered by the adductor aponeurosis (fibres of the adductor pollicis tendon fusing with the fibres of the extensor aponeurosis). In acute lesions of the UCL it is only rarely ruptured, but the aponeurosis may become interposed between a distally torn UCL and the metacarpal head. This derangement is known as ‘Stener lesion’ and prevents effective healing as there is no contact between the proximal and the distal ligamentous or bony structures.[4]

Forceful radial deviation of the thumb most often occurs in skiers who fall on their outstretched hand while still holding the ski pole,[6-9] but it also occurs in sports where there is direct ball to thumb impact, such as handball or volleyball,[10] ice hockey,[11] and where there are falls on the outstretched hand with the thumb abducted even without holding any handle.[4] Lesions of the UCL comprise all degrees from simple sprain to complete rupture of the ulnar ligamentocapsular structures. The UCL can also be torn from its distal attachment with a bony fragment. These fragments are small usually (representing only part of the UCL-insertion) but occasionally involve a greater part of the articular surface. Ligamentous tears can be found in addition to bony avulsion fractures, so undisplaced fragments do not necessarily indicate a stable injury.[12] All distal avulsions inherit the risk of proximal displacement and consequent Stener lesion (table I). In about 10% of ligamentous lesions, the rupture is in the mid-substance of the UCL, but lesions at the proximal origin are only rarely found.[6,13]