Curettage without bone grafting for a simple bone cyst in the capitate

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ABSTRACT

Purpose. To review the outcome after intralesional curettage without bone grafting for simple bone cysts in the capitate.

Methods. Records of 12 hands in 10 consecutive females aged 14 to 21 (mean, 17.5) years who underwent intralesional curettage without bone grafting for a simple bone cyst in the capitate were reviewed. Clinical outcome was evaluated using the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire. Wrist/hand pain was assessed using the modified Mayo wrist score. Patient satisfaction, range of motion, and grip strength were self-evaluated as improved, unchanged, or worse.

Results. After a mean follow-up of 7.5 (range, 2.5–12.5) years, the mean DASH score was 12.3 (range, 0–25), and the mean modified Mayo wrist score was 85 (range, 70–95); the modified Mayo wrist score was excellent in 8 hands and good in 4 hands. All patients had bone union and preservation of capitate height. All patients had no pain except for 2 patients (4 hands) who reported pain after strenuous activity. All patients had improved range of motion, and all but 2 patients had improved grip strength.

Conclusion. Curettage without bone grafting for a simple bone cyst in the capitate is a sufficient and viable option.

Key words: cysts; capitate bone; curettage

INTRODUCTION

Simple bone cysts in the carpal bones usually occur in the lunate and scaphoid, and rarely in the capitate. The differential diagnosis includes post-traumatic cyst, aneurysmal bone cyst,1 avascular necrosis,2,3 intra-osseous ganglion cyst,4 osteoarthritic cyst, and tumour. This study reviewed the outcome after intralesional curettage without bone grafting for simple bone cysts in the capitate.
MATERIALS AND METHODS

Records of 12 hands in 10 consecutive females aged 14 to 21 (mean, 17.5) years who underwent intralesional curettage without bone grafting for a simple bone cyst in the capitate of the right (n=8) or left (n=4) hands between September 2000 and September 2010 were reviewed. Patients with other intra-osseous or extra-osseous lesions in the wrist/hand such as avascular necrosis, ganglion, osteoarthritic cyst, tumour, and injury were excluded.

All patients had pain over the capitate for 6 to 18 (mean, 12) months; none recalled any traumatic event. The cysts were rounded and within the capitate (closer to the dorsal than volar aspect), and their diameter ranged from 1–1.5 mm (n=6) to 1.5–2 mm (n=6). Passive and active wrist motion was painless and satisfactory; grip strength was weak.

Radiographs showed a radiolucent lesion with sclerosis within the capitate (Fig. 1a). Magnetic resonance imaging showed the lesion as hypointense in T1-weighted and hyperintense in T2-weighted images (Fig. 1b).

Intralesional curettage was performed through a 3-cm incision from the distal crease of the dorsum of the wrist just medial to the dorsal tubercle of the radius (Lister’s tubercle), near the radial sensory nerve and the radial artery branches. The superficial branches of the radial nerve were identified and retracted laterally. The dissection proceeded between the extensor pollicis longus (third compartment), the extensor digitorum communis, and the extensor indicis (fourth compartment) to expose the capitate. The exact location of the cyst was identified under image intensification and with the help of a Kirschner wire. The midcarpal joint capsule was preserved. The capsular function was preserved using a transverse recess between the dorsal surfaces of the capitate head and neck, the pole of the hamate, the dorsal midcarpal joint capsule, and the dorsal surface of the scaphoid distal to the dorsal ridge. The external vascular supply of the carpus is through transverse arches formed by the anastomosis of the radial, ulnar, and anterior interosseous arteries, whereas intra-osseous blood supply is through vessels entering the bone at ligamentous attachments on the palmar surface and through the dorsal surface. Blood supply to the proximal pole of the capitate is in a retrograde fashion and thus is preserved. A small window was made in the dorsal aspect of the capitate using a 2.5-mm drill bit for curettage of the cyst (Fig. 2).

Figure 1 (a) Radiographs and (b) magnetic resonance images of the wrist showing a radiolucent lesion with sclerosis within the capitate that is hypointense in T1-weighted and hyperintense in T2-weighted images.

Figure 2 A window is made in the dorsal aspect of the capitate.
The wound was closed in layers, and a below-elbow plaster-of-Paris cast was applied. Histopathology of the cyst showed a thin fibrous wall enclosing areolar tissue, fibroblasts, osteoclasts, and a few giant cells (Fig. 3).

Postoperatively, active and passive range of motion exercises of the fingers were allowed at day 1. Sutures were removed at week 2, and the cast was kept on for further 6 weeks and then replaced with a removable plastic splint. Active motion of the wrist was allowed.

Clinical outcome was evaluated using the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire, with a total score ranging from 0 (no disability) to 100 (severe disability). Wrist/hand pain was assessed using the modified Mayo wrist score, with a total score ranging from 90–100 (excellent), 80–89 (good), 65–79 (fair), to <65 (poor). Patient satisfaction, range of motion, and grip strength were self-evaluated as improved, unchanged, or worse.

RESULTS

After a mean follow-up of 7.5 (range, 2.5–12.5) years, the mean DASH score was 12.3 (range, 0–25), and the mean modified Mayo wrist score was 85 (range, 70–95); the modified Mayo wrist score was excellent in 8 hands and good in 4 hands (Table). All patients had bone union and preservation of capitate height (Fig. 4). All patients had no pain except for 2 patients (4 hands) who reported pain after strenuous activity. All patients had improved range of motion, and all but 2 patients had improved grip strength.

DISCUSSION

In our patients, intralesional curettage without bone grafting followed by 8 weeks of immobilisation

<table>
<thead>
<tr>
<th>Sex/age (years)</th>
<th>Pain</th>
<th>Range of motion</th>
<th>Grip strength</th>
<th>Disabilities of the Arm, Shoulder and Hand score</th>
<th>Modified Mayo wrist score</th>
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<td>Improved</td>
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<td>Improved</td>
<td>10</td>
<td>90</td>
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<td>Improved</td>
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<td>90</td>
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<td>Improved</td>
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<td>85</td>
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<tr>
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<td>Improved</td>
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<tr>
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<td>Improved</td>
<td>25</td>
<td>70</td>
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<tr>
<td>F/18</td>
<td>On strenuous activity</td>
<td>Improved</td>
<td>Improved</td>
<td>10</td>
<td>90</td>
</tr>
</tbody>
</table>

Table: Postoperative outcome after curettage without bone grafting for a simple bone cyst in the capitate
achieved bone healing and good-to-excellent functional outcome. Bone grafts harvested from a donor site may result in painful scarring, infection, haematoma, fracture, and gait disturbance. Removal of the involved bone is unnecessary. Curettage without bone grafting for a simple bone cyst in the capitate is a sufficient and viable option.

**DISCLOSURE**

No conflicts of interest were declared by the authors.

**REFERENCES**