Extensor Digiti Minimi Transfer for the Treatment of an Unstable Metacarpophalangeal Joint in Thumb Polydactyly Without Thenar Atrophy

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Received: 9 January 2015 / Accepted: 14 January 2015 / Published online: 22 January 2015
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Dear Sir,

As treatments for the laxity of metacarpophalangeal (MCP) joint in hypoplastic thumb, joint capsular plication, free tendon graft or MCP arthrodesis have been performed [1]. In addition, transfer of abductor digiti minimi [2] or ring finger flexor digitorum superficialis [3] have been used to provide thumb opposition and restore MCP joint stability. In the present case, we used extensor digiti minimi (EDM) transfer to treat MCP joint instability due to ulnar collateral ligament laxity in a patient with thumb polydactyly without thenar muscle atrophy.

An 11-year-old girl who was naturally right thumb polydactyly with floating ulnar thumb had a thumb plasty at the age of five. But she was bothered by an unstable MCP joint due to ulnar collateral hypoplasia (Fig. 1a). Six years later from primary operation, she underwent a second surgery to improve joint instability and outer appearance of the thumb. The MCP joint instability was corrected by an EDM transfer, which involved fastening the end of the transferred tendon to the ulnar side of the MCP joint at the bottom of proximal phalanx and at the metacarpal head (Fig. 2). At 10 months postoperatively, the appearance of the thumb was improved and the MCP joint was stable (Fig. 1b).

The EDM transfer procedure was initially reported for restoration of thumb adduction in ulnar nerve paralysis [4], but MCP joint stability could be achieved by changing the distal tendon insertion as this case. We consider there are some

advantages to this procedure: 1) the MCP joint achieves maximum stability in the opposite position, because the tension of the transferred EDM tendon increases with the increase in the angle of opposition, 2) the mobility of the MCP joint is not impaired, 3) the strength of side pinch could be increased by increasing the thumb adduction force. On the other hand, the disadvantages of this procedure include that this transfer would position thumb in extension and adduction, and a decrease in the extension force of the little finger. The former demerit barely mattered in actuality, because we think the tension of transferred EDM is not strong in the rest position.

Fig. 1 **a:** Preoperative side pinch. The MCP joint was unstable due to hypoplasia of the ulnar collateral ligament. **b:** Postoperatively, the MCP joint remained stable when the side pinch was performed

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Fig. 2 A diagram of the EDM transfer and tendon insertion

And the latter demerit could be partially prevented by suturing the distal cut end of EDM to extensor digitorum communis (Fig. 2). This procedure is simple and effective for the treatment of MCP joint instability due to ulnar collateral hypoplasia in congenital anomalies.

Acknowledgement None.

Conflict of Interests None declared.

Funding Statement No benefit in any form has been or will be received related directly or indirectly to the subject of this article.

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