



Outcome of simultaneous surgical treatment of hyperextension of metacarpophalangeal and basal joint osteoarthritis of the thumb

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The effect of correction of metacarpophalangeal (MCP) joint hyperextension on the outcome of reconstructive surgery for basal joint osteoarthritis of the thumb was studied. Impairment, pain and satisfaction were similar after a combined surgical treatment of MCP hyperextension and basal thumb osteoarthritis in 33 patients, as in a series of 233 patients at the same institution after osteoarthritis surgery with a normal MCP joint.

Keywords : carpometacarpal joint ; thumb ; metacarpophalangeal joint ; hyperextension ; surgery.

INTRODUCTION

A hyperextension/adduction deformity commonly occurs at the metacarpophalangeal joint (MCP) of the thumb with advanced stages of carpometacarpal osteoarthritis. Failure to recognize and treat the metacarpophalangeal deformity may result in continued pain and poor function (1). It is generally accepted that hyperextension of more than 30° is an indication for surgery. The purpose of this study was to evaluate the outcome of simultaneous treatment of both deformities : trapeziectomy for the carpometacarpal (CMC) joint and arthrodesis or capsulodesis of the metacarpophalangeal joint.

MATERIAL AND METHODS

The study was designed as a single centre retrospective study. We analysed the outcome of a combined trapeziectomy and ligament reconstruction/tendon interposition (LRTI) procedure for osteoarthritis of the CMC, with correction of MCP hyperextension, performed between January 2000 and December 2011.

We reviewed patient groups for sex, side, age, length of follow-up.

The LRTI was performed according to the description of Burton & Pelligrini (1,9) ; we used the whole flexor carpi radialis (FCR) tendon rather than a strip, and patients were allowed to mobilize immediately post-operatively. The MCP joint was fused and fixed with two K-wires in 5° of flexion or the sesamoids were fused to the neck of the metacarpal according to Tonkin *et al* (10).

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Fixation was done with bone anchors and the MCP was temporarily transfixed with a K-wire for 5 weeks. When hyperextension did not exceed 30° only a trans-articular pinning of the MCP in 15° for 6 weeks was performed.

There were 33 patients with 36 procedures for MCP hyperextension : 30 women, 3 men with a mean age of 60 years (range : 46 to 73) ; five had a simple transarticular pinning for 6 weeks, 21 had a capsulodesis according to Tonkin *et al* (10) and 10 had an arthrodesis.

They were compared to the group of 233 patients (285 procedures) reported in a previous paper (11).

A self-assessment questionnaire was sent to all patients. The outcome of the procedure was evaluated with a QuickDASH score, the Nelson hospital score (NHS) (2) for osteoarthritis of the thumb and a VAS (visual analogue score) for pain and VAS for satisfaction. (QuickDASH score of 0 means no disability, 100 maximal disability ; NHS has a maximal score of 100 ; VAS pain of 0 was no pain, 10 was extreme pain, VAS satisfaction was evaluated on a scale of 100) Student's test was used to determine significance ; $p < 0.05$ was considered as significant.

RESULTS

The effect on those patients with both CMC osteoarthritis and treated MCP hyperextension were

analysed separately (Table I). The Quick DASH score, patient satisfaction and the NHS were not significantly different between both groups. Patients who had MCP hyperextension treated, reported significantly less pain.

Outcome after MCP capsulodesis versus arthrodesis did not demonstrate a significant difference (Table II), but numbers were too small to draw definite conclusions.

DISCUSSION

Only a few retrospective case series have studied the management of MCP hyperextension in patients with CMC osteoarthritis. Some authors prefer arthrodesis of the MCP (6), some perform an fusion between sesamoids and metacarpal (10) and others describe soft tissue procedures (4,5). Concomitant MCP surgery had no negative correlation with outcome. A previous study in our institution (3) concluded that preoperative MCP hyperextension has a negative prognostic value for outcome. The study of Poulter and Davis (8) however concluded that the inferior outcome seems to be related more to the presence of MCP hyperextension than to its treat-

Table I. — Analysis of the procedures on MCP and CMC versus the CMC only

	LRTI alone (11) Mean (SD)	LRTI + MCP correction Mean (SD)	
N° of thumbs	233	36	NS
Age (years)	57	60	NS
Quick DASH	28 (24.71)	21 (17.00)	NS
NHS	74 (27.00)	83 (14.69)	NS
VAS pain	2.2 (2.48)	1.3 (1.77)	$p = 0.04$
VAS satisfaction	76 (21.48)	78 (23.03)	NS

NS = not significant.

Table II. — Outcome according to type of hyperextension correction procedure

	MCP arthrodesis Mean (SD)	MCP capsulodesis Mean (SD)	MCP pinning Mean (SD)
Number	10	21	5
Quick DASH	21 (13.1)	23 (20.8)	21 (16.6)
NHS	84 (14.0)	80 (16.9)	79 (20.9)
VAS pain	1.7 (1.48)	1.4 (2.05)	1.4 (1.70)
VAS satisfaction	72 (29.3)	75 (19.6)	75 (25.1)

ment. They recommend to correct any hyperextension of the MCP greater than 35°. The findings in this survey are compatible with the conclusions of those two papers (3,8). A hyperextension seen at presentation before treatment has a negative prognostic value ; once treated the outcomes are not different than those without preoperative hyperextension. This is a plea for a low threshold for correction of any hyperextension of the MCP when treating CMC osteoarthritis.

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