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Complex made Simple...clinically relevant education by Judy C. Colditz, OT/L, CHT, FAOTA

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WHY DOES THE LITTLE FINGER ROTATE AFTER A DISTAL RADIUS FRACTURE?

ROTATION TOWARD THE RING FINGER

Recently I received a thought-provoking e-mail from Dr. Jun Wang who works in the Rehabilitation Department at the Wuxi Hand Surgery Hospital in Jiangsu Province, China. He wrote:

"I have several patients with distal radius fractures. They all have the same symptom that their small finger rotates and deviates toward ring finger, just like attached pictures illustrate. I don't know how to explain it, can you help me?"



Rotation of the little finger during flexion



Abducted and rotated posture of the little finger during extension

I wrote saying in my experience rotation of the little finger is a common occurrence following treatment of a distal radius fracture. I think it has more to do with immobilization than it does the injury, as I have seen this rotation when the hand is immobilized for other injuries.

MUSCLE IMBALANCE

Although I gave Dr. Wang a brief answer that immobilization creates a muscle imbalance in the little finger which resolves as the patient regains normal motion and strength, I spent some time considering the exact mechanism of this common presentation:

In the fingers the interosseous muscles are responsible for our ability to actively rotate the fingers at the MP joint. Although the anatomy is often variable, usually the little finger has only one interosseous muscle (the third volar interosseous) which approaches the radial side of the finger, thus having the ability to rotate the finger away from the other fingers.

Opposing the third volar interosseous muscle are three hypothenar muscles contributing to rotation in the direction toward the other fingers. Both the abductor digiti minimi (ADM) and the flexor digiti minimi (FDM) commonly insert distal to the MP joint, making them MP joint rotators. The third muscle, the opponens digiti minimi, does not commonly provide a rotational force at the MP joint since it inserts proximal to the joint. It does, however, provide a rotational force at the CMC joint together with the ADM and FDM previously mentioned.

The rotation of the little finger commonly seen

continued...

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is a result of three muscles creating rotation at both the MP and the CMC joints of the little finger with the opposing force being the 3rd volar interosseous muscle. I believe it is this two-joint rotation as well as the power of three (larger) muscles against one that creates this common presentation.

The amount of passive MP joint rotation in the radial direction increases as one moves toward the ulnar fingers. My conclusion is that rotation of the little finger toward the other fingers is the path of least resistance mechancially and is powered by a natural muscle power imbalance which favors this rotational direction.

The follow up question to this brief analysis would be: Is there anything we can do to prevent this common problem?

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