



BEYOND TENOSYNOVITIS: VOLAR PLATE PRESSURE "VPP": FIRST METACARPOPHALANGEAL JOINT INSTABILITY IN SMARTPHONE USERS.

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KEYWORDS :

Anatomy and Functional Role of the Volar Plate

The volar plate is a thick, fibrocartilaginous structure on the palm side of the MCP joint. Its main functions are:

- Limiting Hyperextension:** It acts as a static stabiliser to prevent the joint from bending backwards.
- Increasing Joint Surface:** Improving the congruency of the articular surfaces.
- Protection:** Shielding the joint from direct compressive force

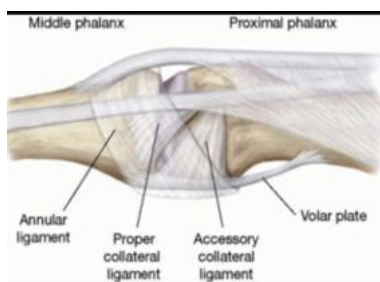


Figure 1: Anatomy of Metacarpophalangeal Joint.

Patho-mechanics of Mobile-Induced Pain

1. The "Cradle" Effect and Static Loading

When a mobile device is held in the left hand, the base of the phone often rests directly on the volar surface of the first MCP joint, creating a focal point of pressure. In contrast to dynamic movement, this static loading decreases blood flow to the fibrocartilage (ischemia) and leads to ongoing mechanical deformation of the volar plate's collagen fibres.

2. Hyperextension Stress

When reaching across the screen or balancing the device, the thumb is often mildly hyperextended. This posture increases tension on the distal volar plate. With repetition, micro-traction injuries and inflammation may result, a presentation referred to as 'volar plate pressure (VPP).'

3. Sesamoid Bone Compression

The first MCP joint contains two sesamoid bones within the tendons of the adductor pollicis and flexor pollicis brevis. Large and heavy mobile devices apply pressure to these bones at the volar plate, resulting in localised tenderness that is felt as pinching during flexion. Prolonged use intensifies the pressure.

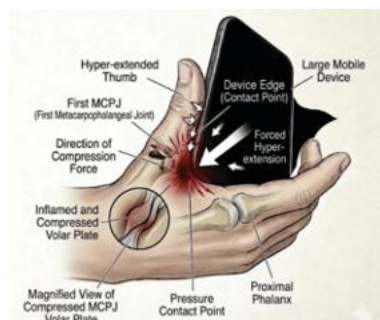


Figure 2: Mobile Device Induced Volar Plate Pressure.

Clinical Presentation

Most patients report dull, aching pain at the base of the thumb

palm. Key signs: point tenderness (sensitivity to palpation of the volar MCP joint), stiffness (difficulty initiating flexion after prolonged device use), and mechanical pain (increased discomfort with thumb extension).

Management and Pain-Reducing Strategies.

The aim is to reduce volar plate pressure (VPP) and preserve the joint's anatomical structure, the following interventions are recommended:

- External gripping aids:** Attaching a ring or socket to the back of the device to shift the load from the joint to the fingers, to reduce direct pressure on the MCP joints.
- Neutral position training:** Maintain the thumb in a relaxed "C-shape" with slight flexion by consciously avoiding a flattened or hyperextended posture during device use. This reduces tension on the volar plate.

Use both hands to hold and operate the device alternately, ensuring the load is distributed and minimising repetitive strain on the first MCP joint.

After prolonged device usage, apply an ice pack to the volar aspect of the first MCP joint for 10–15 minutes to help limit acute inflammation in the fibrocartilage.

CONCLUSION

The volar plate of the first MCP joint is a fibrocartilaginous structure, bordered by ligaments that facilitate thumb movement. Prolonged static compression from large, heavy mobile devices impairs thumb biomechanics, potentially causing acute pain and chronic joint instability. Patients with chronic inflammatory or metabolic rheumatological conditions are at higher risk for volar plate pressure. Awareness of this risk is essential for preventing chronic disability.

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