

## **Cardiac Evaluation after Carpal Tunnel Release in Patients with Tenosynovial Amyloidosis**

**Introduction** – Carpal tunnel syndrome (CTS) is a known extra-cardiac manifestation of amyloidosis. Transthyretin amyloid cardiomyopathy (ATTR-CM) is an under-recognized cause of heart failure in older adults. CTS typically presents 5-10 years prior to onset of cardiac symptoms, thus raising potential for early detection. The purpose of this study was to determine the prevalence of amyloid in tenosynovial biopsies in patients undergoing carpal tunnel release and characterize their subsequent cardiac work-up.

**Methods** – A retrospective review was performed involving patients who underwent CTR from September 2017 to March 2023. Prior to this period, a protocol had been established to obtain routine intraoperative tenosynovial biopsies. Tenosynovium was preserved in formalin and stained with Congo red for amyloid. Positive specimens were sent to an external laboratory for confirmation and subtyping by mass spectrometry. Men  $\geq 50$  years and women  $\geq 55$  years and patients undergoing bilateral CTR were included for analysis. Acute, traumatic, and revision cases were excluded.

**Results** - Of 135 patients who underwent CTR with tenosynovial biopsy, 22 (16.3%) demonstrated positive Congo red stain, and 13 (9.6%) were confirmed by the external laboratory with subtype analysis revealing transthyretin type amyloidosis (ATTR) for all patients. Patients with positive specimens were significantly older than those who tested negative (70.9 vs. 66.0 years, respectively), and positively increased by decade for both sexes. Of patients whose biopsies demonstrated positive Congo red stain, 12 (54.5%) underwent further cardiac evaluation including cardiac magnetic resonance imaging or technetium-99m pyrophosphate scintigraphy imaging. There were no complications from the biopsies.

**Conclusion** - We confirmed evidence of amyloidosis in the tenosynovium of 16.3% of men 50 years or older and women 55 or older who underwent CTR. All patients demonstrated ATTR on mass spectrometry analysis. Over half of patients with tenosynovial biopsy consistent with amyloidosis underwent further Cardiology evaluation and imaging. As these patients are at risk of developing cardiomyopathy, there is an opportunity for early detection, monitoring, and interventions known to improve outcomes.