

## ULTRASOUND – TEMPORAL ARTERY DOPPLER

### **PURPOSE:**

To evaluate temporal and axillary arteries for vasculitis (Giant Cell Arteritis).

### **SCOPE:**

Applies to all US Doppler studies of the temporal arteries performed in Imaging Services / Radiology

### **BILLING CODE:**

- 93882 Duplex scan of extracranial arteries; unilateral or limited study

### **INDICATIONS:**

- Signs or symptoms of temporal arteritis (Headaches, vision loss, jaw pain, fever, fatigue and weakness).
- Abnormal lab values indicating vasculitis (eg. increased ESR, LFTs, Alk phos, IgG, complement)
- Prior history of vasculitis, polymyalgia rheumatic or other rheumatologic condition
- Abnormal findings on prior imaging

### **CONTRAINDICATIONS:**

- No absolute contraindications

### **EQUIPMENT:**

- Linear array transducer with frequency ranges greater than 9MHz.

### **PATIENT PREPARATION:**

- None

### **EXAMINATION:**

#### **GENERAL GUIDELINES:**

A complete examination includes temporal arteries. If necessary examination of axillary arteries. If carotid artery evaluation is needed, a dedication US Carotid order may be required.

#### **EXAM INITIATION:**

- Introduce yourself to the patient/family
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page
- Place patient in supine position.

#### **TECHNICAL CONSIDERATIONS:**

- Review any prior imaging.
- One of the most important signs is the “hypoechoic halo”, a rim of uniform hypoechoogenicity surrounding a long segment of the artery.
- The halo may be best demonstrated with compressions.
- A halo thickness (from intimal to media) of 0.4 mm is sensitive though not specific. A thickness of 1.0 mm is highly predictive of arteritis.

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- Another important finding is areas of stenosis, which can be seen as areas of luminal narrowing with associated color Doppler aliasing. Occlusion can also be seen.
- Affected vessels may be significantly tortuous.

### **DOCUMENTATION:**

- TEMPORAL ARTERIES
  - TRANSVERSE, both RIGHT and LEFT
    - Without/with color Doppler (dual screen):
      - Common superficial temporal arteries (prox; mid; distal)
      - Frontal branch
      - Parietal branch
    - Cine loop compression, without/with color Doppler (dual screen)
    - If hypoechoic halo identified, measure maximum thickness (one side of wall, outer to inner)
      - Confirm halo and assess length of affected vessel in LONG
    - If luminal narrowing/irregularity identified:
      - Use color Doppler to show turbulent flow/aliasing
      - Spectral Doppler waveform and peak velocity prior to, at, and beyond area of maximum stenosis.
    - At least one Duplex spectral Doppler waveform of each temporal artery
    - Additional Duplex Doppler waveforms of any suspected occluded segment
- AXILLARY ARTERIES
  - Repeat above assessment for each axillary artery if temporal arteries are found to be normal

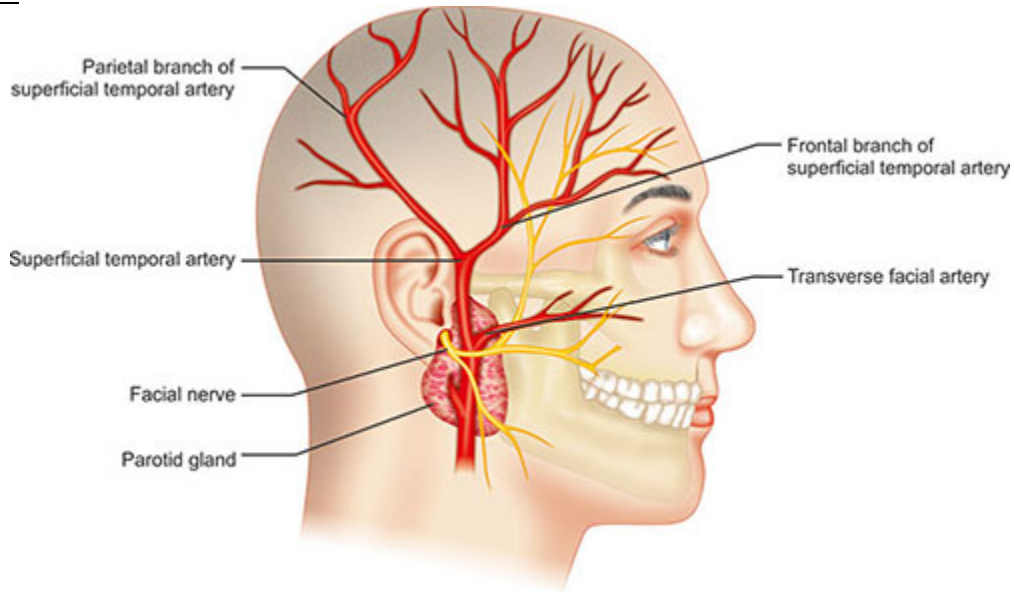
### **PROCESSING:**

- Review examination images and data
- Confirm data in Imorgon (if applicable)
- Document relevant history and any study limitations.

### **REFERENCES:**

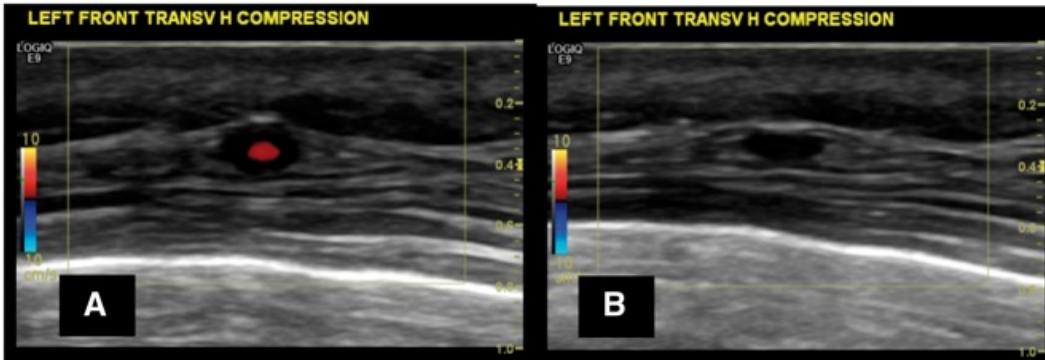
- Ultrasound in the diagnosis and management of giant cell arteritis. Wolfgang A. Schmidt. Rheumatology, volume 57, Issue supplement. 2./Feb 2018. Pgs ii22-ii31, <https://doi.org/10.1093/rheumatology/key44>
- Diagnostic performance of temporal artery ultrasound for the diagnosis of giant cell arteritis: a systematic review and meta-analysis of the literature, Rinagel M. et al. Autoimmunity Reviews 2019, 18(1), 56-61, <https://doi.org/10.1016/j.autrev.2018.07.012>

**APPENDIX:**



Techniques in Ophthalmic Surgery, Chapter 108-Giant Cell (Temporal) Arteritis

**Halo Sign (without/with compression)**



- A halo thickness (from intimal to media) of 0.4 mm is sensitive though not specific. A thickness of 1.0 mm is highly predictive of arteritis.

**Luminal Irregularity**



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## CHANGE HISTORY:

<b>STATUS</b>	<b>NAME &amp; TITLE</b>	<b>DATE</b>	<b>BRIEF SUMMARY</b>
<b>Submission</b>	Allyson LaSalle, RDMS, RVT Monica Morgan, RDMS, RVT	<b>05-27-2020</b>	Submitted
<b>Approval</b>	David Fetzer, MD	<b>05-30-2020</b>	Approved
<b>Review</b>			Reviewed
<b>Revisions</b>	David Fetzer, MD	<b>6-10-2020</b>	Specified need for at least one Duplex spectral waveform for each side