
Yi How Kao, M.D. State College, P.A.

STUDY DESIGN & RATIONALE

- Patients with previous tonsillectomy underwent a top - down approach inclusive of F.E.S.S. and TCRFVR of the tongue base.
- Patients with tonsillar hypertrophy underwent a bottom - up approach inclusive of tonsillectomy, modified UPPP (PKUPPP) utilizing bipolar plasma knife and TCRFVR of the tongue base.

TRADITIONAL TCRFVR PROTOCOL

Lesions are placed roughly around the circumvallate papillae or what is best visualized based on patient anatomy (opening of mouth & or tongue size). The midline is straddled and lesion generation is marched anteriorly in 2 cm increments. 6-8 lesion sites seem to be most common amongst practitioners (1800-2400 joules Rapid Lesion Mode).

Improvement of RDI is transient particularly where positional prolapse is dominant. Additionally, there is concern of tongue paresis, possibly a result of tongue flattening when distracted, bringing the lesion site closer to the tongue nerves. Airway obstruction has also been of historical concern with < 1% incidence.

KAO TCRFVR PROTOCOL

- TCRFVR is comparatively elegant with favorable outcomes across the pathologic continuum.
- Lingual tonsil reduction targets true obstructive region comparative to traditional protocol.
- Tongue nerves are unaffected due to increased distance from treatment sites.
- Clinically more challenging as visualization requires alternative methods.

Our study protocol preferred lesion formation in the lingual tonsil. Following the E.T. tube, the epiglottis is digitally located. Palpating inferiorly between the E.T. tube and tongue muscle, the hyoid bone is identified. Lingual tonsil is observed 1cm cephalad marking the Initial electrode insertion sites. Trans-nasal use of a flexible endoscope and flexible measuring tape can be used to finalize placement.

The dual channel handpiece is introduced between the epiglottis and tongue surface with electrodes sheathed. The safety stops are approximated straddling the midline. The handpiece is NOT typically bent however lifted toward the roof of the mouth so that electrodes penetrate the tongue muscle in the direction of the geniohyoid muscle. The safety stops should be in full contact with the tongue muscle after electrode deployment. Energy is delivered per manufacturers recommendations. Lateral right and left lesions are created 1 cm lateral to the initial midline lesion sites (a total of 4 - 6 linear lesions / 1200 - 1800 joules). (Figure 1)

The second line of 6 lesions are placed 2 cm anterior to the epiglottis in similar fashion. The last 2 lesions are placed 3 cm anterior to the epiglottis, straddling the midline when deployed (600 joules).

RESULTS

- 385 patients
  - 375 received TCRFVR treatment
    - 108 had 2nd TCRFVR treatment (O.R.)
    - 225 had post-op PSG
    - 160 yet to have post-op PSG
      - May not have returned do to success or failure

- 69% success across all 385 patients
- 79% success for the 225 / 2 stage group
  - 93% success mild OSA
  - 85% success moderate OSA
  - 59% success severe OSA
  - Success quantified as RDI reduced 50% & < 20

- 85% included nasal surgery (FESS)
- 76% included palate surgery (PKUPP)
- 97% included hypopharyngeal surgery (TCRFVR)
- BMI and age were better indicators of success than pre-op RDI alone
  - No exclusions of BMI in the study

NOTATIONS

- RAPID LESION mode / 3000 (10 sites) to 4200 (14 sites) joules total.
- No complications of abscess or airway compromise have been noted.
- Pre-operative: IV antibiotic
- Tongue prep: betadine
- No local anesthetic is typically used for the TCRFVR component
- No electrolyte site injection is required
- Analgesia
  - FESS + TCRFVR
    - Patients home the same day
    - Percocet as needed
  - Tonsil / PKUPPP + TCRFVR
    - IV morphine or hydrocodone liquid for Tonsil / PKUPPP component
    - Hydrocodone liquid upon discharge
    - < ½ patients stay 23 hrs
    - Minimal complaint for the TCRFVR component