To ensure VirusTC clinical staff maintain the highest standards of precision and diagnostic integrity while advancing our goal of scalpel-free medicine, please utilize the following checklist for all laser-based dental and oncological procedures.

I. Pre-Procedure: Software & Digital Mapping

- [ ] **Vector Optimization:** Verify that the digital surgical path is designed in CAD/Illustrator with a **0.001" stroke width**.

- [ ] **Shape Alignment:** Align the digital path with the physical boundary projected onto the patient's tissue.

- [ ] **Parameter Calibration:** Set initial parameters based on tissue density:
    - **Power:** 4–6 Watts (standard for oral mucosa).
    - **Speed:** 8 mm/s.
    - **Mode:** Gated Pulse or **Super-Pulse** (to minimize thermal relaxation time).

II. Intraoperative Protocol: Tissue Manipulation

- [ ] **Tension Application:** For soft tissue excisions, manually spread the tissue at a **90-degree angle to Langer's Lines**.

- [ ] **Stabilization:** Secure the spread tissue with surgical tape to maintain constant tension during computer-guided ablation.

- [ ] **The "Single Pass" Objective:** Aim to complete the ablation in one pass. Avoid repeated low-power passes, which increase cumulative thermal damage.

- [ ] **Orientation Marking:** Place a permanent marker or suture at the **12 o'clock position** before final excision to ensure accurate pathological orientation.

III. Specimen Handling & Stabilization

- [ ] **Immediate Fixation:** Submerge the specimen in **10% Neutral Buffered Formalin (NBF)** immediately upon removal.

- [ ] **Fixative Ratio:** Confirm a minimum ratio of **10 parts formalin to 1 part tissue**.

- [ ] **Targeted Labeling:** Clearly mark the container as **"Laser Excision"** to alert the pathology lab to potential thermal artifacts.

IV. Post-Procedure Troubleshooting (The Feedback Loop)

- [ ] **Charring Inspection:** Inspect the specimen for carbonization. If the "char" layer exceeds **0.5 mm**, diagnostic integrity is at risk.

- [ ] **Parameter Adjustment:** If significant charring or "streaming" nuclei (thermal stretching) are reported by the pathologist:
    - **Increase** programmed speed (mm/s).
    - **Switch** to a higher pulse frequency to allow for cooling.

- [ ] **Pathology Coordination:** Request "Deeper Sectioning" (levels) if the primary surface is too charred for a definitive assessment.

V. Maintenance & Quality Control

- [ ] **Focal Point Calibration:** Re-calibrate the laser focal point weekly or if incision widths deviate from programmed specs.

- [ ] **Safety Equipment:** Confirm all staff and patients are wearing wavelength-specific protective eyewear before activating the laser.

Administrative Note: This protocol is a live document of VirusTC and the University of Washington Surgical Oncology series. Any deviations must be documented and reviewed by the Chief Medical Officer.