# CVAT Annotation Guide: Labral Repair Surgical Video

## Purpose

This guide outlines the annotation strategy for labeling labral repair surgical videos in CVAT. The goal is to generate accurate phase-level timestamps and event-level tags to support automated performance analysis and skill profiling.

## Annotation Modes

• Use TRACK mode for **phases** (span-based annotations).

• Use SHAPE mode for **events** (point or short box annotations).

## Phase-Level Annotations

Annotate each occurrence of a phase using a new track. Do not reuse tracks across repeated actions.

* Portal Placement: Start: Spinal needle enters view. End: Removal of cannula trocar.
* Diagnostic Arthroscopy: Start: Scope begins sweeping. End: Evaluation complete (scope stops moving).
* Labral Mobilization: Start: Insertion of elevator instrument End: Removal of elevator.
* Glenoid Preparation: Start: Insertion of shaver/burr for prep. End: Burr removal.
* Anchor Placement: Start: Anchor tool enters view. End: Anchor guide removed.
* Suture Passage: Start: Suture passer enters view. End: Suture passed through tissue.
* Suture Tensioning: Start: Suture passed through tissue. End: Labrum fixated.
* Final Inspection: Start: Camera sweep begins. End: Scope withdrawn or case end.

## Event-Level Annotations

Tag these events using SHAPE mode (short box or tag). They are timestamped and later matched to the nearest enclosing phase.

* Suture Attempt: Each individual suture pass attempt. Tied to Anchor and attempt number (eg Anchor: 2, Attempt 1, Outcome: Success) Attribute: Outcome (Success/Fail).
* Anchor Reposition: Anchor adjusted but not removed.
* Anchor Pullout: Anchor removed due to instability.
* Bleeding: Bleeding observed during procedure. Attributes: Severity.

## Best Practices

* Annotate each anchor placement and suture passage individually.
* Do not combine multiple events into one track or label.
* Use consistent timing logic across videos.
* Attributes should be filled in during the annotation if applicable.
* Save annotations regularly.

## File Export

After annotation is complete, export the task as 'CVAT for Video 1.1' (XML format). This file will be used by the structured parser to calculate phase durations, event counts, and generate synthetic training data.