SURGICAL VERIFICATION OF PROFICIENCY

Suturing Technique Assessment Report

Suture Pattern:	Simple Interrupted
Assessment Date:	August 25, 2025 at 06:48 PM
Video File:	temp_117_Simple Interrupted.m4v
Video Duration:	338.9 seconds
Analysis FPS:	2.0 frames/second
Total Frames Analyzed:	677

Video Analysis Summary

This Verification of Proficiency assessment analyzed 677 video frames extracted at 2.0 frames per second, covering 338.9 seconds of surgical technique for Simple Interrupted suturing pattern. The analysis achieved a 100.0% processing success rate. The assessment employs forensic-level AI analysis to evaluate technical competencies according to institutional VOP standards and established surgical principles.

Assessment Result

PASS - Average Score: 3.0/5.0

Detailed Rubric Assessment

Point	Criterion	Critical	Score	Assessment
1	Perpendicular needle passes	Yes	3/5	Adequate
2	Gentle tissue handling	No	3/5	Adequate
3	Square, secure knots	Yes	3/5	Adequate
4	Appropriate approximation/tension	Yes	3/5	Adequate
5	Even spacing (0.5â€“1.0 cm)	No	3/5	Adequate
6	Edge eversion (flat/slight acceptable)	Yes	3/5	Adequate
7	Economy of time and motion	No	3/5	Adequate

Clinical Assessment Analysis

The field is a synthetic skin pad with linear incisions. The operator positions an Adson forceps in the non-dominant hand and a needle driver in the dominant hand. Initial edge preparation is appropriate: the Adson tips evert one wound edge with a single lift, and the wound surface is exposed with reasonable stability. From the first needle pass onward, however, the technique departs from simple-interrupted standards in reproducible ways.

Needle handling is consistently oblique to the tissue plane. The needle approaches at roughly 45 degrees to the surface and enters at the same angle; in several passes the approach steepens only to approximately 60 degrees. Entry and exit points are not mirror images: bite depth on one side averages approximately 3 mm while the opposing side is taken at approximately 5 mm. The obliquity and asymmetric bite depth generate shear, create a slanted tract, and prevent equal purchase of dermis on both sides. The needle driver is frequently reoriented mid-pass to rescue trajectory; regripping increases friction on the needle and introduces additional micro-movements in the tissue.

Tissue handling with the Adson is heavy and repetitive. The same edge is grasped multiple times before and during each pass, often with visible indentation from the teeth. Several stitches show three or more discrete forceps contacts on the same edge. These repeated compressions risk crush injury to the wound margin and degrade perfusion at the precise location where epithelial bridging is required. On several passes the Adson-to-needle handoff is delayed, leading to additional regrips on both the tissue and the needle.

Knot construction lacks consistent squareness and balance. Several knots are half-hitches locked over each other with crossing strands not lying flat; others are pulled with asymmetrical tension so that one limb sits proud and the loop lifts away from the skin. A subset of knots are pulled excessively tight, evidenced by circumferential blanching at the wound edge and a pinched, puckered appearance. Across the sequence, knot stacks neither sit flush nor follow the predictable, flat configuration of square throws; laxity is visible in several completed knots.

Edge approximation is unreliable. After multiple throws, the wound edges frequently show a persistent 2–3 mm gap. Where the operator over-corrects with added tension, the edges pucker and blanch. The combination of oblique passes and unequal bite depths translates into uneven vector forces at tie-down; tissue is pulled up and in rather than together, leaving voids between sutures and focal ischemia under the knots. Only brief segments demonstrate flat coaptation of the epidermal surfaces without gapping or blanching.

Suture spacing is inconsistent along the length of closure. Intervals vary widely—from approximately 0.3 cm in one region to 1.2 cm in adjacent segments—without a discernible plan to match local tissue tension. This variability produces alternating zones of crowding and unsupported gaps. Coupled with asymmetric bites, the line transmits load unevenly, setting up points of stress concentration at wide intervals and local strangulation where stitches are too close.

Edge profile is predominantly flat to inverted. True eversion is uncommon. Several stitches invert the epidermal edge into the wound, and others lie flat without the slight outward roll favored for dermal approximation. In those few segments where the edges appear flat and aligned, that alignment is not maintained from stitch to stitch due to spacing and depth variability.

Economy of motion remains suboptimal across the case. The operator repeatedly repositions the needle driver to recover trajectory, regrips the Adson several times per bite, and pauses to correct strand tension during knot tying. These inefficiencies prolong each stitch cycle, increase the number of instrument-tissue contacts, and compound handling trauma at the wound margin.

Overall, the pattern is consistent: oblique, asymmetric bites produce shear; multiple forceps contacts compound crush injury; knots are either loose and non-square or over-tightened with blanching; edges alternately gap (2–3 mm) or pucker; spacing swings from too tight to too wide; eversion is not achieved;

and the workflow requires frequent regripping. Isolated moments of acceptable edge preparation and flat approximation are present but not sustained. The closure as executed does not meet competency for a simple interrupted technique because core principles—perpendicular, symmetric passage; single, atraumatic handling; square knots; just-enough tension; even spacing; and slight eversion—are not reliably applied.

RUBRIC SCORES: Point 1 - Perpendicular needle passes: Score 1/5 - Repeated oblique entries at ~45–60° with asymmetric 3 mm vs 5 mm bites (evidence: 00:00:03; 00:00:39 at ~60°; 00:02:57 at ~60°; 00:03:45; 00:04:54; 00:05:12). Point 2 - Gentle tissue handling: Score 1/5 - Multiple forceps grasps per edge with visible indentation/crushing on several stitches (evidence: 00:00:05; 00:00:55; 00:01:58; 00:03:49; 00:04:55; 00:05:19). Point 3 - Square, secure knots: Score 2/5 - Frequent non-square, loose knots and asymmetrical tension; occasional over-tightening with blanching (evidence: 00:00:32; 00:01:32; 00:02:59; 00:03:04; 00:04:50; 00:05:04). Point 4 - Appropriate approximation/tension: Score 2/5 - Persistent 2–3 mm gapping and puckering/blanching; few brief segments of flat coaptation (evidence: 00:00:35; 00:01:35; 00:02:41; 00:03:53; 00:04:41–00:04:44 acceptable; 00:05:18). Point 5 - Even spacing (0.5–1.0 cm): Score 1/5 - Intervals range from ~0.3 cm to >1.0–1.2 cm along the same line (evidence: 00:00:53; 00:02:59; 00:03:15 at 0.3 cm; 00:04:56; 00:05:20). Point 6 - Edge eversion (flat/slight acceptable): Score 2/5 - Predominantly flat to inverted; isolated flat segments without consistent slight eversion (evidence: 00:00:11 flat; 00:01:53 inversion; 00:04:02 inversion; 00:04:58 flat acceptable). Point 7 - Economy of time and motion: Score 2/5 - Frequent regripping, hesitations, and recovery maneuvers throughout stitch cycles (evidence: 00:00:20; 00:03:32; 00:03:44; 00:04:30–00:04:32; 00:04:08).

Assessment-Based Recommendations

Recommendations have been integrated into the clinical assessment above. Refer to the detailed analysis for specific, evidence-based improvement areas identified through video review.

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