

Prospective Comparative Evaluation

xchange™ vs LMA

Key Findings

Across 11 same-provider procedural anesthesia cases, the evaluation identified a consistent set of observed clinical and operational differences. These findings are summarized here before the report examines each endpoint in detail.

~51%

**SHORTER OBSERVED AIRWAY
ESTABLISHMENT TIME**

1:28 xchange™ vs 3:00 LMA

5.1 min

**SHORTER OBSERVED TIME
ANESTHESIA START TO INCISION**

4.4 vs 9.5 min

3.8 min

**SHORTER OBSERVED TIME
ROOM ENTRY TO INCISION**

11.0 vs 14.8 min

4 of 5

**CONSISTENT EtCO2
THROUGHOUT THE CASE**

vs 0 of 6 LMA

5 of 5

**MAINTAINED SpO2 >=90%
DURING ACTIVE SUPPORT**

vs 4 of 6 LMA

12.2 min

**SHORTER OBSERVED PACU
TIME**

39.6 vs 51.8 min

PATIENT EXPERIENCE

0 **THROAT DISCOMFORT***
vs 6 LMA

0 **HOARSENESS***
vs 5 LMA

0 **DENTAL / ORAL
COMPLICATIONS***
vs 2 LMA

OVERALL OBSERVATION

The direction of the observed findings was consistent across airway establishment, OR workflow, monitoring visibility, oxygenation during active support, postoperative comfort, and recovery utilization.

ECONOMIC CONTEXT

~\$294

OR-time cost equivalent / case

Based on the 5.1-minute observed difference and a published California hospital OR-cost benchmark of \$57.71/min.

100 CASES

~\$29.4K

500 CASES

~\$147.2K

1,000 CASES

~\$294.3K

The following pages examine each finding in detail.

Results are descriptive and facility-specific observations from 11 cases and should not be interpreted as proof of superiority or causation. *Postoperative symptom documentation was available for 4 of 5 xchange™ cases. Economic figures are benchmark-based cost equivalents, not measured or guaranteed savings.

01 | EVALUATION DESIGN + OR WORKFLOW

A Real-World, Same-Provider Comparison

The same definitions and endpoints were applied across both cohorts; missing data were not imputed.

DESIGN

Prospective comparative clinical evaluation

SETTING

ASC, Southern California

TOTAL CASES

11 total: 6 LMA | 5 xchange™

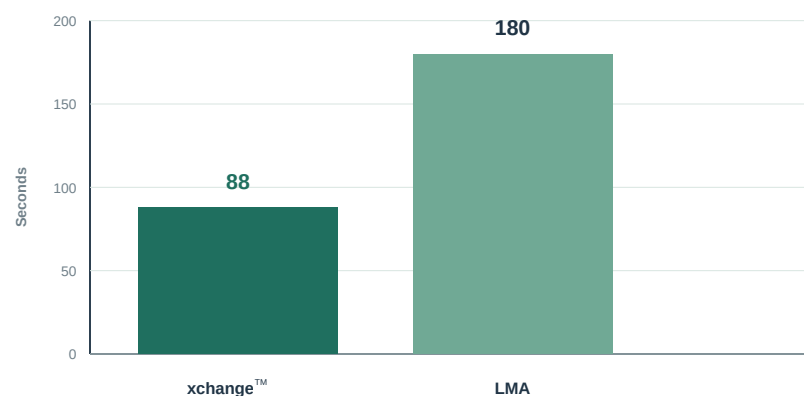
PROVIDER

Same-provider evaluation

Airway Establishment

Among cases with valid timestamps, observed airway-establishment time was 1 minute 28 seconds (88 seconds) with xchange™ versus 3 minutes (180 seconds) with LMA, approximately 51% shorter. One LMA case had an unresolved timing discrepancy and was excluded from this endpoint.

AIRWAY-ESTABLISHMENT TIME



OBSERVED DIFFERENCE

Airway support was established 92 seconds sooner on average with xchange™ in cases with valid timestamps.

OR Workflow Timing

The case forms also captured room entry, anesthesia start, and incision. Both time intervals are shown because they answer different workflow questions.

ANESTHESIA START TO INCISION



ROOM ENTRY TO INCISION



02 | MONITORING + AIRWAY STABILITY

Clinical Visibility and Observed Airway Events

EtCO₂ consistency, oxygenation, and airway interventions were evaluated during the assigned airway strategy.

EtCO₂ Monitoring Reliability

xchange™ : 4 of 5 cases maintained consistent EtCO₂ monitoring throughout the case. One case required EtCO₂ troubleshooting. LMA: 0 of 6 cases maintained consistent EtCO₂ monitoring throughout the entire case; interruptions were documented in all 6.

MAINTAINED CONSISTENT EtCO₂ THROUGHOUT THE CASE



PATIENT-SAFETY RELEVANCE

Consistent EtCO₂ visibility supports continuous assessment of ventilation and earlier recognition of change. This evaluation documents monitoring consistency; it does not establish a reduction in adverse events.

0/6 does not mean no EtCO₂ reading was obtained; it means no LMA case maintained a consistently reliable signal throughout the full case.

Oxygenation and Airway Interventions

5/5 xchange™

maintained SpO₂ ≥90% while xchange™ was actively supporting the patient, with 0 intraoperative airway interventions during active use.

4/6 LMA

maintained SpO₂ ≥90%. Two cases had documented SpO₂ <90%; one intraoperative event around 80% required jaw thrust and mask ventilation.

OFF-DEVICE OBSERVATIONS

Case 2: PACU SpO₂ 89% after xchange™ had been removed before PACU. Case 5: SpO₂ 82% during EtCO₂ troubleshooting after xchange™ had been removed. These are temporal observations; removal is not presented as causal.

Interpretive note: Events after xchange™ removal are reported separately to preserve chronology and avoid attributing causality that the evaluation cannot establish.

03 | PATIENT EXPERIENCE + RECOVERY

Postoperative Experience and PACU Utilization

Postoperative symptoms and recovery utilization provide a patient and operational view of the two cohorts.

Patient Experience

Documented postoperative symptoms are shown as direct xchange™ vs LMA counts for faster interpretation.

OBSERVATION	xchange™	LMA
Throat discomfort No documented xchange™ events*	0	6
Hoarseness No documented xchange™ events*	0	5
Oral / dental observations No comparable xchange™ observations	0	2

PATIENT EXPERIENCE SIGNAL

Across the documented postoperative observations, the xchange™ cohort had no recorded throat discomfort, hoarseness, or comparable oral/dental observations.

*Postoperative symptom documentation was available for 4 of 5 xchange™ cases. Values above represent zero documented events among the 4 cases with available symptom documentation. LMA oral/dental observations included a temporary crown/gum observation in one patient and coughing/ticklish throat after emergence in another; observations are descriptive and not presented as causal complications.

PACU Utilization

Arrival to actual discharge averaged 39.6 minutes with xchange™ versus 51.8 minutes with LMA.



04 | QTI CONCLUSIONS

What the Evaluation Showed

A synthesis of clinical, workflow, patient-experience, and recovery observations.

In this prospective 11-case evaluation, the xchange™ cohort showed favorable observed trends across airway establishment, OR workflow, EtCO2 monitoring reliability, oxygenation during active support, patient comfort, and recovery utilization compared with the LMA cohort.

CLINICAL + OPERATIONAL SIGNAL

AIRWAY ESTABLISHMENT	88 sec vs 180 sec	~51% shorter observed
ANESTHESIA START TO INCISION	4.4 min vs 9.5 min	5.1 min shorter observed
ROOM ENTRY TO INCISION	11.0 min vs 14.8 min	3.8 min shorter observed
EtCO2 VISIBILITY	4/5 vs 0/6	consistent throughout
RECOVERY	39.6 min vs 51.8 min	12.2 min shorter observed PACU time

ECONOMIC CONTEXT FOR THE 5.1-MINUTE WORKFLOW DIFFERENCE

\$57.71 published California hospital OR cost / minute

Ashrafi et al. | JAMA Surgery | 2026 | 278 California hospitals | FY2022 disclosures

~\$294 OR-time cost equivalent / case

100 ~\$29.4K | 500 ~\$147.2K | 1,000 ~\$294.3K

Overall Interpretation

No single endpoint from an 11-case evaluation should be viewed as proof of superiority. The strength of the QTI signal is the consistency of direction across multiple independent endpoints: airway establishment, time to incision, monitoring visibility, oxygenation while actively supported, postoperative comfort, and recovery utilization.

Limitations

Small, non-randomized, single-facility evaluation; unequal cohort sizes; limited postoperative symptom documentation in one xchange™ case; one unresolved LMA airway-establishment timestamp; potential patient and procedural differences between cohorts; and multiple factors beyond airway strategy may influence workflow and PACU discharge time. The workflow intervals did not separately timestamp device setup, positioning, prep, or draping. Results are descriptive, facility-specific, and should not be interpreted as causal or generalizable clinical evidence.

QTI TAKEAWAY

Across this 11-case evaluation, xchange™ demonstrated a consistent observed signal across airway establishment, OR workflow, monitoring visibility, patient experience, and recovery utilization.