

Neoadjuvant therapy increased the likelihood of extended resection—but did not independently worsen postoperative outcomes.

BACKGROUND & OBJECTIVE

Perioperative trials of novel therapies for resectable NSCLC have reported limited surgical detail. With neoadjuvant chemo-immunotherapy expanding operative indications, it remains uncertain whether treatment increases the need for technically complex resections or compounds postoperative risk.

OBJECTIVE
Compare extended versus standard lobectomy in real-world stage I–III disease; determine whether neoadjuvant therapy is associated with extended resection; and test whether it modifies perioperative outcomes after extended surgery.

METHODS

DESIGN
Retrospective international multicenter registry of consecutive stage I–III rNSCLC resections (2013–2023) across 4 high-volume centers using prospectively maintained databases.

COHORT
5,365 patients; 748 extended lobectomies (13.9%). Median age 64; 62% male; 72% smokers; 85% had stage I–II disease; adenocarcinoma accounted for 74%.

NEOADJUVANT THERAPY
Received by 7%: chemotherapy alone 54%, chemo-immunotherapy 40%, targeted therapy 5%, and chemo-radiotherapy 1%.

ANALYSIS
Inverse probability weighting using pretreatment age, comorbidities, clinical T and N stage. Weighted models assessed resection extent, perioperative outcomes and treatment-by-resection interaction.

ENDPOINTS
Complications, 30-/90-day mortality, conversion, hospital stay, operative time and likelihood of extended lobectomy.

INTERPRETATION

WHAT CHANGED?
Neoadjuvant therapy was associated with a 58% higher odds of extended lobectomy.

WHAT DROVE RISK?
Extended resection—not neoadjuvant therapy—was independently associated with major complications. Operative time and hospital stay were also longer after extended procedures.

WHAT DID NOT CHANGE?
Overall complication rates and 30-day mortality were comparable. No significant treatment-by-resection interaction was detected (p=0.38).

PROCEDURE-SPECIFIC SIGNALS
Bronchial sleeve complications were driven mainly by pneumonia, supraventricular arrhythmia and empyema. PA sleeve/double sleeve morbidity was dominated by atrial fibrillation and prolonged air leak.

CLINICAL IMPLICATION
Complex resection requires tailored planning, but neoadjuvant treatment alone should not be interpreted as an additional postoperative risk multiplier.

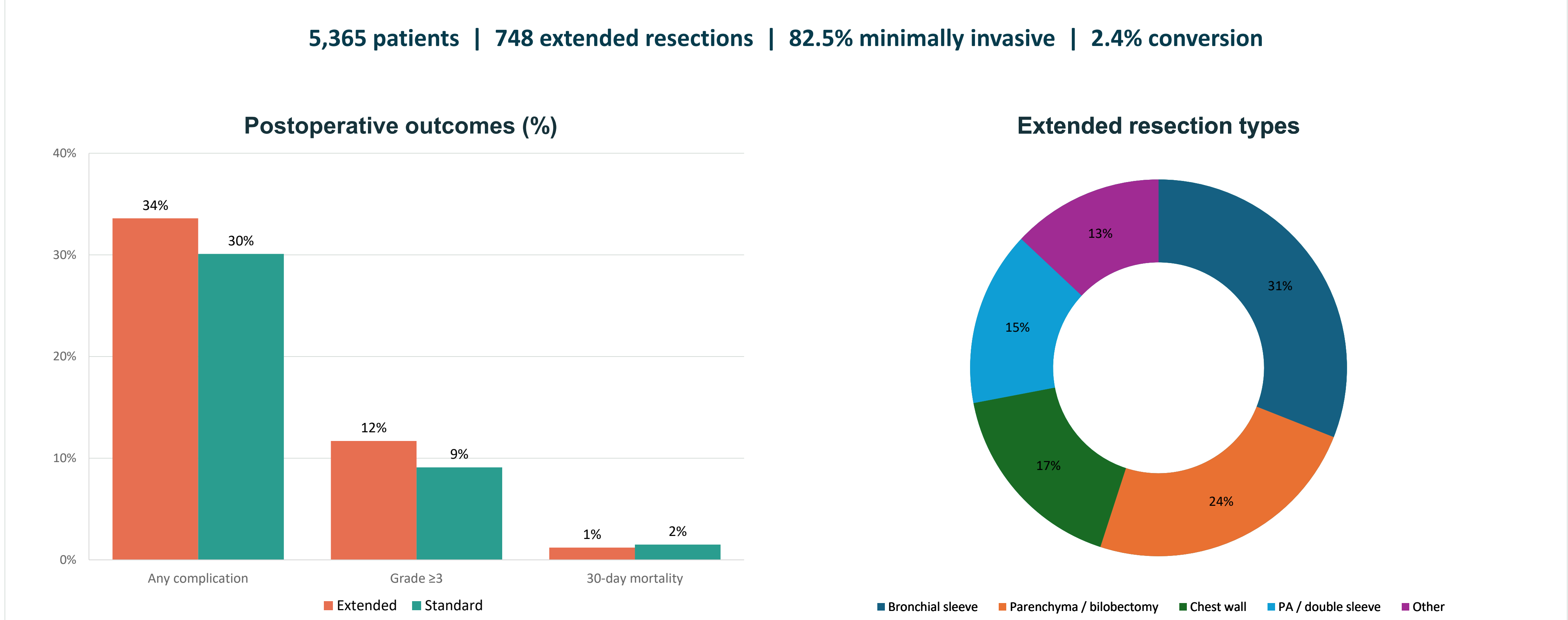
CONCLUSION

Extended lobectomy was associated with a higher rate of grade ≥3 complications than standard lobectomy, while overall morbidity and early mortality remained similar.

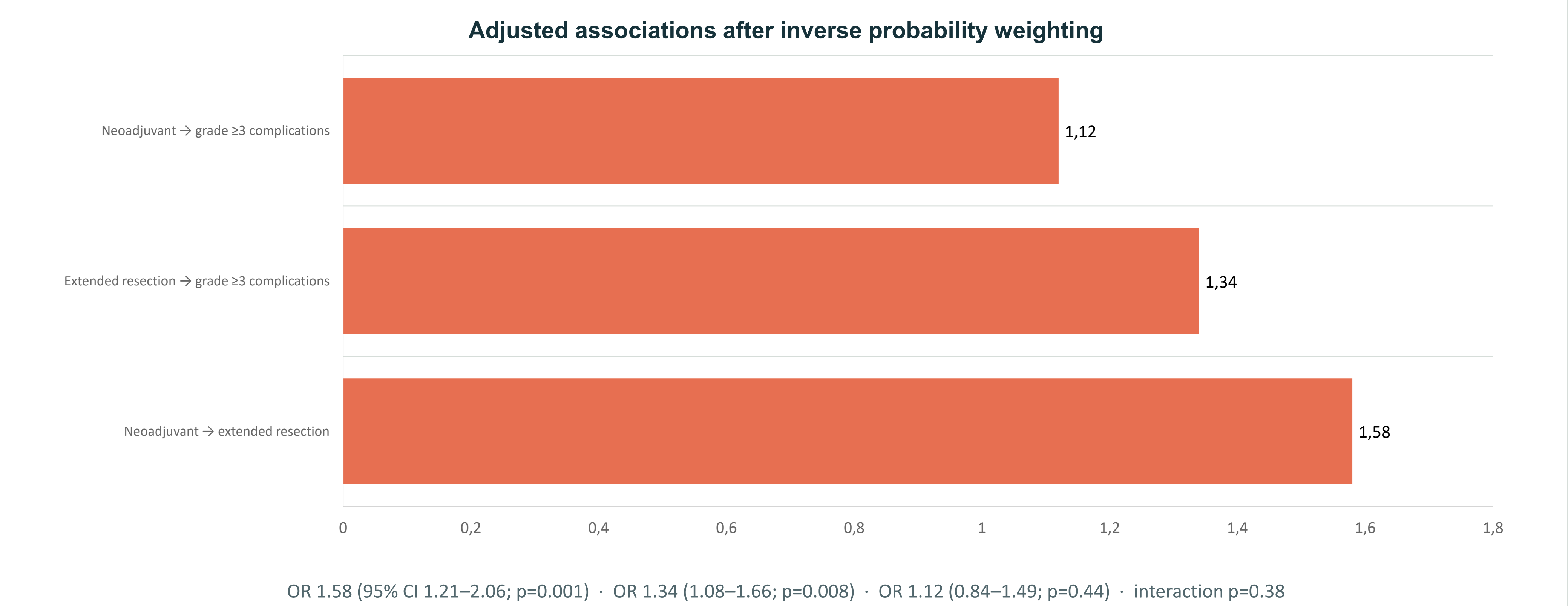
Neoadjuvant therapy increased the probability of an extended operation, yet was not independently associated with worse postoperative outcomes and did not magnify the morbidity of extended resection.

NEXT STEP
Prospective validation with procedure-specific adjustment and long-term oncologic endpoints.

RESULTS



Overall complications were similar (p=0.09); major complications were higher after extended resection (p=0.03).



PROCEDURE-SPECIFIC SIGNALS
Bronchial sleeve: 30% complications; pneumonia predominated. PA sleeve/double sleeve: 50% complications; atrial fibrillation and prolonged air leak predominated.