

Outcomes of Salvage Pulmonary Resection after Immune-Checkpoint-Inhibitor-Combined Therapy

A Single-Center Nine-Year Prognostic Analysis

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Key message

Among selected patients with initially unresectable NSCLC, favorable OS was observed after salvage pulmonary resection despite frequent recurrence.

Background and Objective

ICI-containing systemic therapy can convert a subset of initially unresectable advanced NSCLC into surgical candidates.

However, long-term outcomes after salvage pulmonary resection following ICI-containing regimens remain insufficiently characterized.

Why this matters

Tumor response & downstaging

vs

Risk of recurrence

Objective

To evaluate perioperative and long-term outcomes of salvage pulmonary resection after ICI-containing systemic therapy in initially unresectable NSCLC.

Feasibility

Oncologic outcomes

Role of surgery

Key question: Can surgery add value after systemic response in initially unresectable NSCLC?

Clinical stage at diagnosis vs preoperative restaging

12

initially unresectable NSCLC patients

20.1 mo

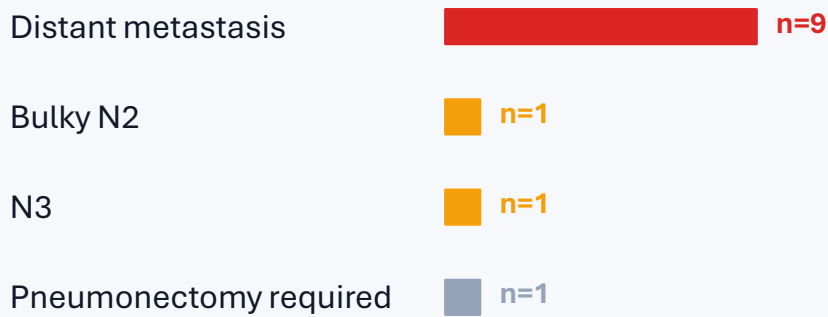
median interval from initial treatment to surgery

1st–4th

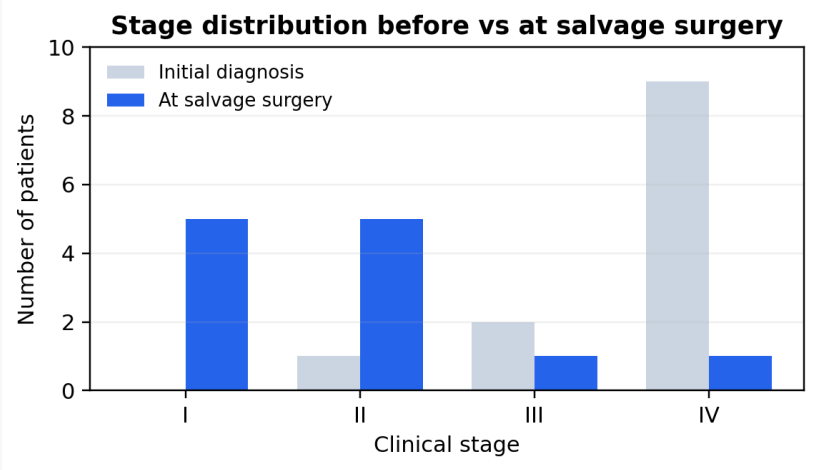
treatment line at surgery

Single-center retrospective review, January 2016–December 2024. Outcomes were assessed after salvage pulmonary resection and post-recurrence treatment review.

Initial unresectability



Stage distribution at diagnosis vs preoperative restaging



75%

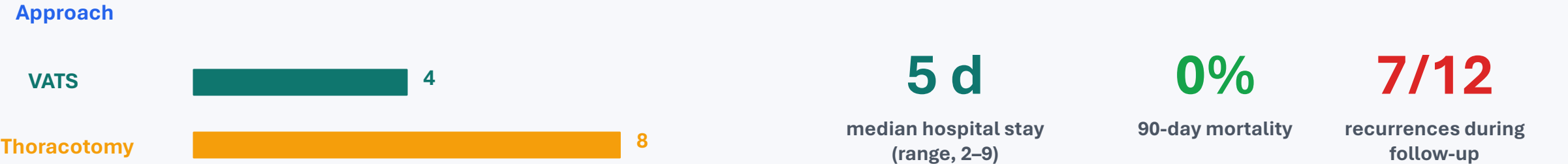
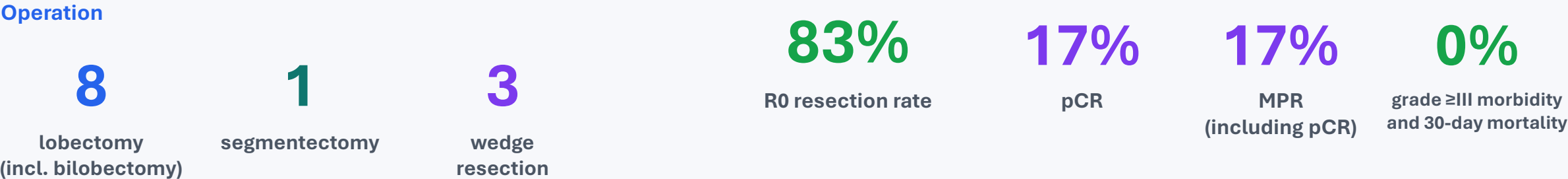
cStage IV at initial diagnosis

83%

had stage I–II disease at preoperative restaging

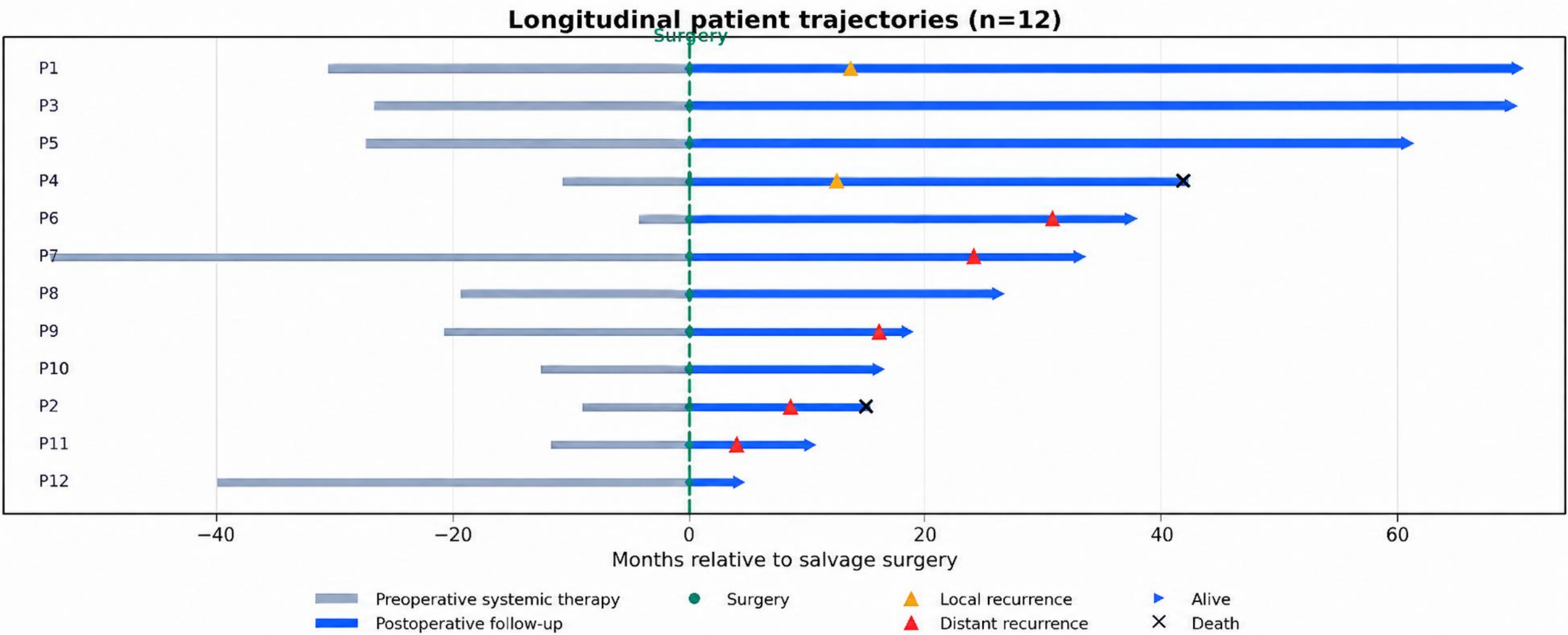
This cohort represents salvage/conversion surgery after prolonged systemic therapy—not planned short-course neoadjuvant ICI.

Surgical Feasibility and Pathological Response



Salvage surgery was feasible in selected patients; however, recurrence remained common despite a high R0 resection rate.

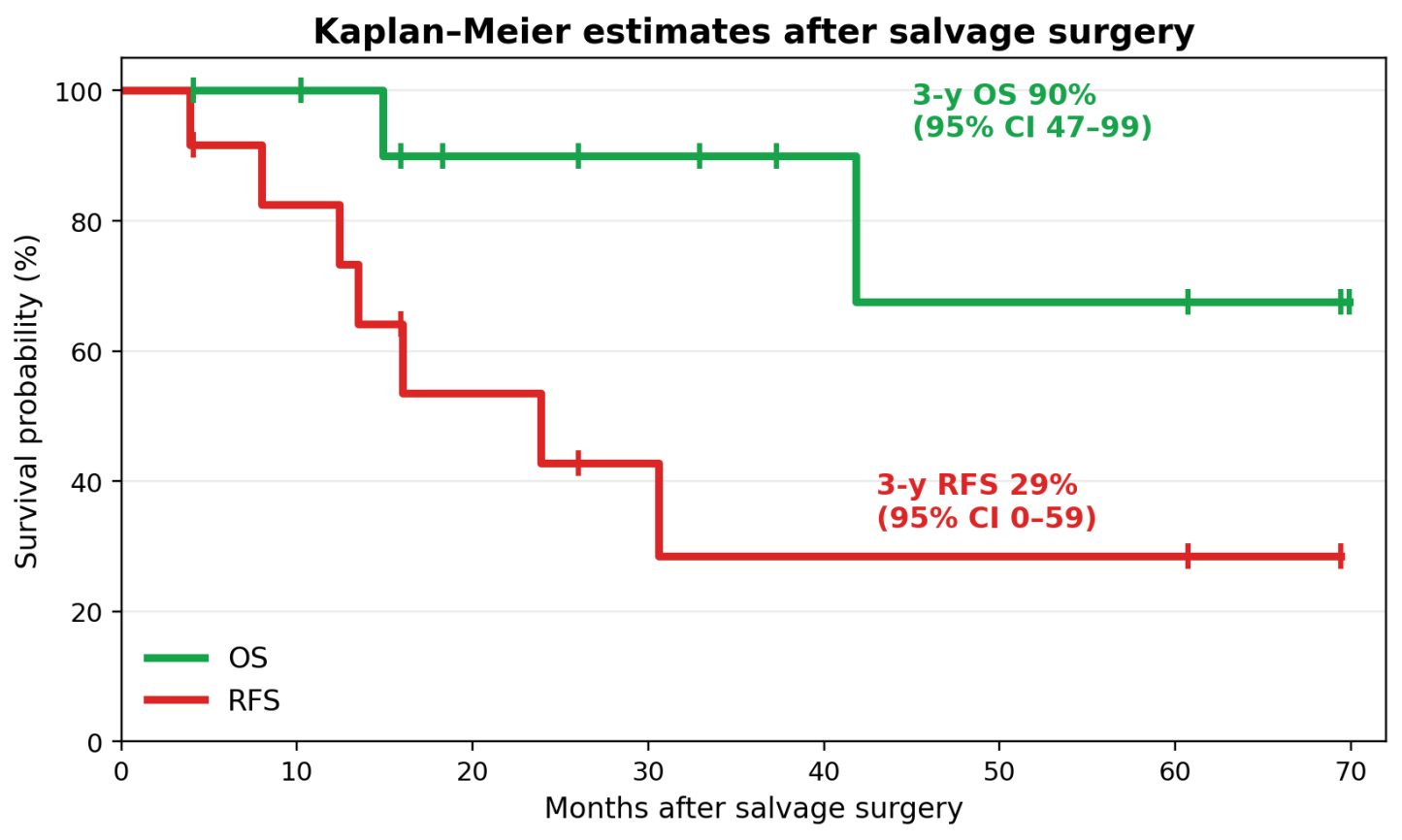
Longitudinal Patient Trajectories



7/12 recurrences

5/7 recurrent patients alive at last follow-up

Survival, Recurrence, and Post-recurrence Treatment



Recurrence pattern

7/12

recurrences

2

local

5

distant

Post-recurrence therapy

ICI

n=2

Targeted agents

n=2

Cytotoxic chemotherapy

n=4

Local treatment

n=2

Note: Treatment categories overlap.

Despite frequent recurrence, favorable long-term survival was observed in carefully selected patients treated with salvage surgery as part of longitudinal multidisciplinary care.

Discussion and Conclusion

Interpretation

- 1** High R0 rate (83%) and no major peri-operative morbidity support the technical feasibility of salvage pulmonary resection in selected patients.
- 2** Frequent recurrence and a 3-year RFS of 29% highlight the limited durability of disease control after salvage surgery.
- 3** Favorable 3-year OS of 90% may reflect careful selection, disease control before surgery, and multidisciplinary treatment after recurrence.

Conclusion

Salvage pulmonary resection was feasible in carefully selected patients with initially unresectable NSCLC. Although recurrence was frequent, favorable OS suggests that surgery may have a role as one component of longitudinal multidisciplinary treatment.

AI Use Disclosure: AI-assisted language editing, slide drafting, and data visualization were used; all content was reviewed and approved by the authors. | Contact: [katsutoshi.seto@gmail.com]