

Introduction

Post-operative endocrinopathy after surgical resection of craniopharyngioma is common. While surgical planning for these lesions depends on tumor characteristics, the preference of gross total resection (GTR) or subtotal resection (STR) followed by adjuvant radiotherapy (XRT) remains controversial in consideration of recurrence-free survival and post-operative comorbidities, namely endocrinopathy. Furthermore, the incidence of endocrinopathy following pituitary stalk preservation is still unclear. We aim to compare the impact of GTR versus STR+XRT for craniopharyngioma treatment on long-term post-operative endocrinopathy.

Methods

This retrospective cohort study analyzed postoperative steroid and DDAVP use in patients undergoing subtotal (STR) or gross total resection (GTR) of pituitary adenomas. Kaplan-Meier survival curves and Cox proportional hazards models assessed the timing of initiation, discontinuation, and restart events, adjusting for patient factors. Generalized Linear Mixed Models (GLMMs) estimated daily use probabilities, incorporating post-op day, resection type, interaction terms, and patient-level random effects. Likelihood of first-time initiation was evaluated using Kaplan-Meier and Cox models. Analyses were conducted in R, with survival curves and trend plots visualized.

Results

Median time to steroid initiation was not significantly different between resection types ($p = 0.08$), with a slight non-significant trend toward delayed initiation in the STR cohort compared to GTR (HR 0.573 [95% CI: 0.308–1.069]).

No significant difference was observed between resection types for stopping steroids ($p = 0.745$). The HR for STR was 1.247 (95% CI: 0.329–4.724).

Patients undergoing STR demonstrated an increasing probability of steroid use over time compared to GTR ($p = 0.044$). Predicted probabilities illustrated a slower decline in steroid use for STR patients post-surgery.

No significant association was found between resection type and the likelihood of initiating steroids ($p = 0.31$).

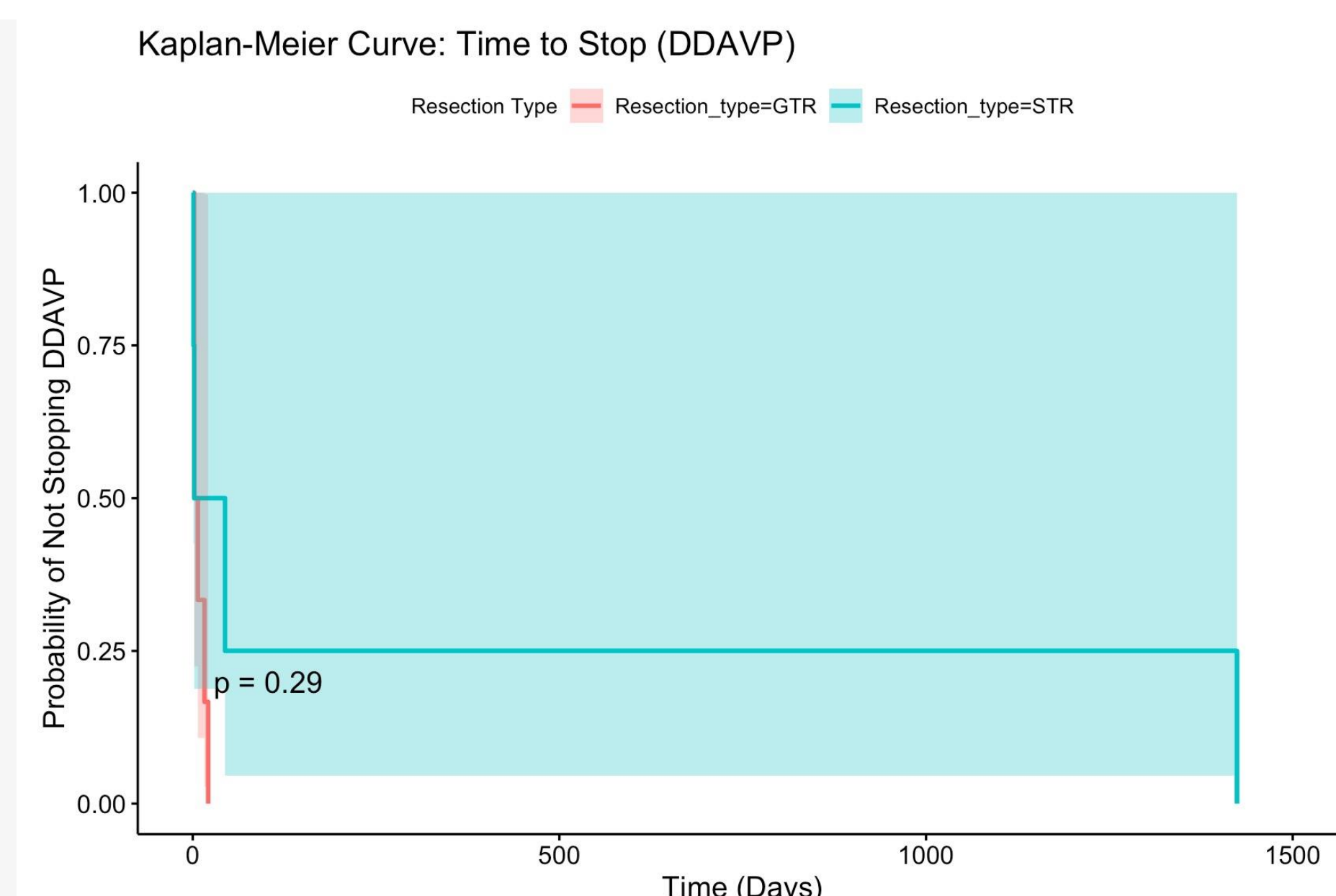
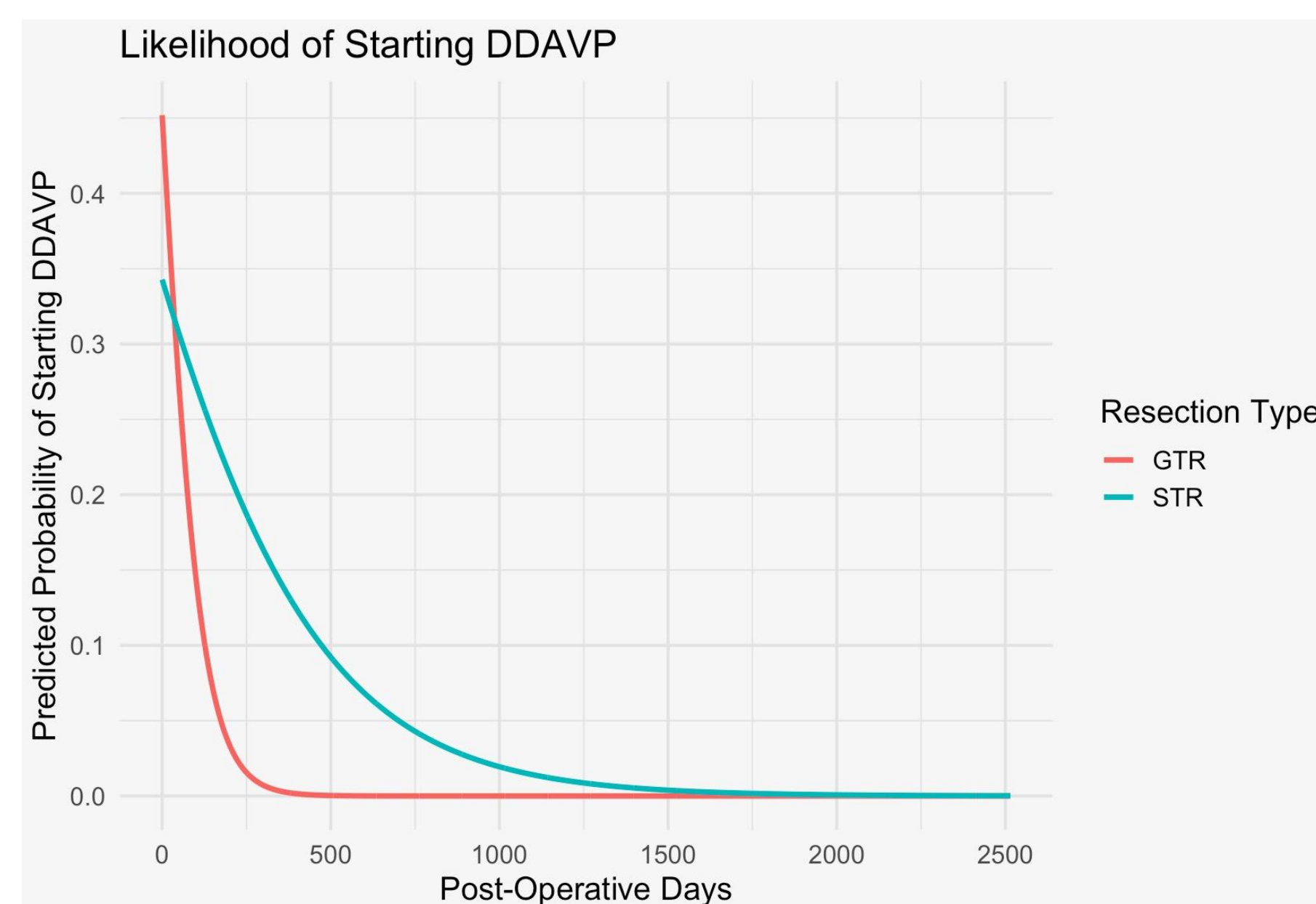
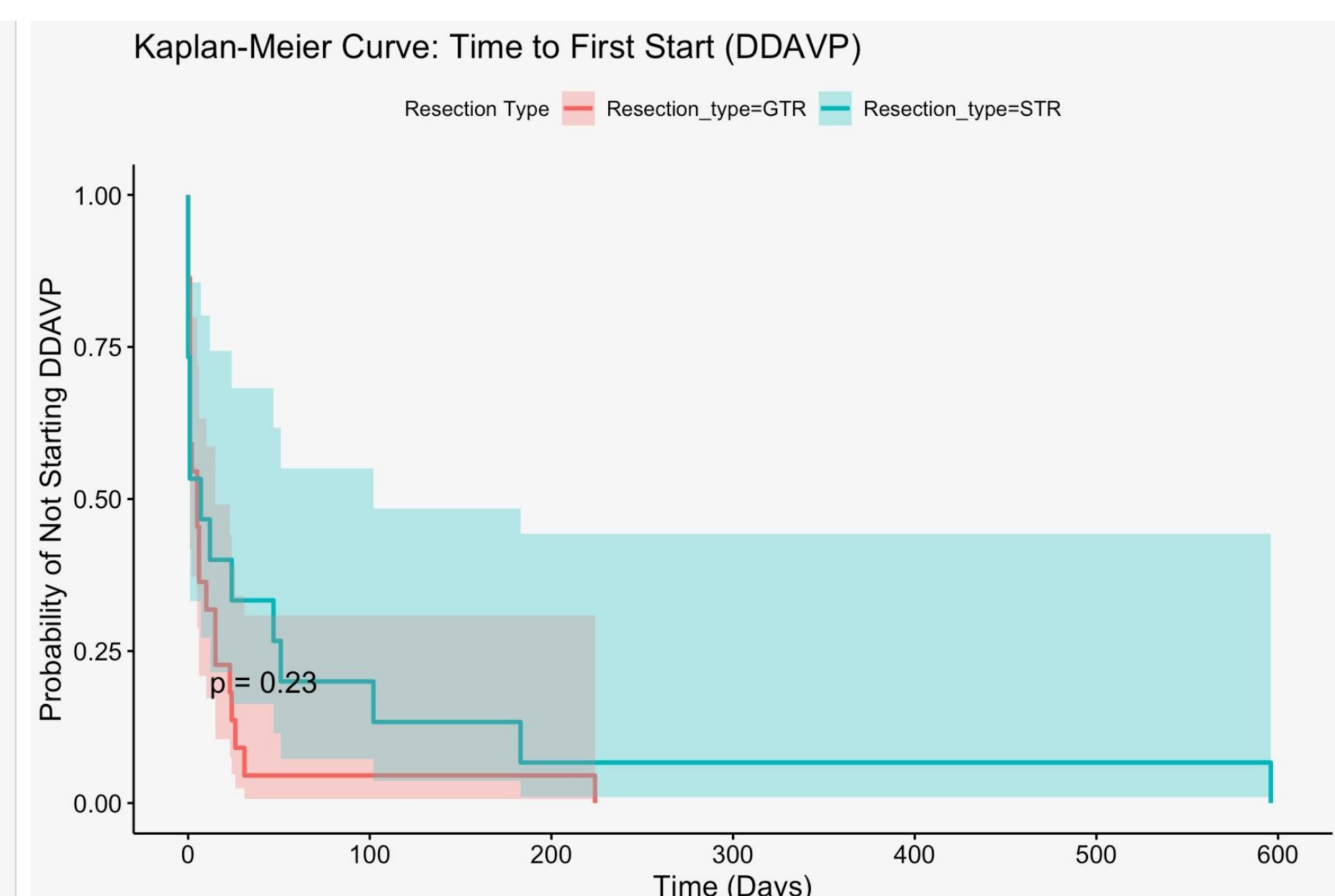
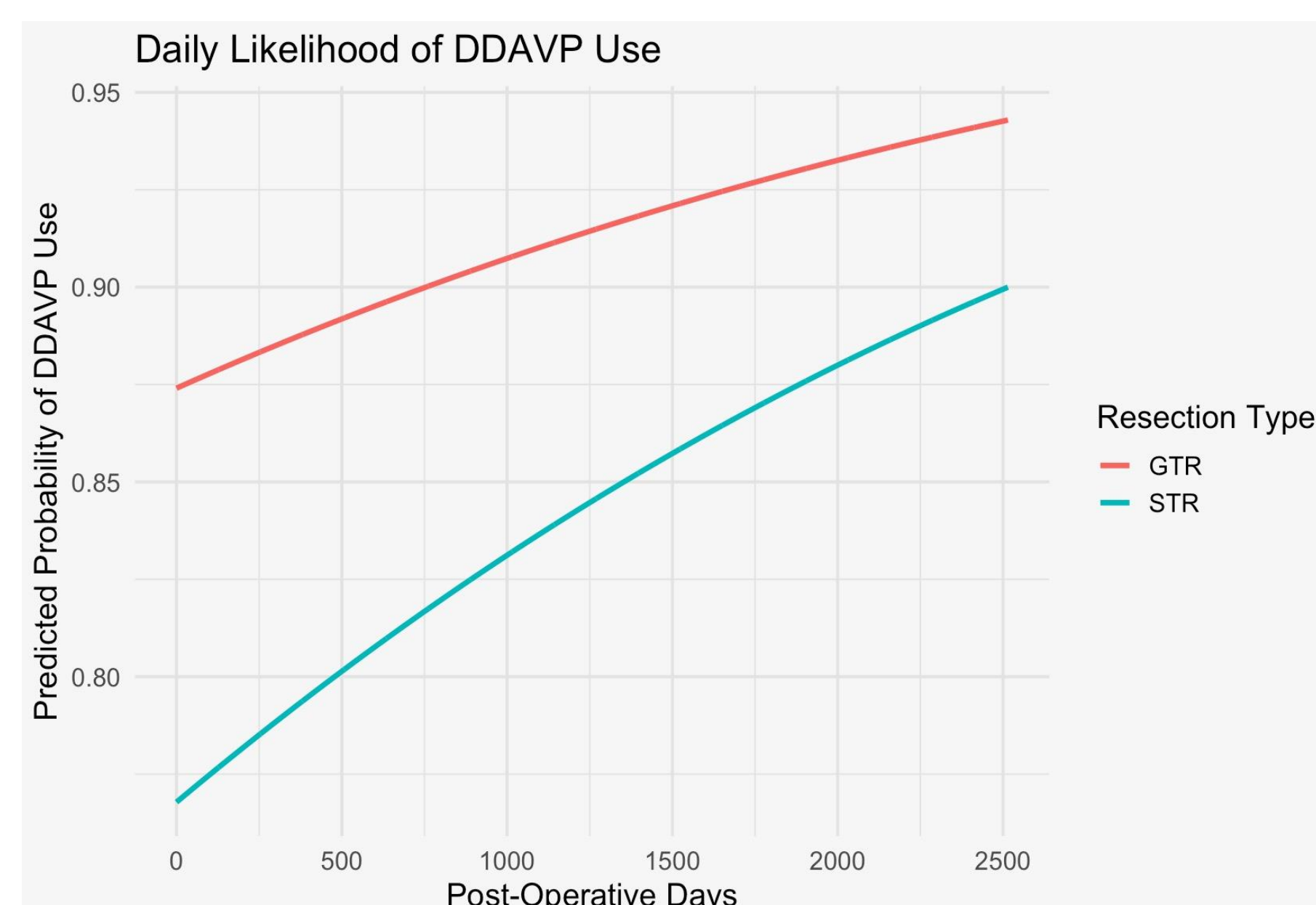
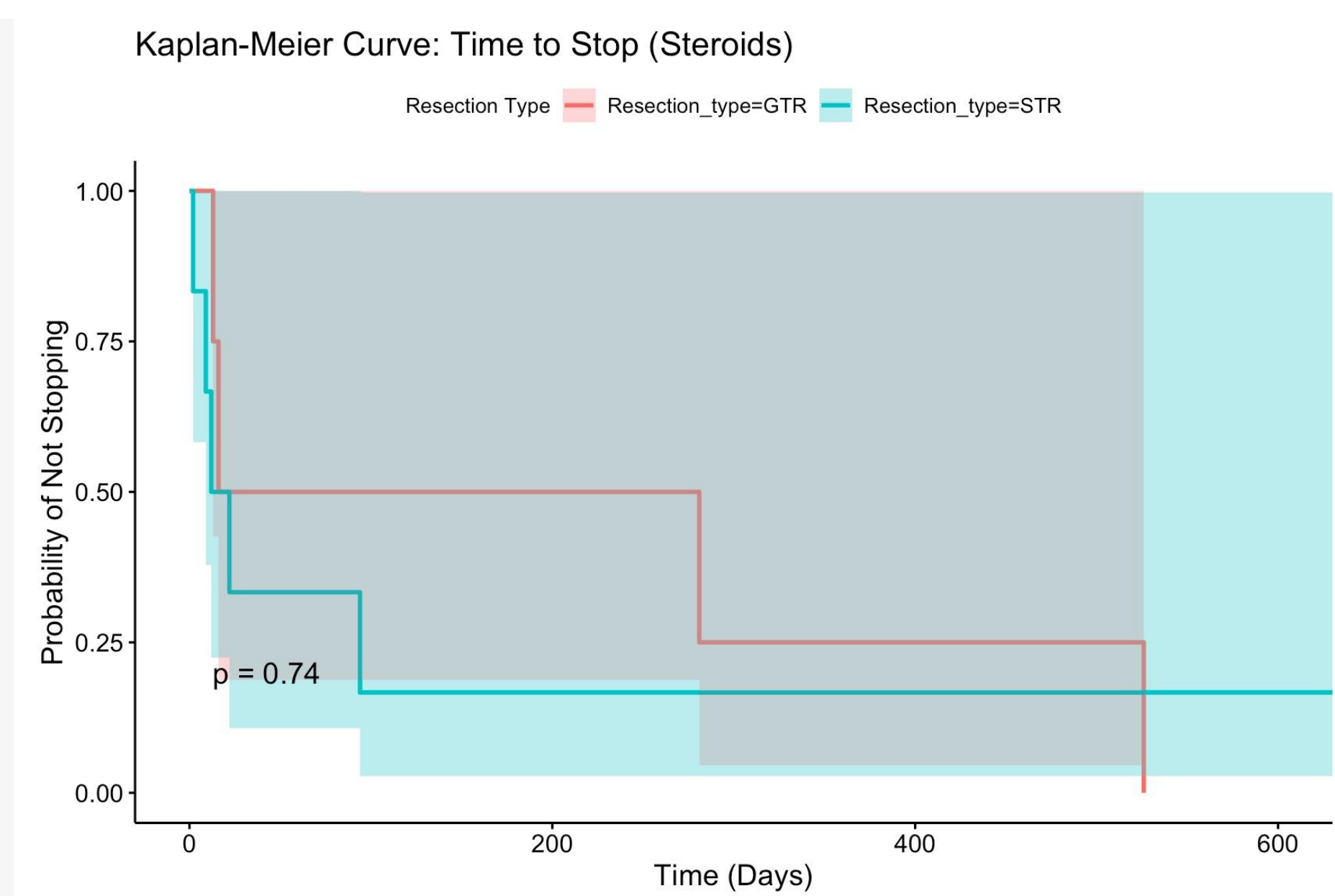
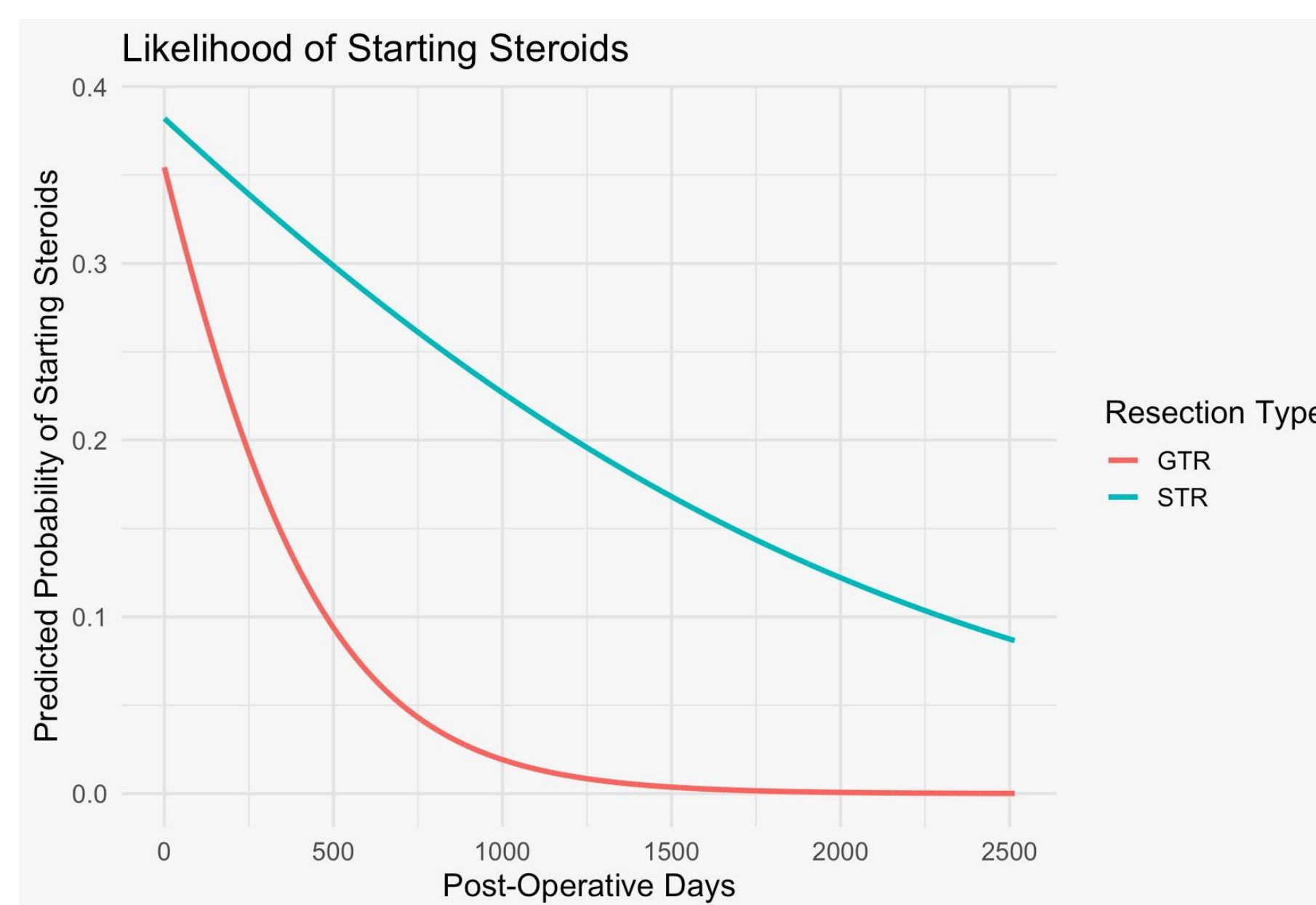
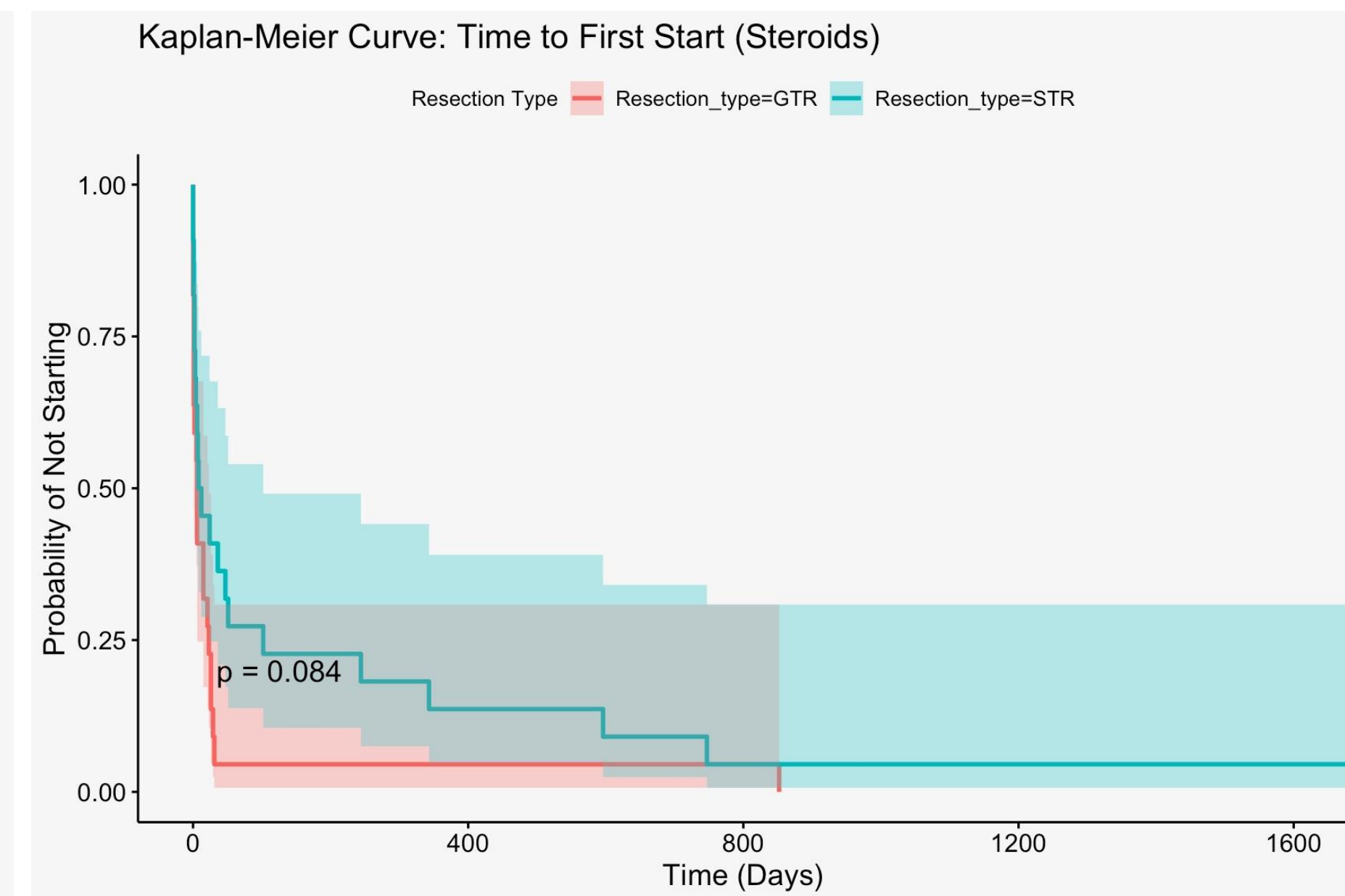
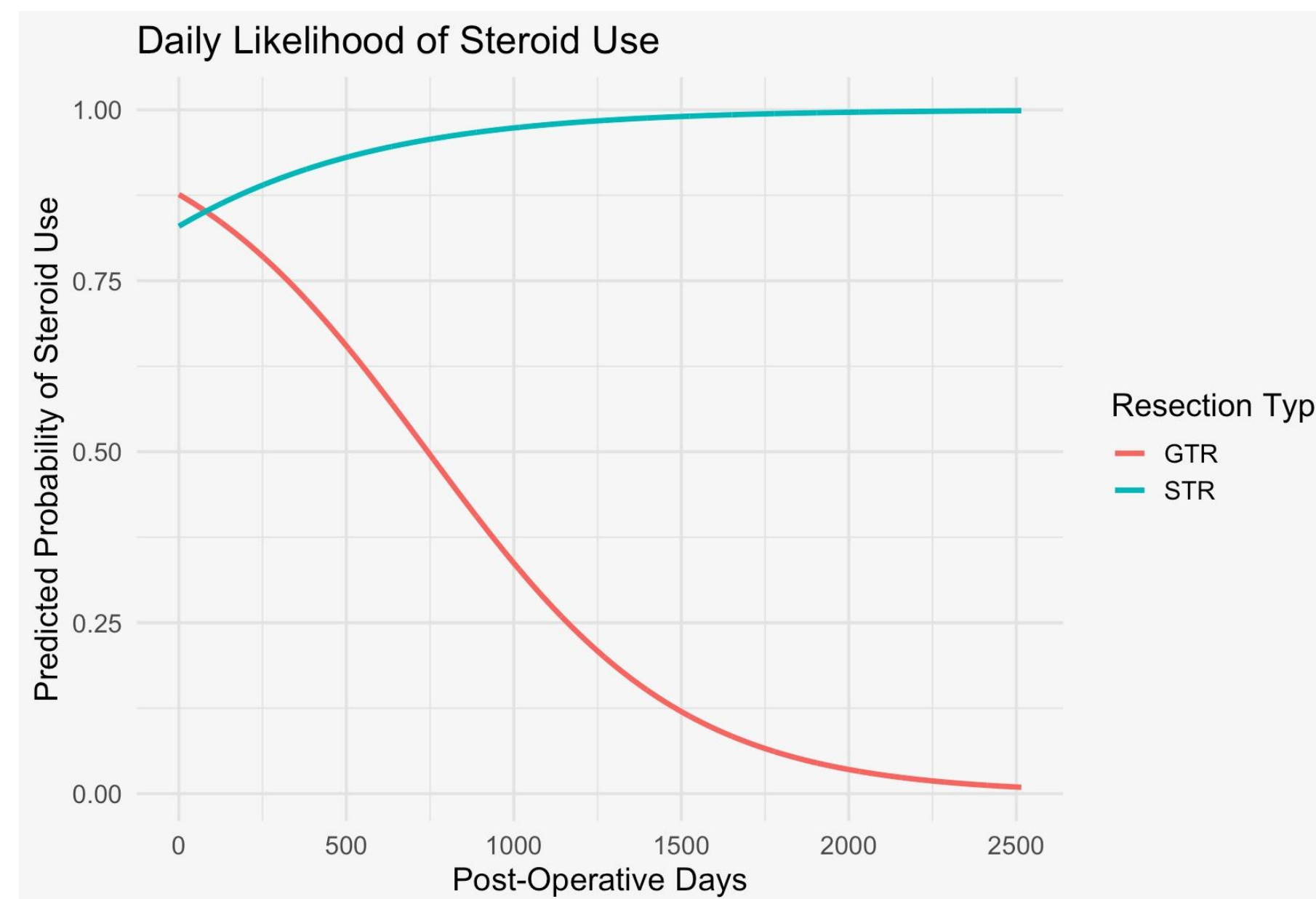
There was no significant difference in DDAVP initiation between resection types ($p = 0.26$). Resection type STR had an HR of 0.670 (95% CI: 0.334–1.345).

No significant association was found between resection type and time to DDAVP cessation (HR = 0.440, $p = 0.325$).

DDAVP use declined similarly over time for both resection types and was not significantly different between resection type ($p = 0.978$).

Post-operative day showed a significant negative association with likelihood of initiating DDAVP ($p = 0.048$). The interaction between resection type and day was not significant ($p = 0.131$).

Results (cont.)



Conclusion

Increased probability of steroid use was associated with post-operative time within STR+XRT patients, although likelihood of starting steroids was not associated with resection type. There was a negative association of DDAVP initiation with respect to post-operative time. The rate at which initiation decreases did not significantly differ between STR and GTR patients.

References

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