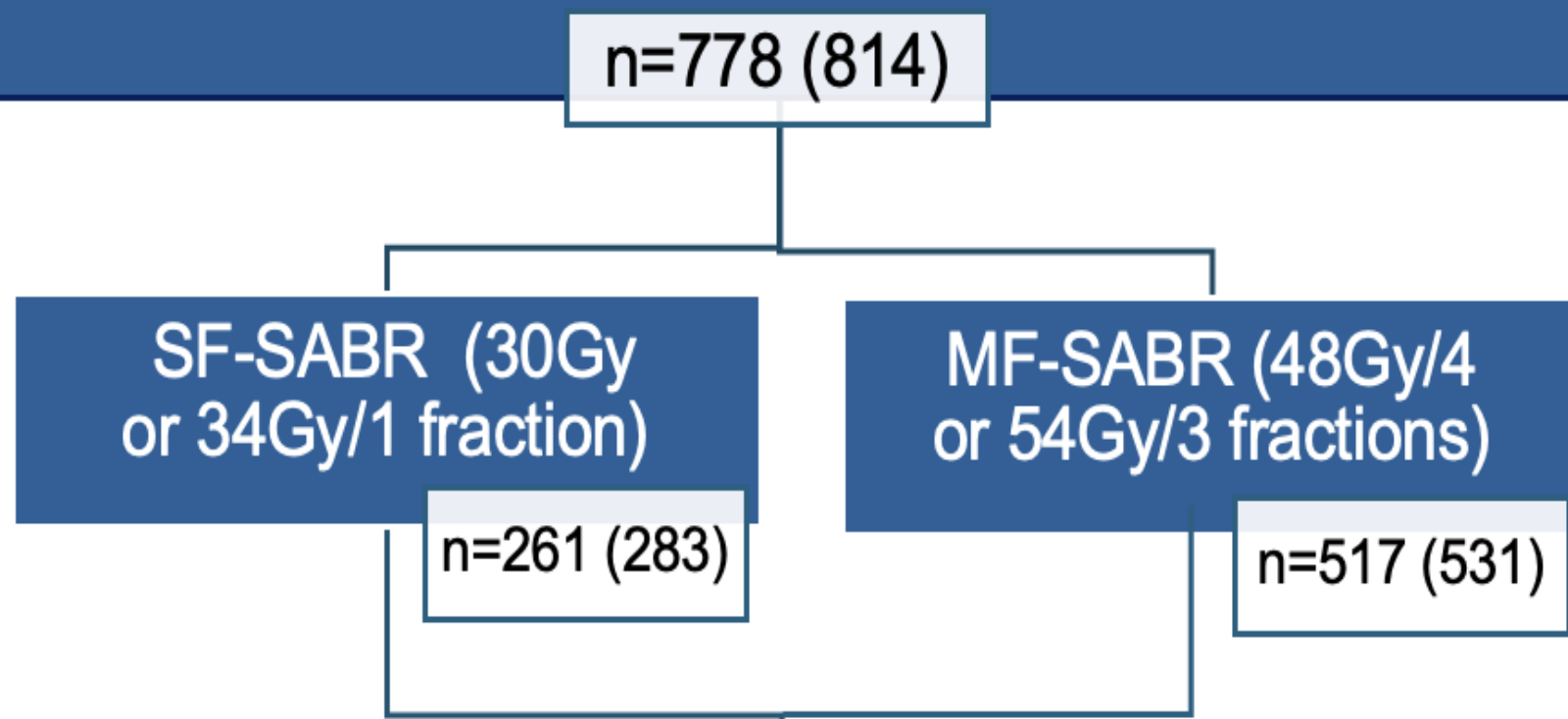


INTRODUCTION

- Stereotactic ablative radiotherapy (SABR) is the standard of care for patients with early-stage non-small-cell lung cancer (NSCLC) who are medically inoperable or who decline surgery [1].
- However, optimal dose fractionation remains unclear.
- This population-based study compares local failure (LF), overall survival (OS) and toxicities between SF- and MF-SABR in patients with peripheral early-stage NSCLC.

METHODS

All patients in British Columbia, Canada with peripheral T1–2N0 NSCLC treated with SABR between January 2021 and August 2024



LF and OS were estimated using Kaplan-Meier method with death as a competing risk. UVA and MVA were evaluated using Fine-Gray model for LF and Cox regression for OS. Toxicity was graded per CTCAE version 5. Binary logistic regression was used to assess predictors of chest wall toxicity (CWT).

Figure 1. CONSORT diagram

RESULTS

- A total of 814 lesions in 778 patients were retrospectively reviewed.
- Median follow-up was 25.8 months (interquartile range, 18.8–36.6).
- No statistically significant differences** were observed in 2-year LF (3.5% vs. 4.8%, $p=0.11$), 2-year OS (79.3% vs. 79.4%, $p=0.62$), any grade 2 toxicity (11.5% vs. 12.4%, $p=0.13$), any grade 3-5 toxicity (1.5% vs. 3.9%, $p=0.08$), or grade 2+ CWT (5.0% vs. 5.0%, $p=0.98$).
- Chest wall abutment was the only independent predictor of grade 2+ CWT and any grade 2+ toxicity.
- SF-SABR alone did not predict worse LF, OS, any grade 2+ toxicity, or grade 2+ CWT.

Table 1. Pertinent baseline patient and tumour characteristics.

PATIENT CHARACTERISTICS	SF-SABR n= 261(%)	MF-SABR n= 517(%)	Overall	p-value
Median age (range)	76 (53–94)	76 (51–96)	76 (51–96)	
Mean Age (SD)	76± 8	76± 8	76± 8	0.72
Sex				0.72
Male	106 (40.6)	217 (42.0)	323 (41.5)	
Female	155 (59.4)	300 (58.0)	455 (58.5)	
Performance status – ECOG				0.034
0	50 (19.2)	72 (13.9)	122 (15.7)	
1	140 (53.6)	254 (49.1)	394 (50.6)	
2	57 (21.8)	156 (30.2)	213 (27.4)	
3	14 (5.4)	34 (6.6)	48 (6.2)	
4	0 (0)	1 (0.19)	1 (0.13)	
Prior thoracic surgery	69 (26.4)	102 (19.7)	171 (22.0)	0.035
TUMOUR CHARACTERISTICS	SF-SABR n= 283 (%)	MF-SABR n= 531 (%)	Overall n= 814 (%)	
Mean tumour diameter, in cm± SD	1.7 ± 0.6	2.1 ± 0.68		<0.001
Tumour histology				<0.001
Adenocarcinoma	53 (18.7)	151 (28.4)	204 (25.1)	
Squamous cell carcinoma	28 (9.9)	61 (11.5)	89 (10.9)	
Non-small cell carcinoma NOS	3 (1.1)	21 (4.0)	24 (2.9)	
Non-diagnostic	20 (7.1)	46 (8.7)	66 (8.1)	
Unbiopsied	177 (62.5)	246 (46.3)	423 (52.0)	
Others	2 (0.7)	6 (1.1)	8 (1.0)	
T-stage				<0.001
T1	274 (96.8)	451 (84.9)	725 (88.1)	
T2	9 (3.2)	80 (15.1)	89 (10.9)	
Tumour proximity to chest wall				0.043
Abutting	87 (30.7)	215 (40.5)	302 (37.1)	
< 1.0 cm	100 (35.3)	164 (30.9)	264 (32.4)	
> 1.0 cm	96 (33.9)	152 (28.6)	248 (30.5)	

Abbreviations: ECOG, Eastern Cooperative Oncology Group; MF, Multi-fraction; NOS, Not otherwise specified; SABR, Stereotactic ablative radiotherapy; SD, Standard deviation; SF, Single-fraction

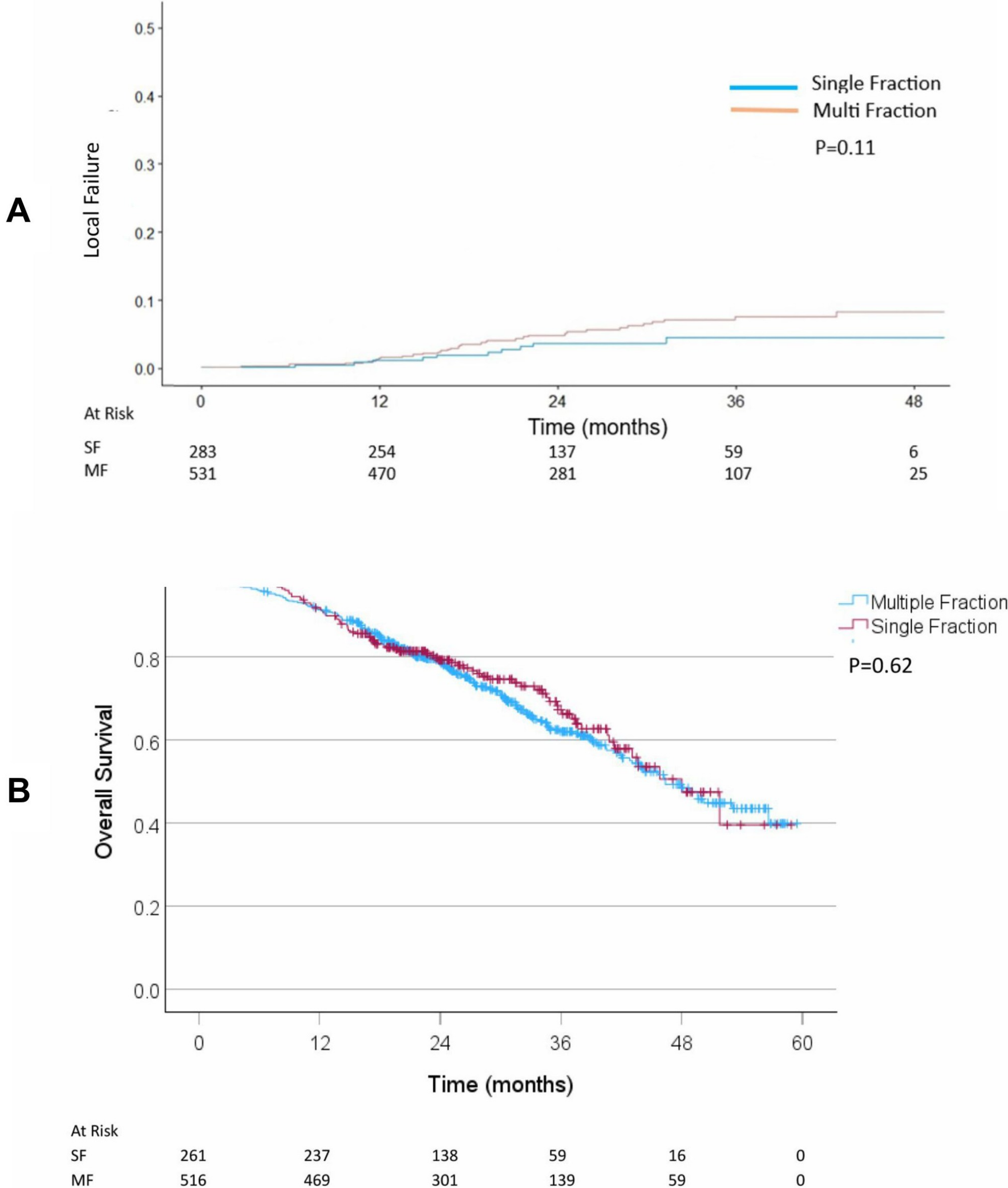


Figure 2. Kaplan-Meier curves for A) LF and B) OS between SF-SABR and MF-SABR.

DISCUSSION

- To our knowledge, this is the *first multi-institution, population-based analysis* comparing SF-SABR and MF-SABR for peripheral early-stage NSCLC.
- Small phase II randomised trials and retrospective studies have shown comparable outcomes between SF- and MF-SABR in this patient population, consistent with the findings of the present study [2–7].

CONCLUSION

- No statistically significant differences** in LF, OS or toxicity were observed between SF-SABR and MF-SABR for patients with peripheral early-stage NSCLC.
- This study supports the use of SF-SABR in a real-world population-based setting, *thereby bridging the gap between clinical trials and actual practice in a broader patient population.*

REFERENCES & ACKNOWLEDGEMENTS

ACKNOWLEDGEMENT
None.

Artificial Intelligence (AI) Use Disclaimer
The authors used Gemini exclusively to assist with grammatical editing and proofreading. Artificial intelligence was not utilised to generate scientific content, and all clinical interpretations remain solely those of the authors.

REFERENCES

