



Broncho-Lung Parenchymal Discrepancy in Lung Segmentectomy: Its Frequency and Impact on Clinical Course

Takao Nakanishi, Koichiro Ishii, Ren Takehara, Taishi Adachi, Mitsugu Omasa
Department of Thoracic Surgery, Kobe City Nishi-Kobe Medical Center, Kobe, Japan · takawonak1@gmx.com

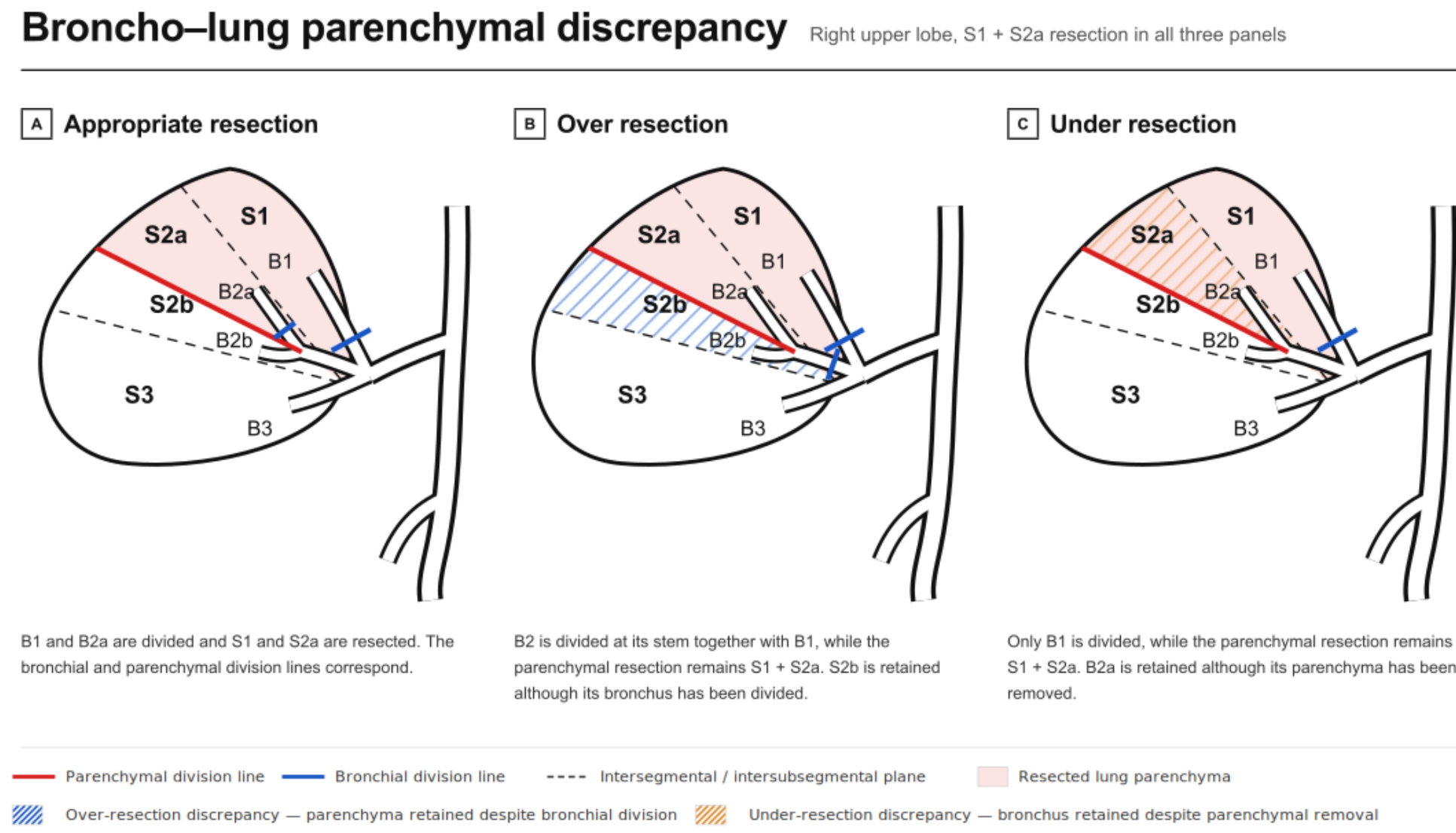
EP07.66

EP07 · Resectable NSCLC (Stages I-III)
WCLC 2026 · Seoul, Republic of Korea



BACKGROUND

Broncho-lung parenchymal discrepancy (BLPD) is a mismatch between the bronchial tree that is divided and the lung parenchyma that is removed during segmentectomy. It may arise intentionally, to avoid unnecessary deep dissection, or inadvertently. Its frequency and clinical significance have not previously been described.



METHODS

- Single-center retrospective review, January 2021 – December 2024
- 123 consecutive segmentectomies for lung cancer with curative intent
- BLPD defined as over- or under-resection of the bronchus affecting more than one subsegment
- Identified from operative reports and postoperative CT images
- Groups compared for complications and disease-free survival
- Analysed in R 4.3.3 (survival 3.5-8, survminer 0.4.9)

TABLE 1. PATIENT CHARACTERISTICS

	With BLPD (n = 17)	Without BLPD (n = 106)	P
Age, years	75 [69–81]	75 [71–80]	0.92
Male sex	9 (53)	59 (56)	1.00
%FEV ₁ , %	106 [97–114]	94 [78–108]	0.10
%DLCO, %	89 [81–113]	93 [77–110]	0.83
Upper lobe	12 (71)	69 (65)	0.79
Approach, VATS / uniportal / RATS / open	9 / 4 / 3 / 1	58 / 31 / 17 / 0	0.25
Operative time, min	152 [124–162]	162 [135–201]	0.16
Tumor size, mm	15 [11–17]	18 [13–22]	0.040
Any complication	3 (18)	13 (12)	0.46
Major complication (CD ≥IIIa)	0 (0)	3 (3)	1.00
Postoperative stay, days	5 [5–7]	5 [4–7]	0.63

Median [IQR] or n (%). Wilcoxon rank-sum or Fisher exact test. One salvage resection with no residual tumor was excluded from the tumor-size comparison.
CD, Clavien-Dindo; DLCO, diffusing capacity for carbon monoxide; FEV₁, forced expiratory volume in 1 s; IQR, interquartile range; RATS, robot-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery; uniportal, uniportal VATS; open, thoracotomy.

RESULTS — FREQUENCY

- BLPD occurred in 17 of 123 patients (13.8%)
- 3 over-resection and 14 under-resection
- 15 were intentional; 2 were inadvertent, and both were over-resections in the left upper lobe
- Occurred in every lobe except the right middle lobe

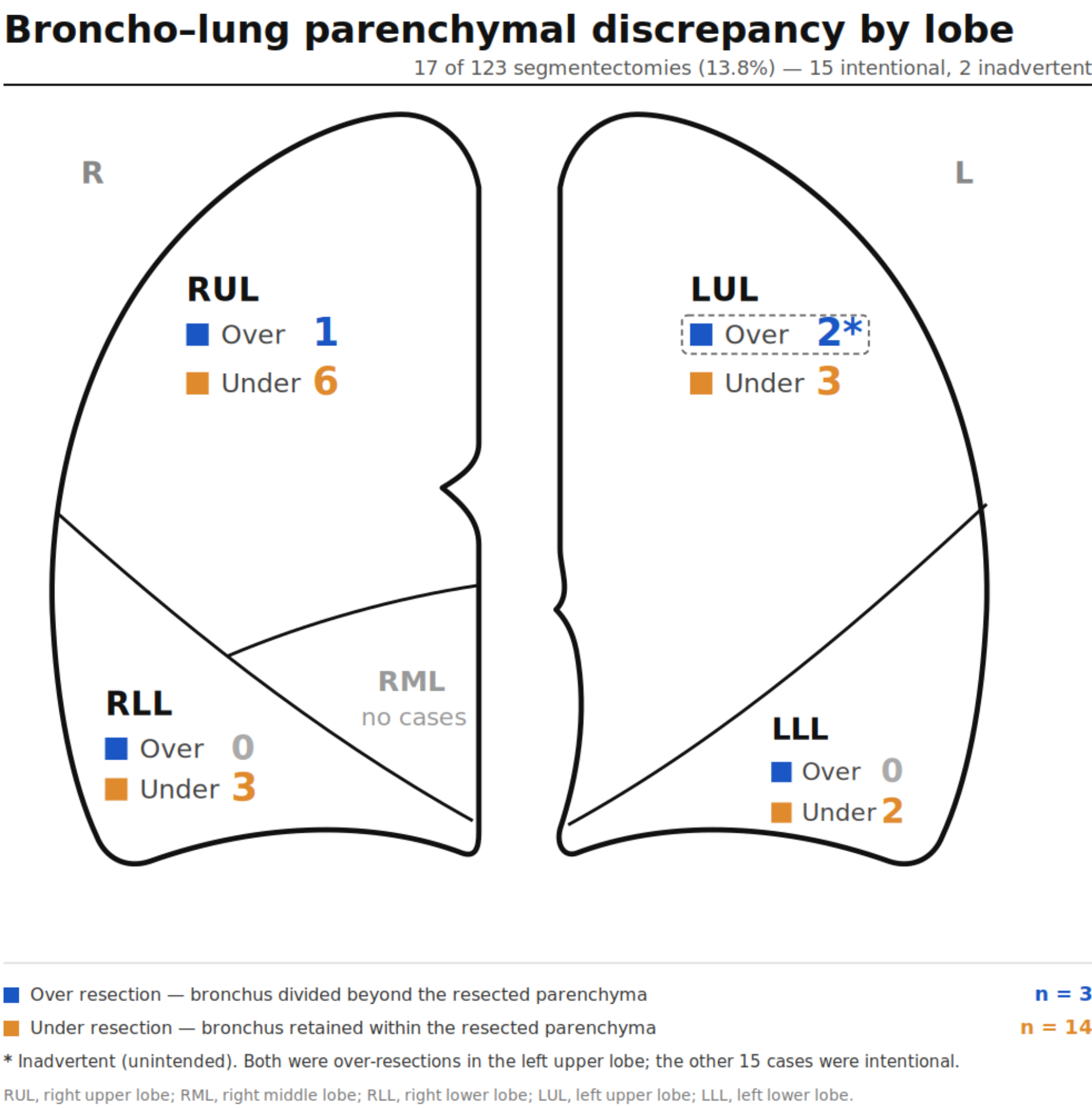
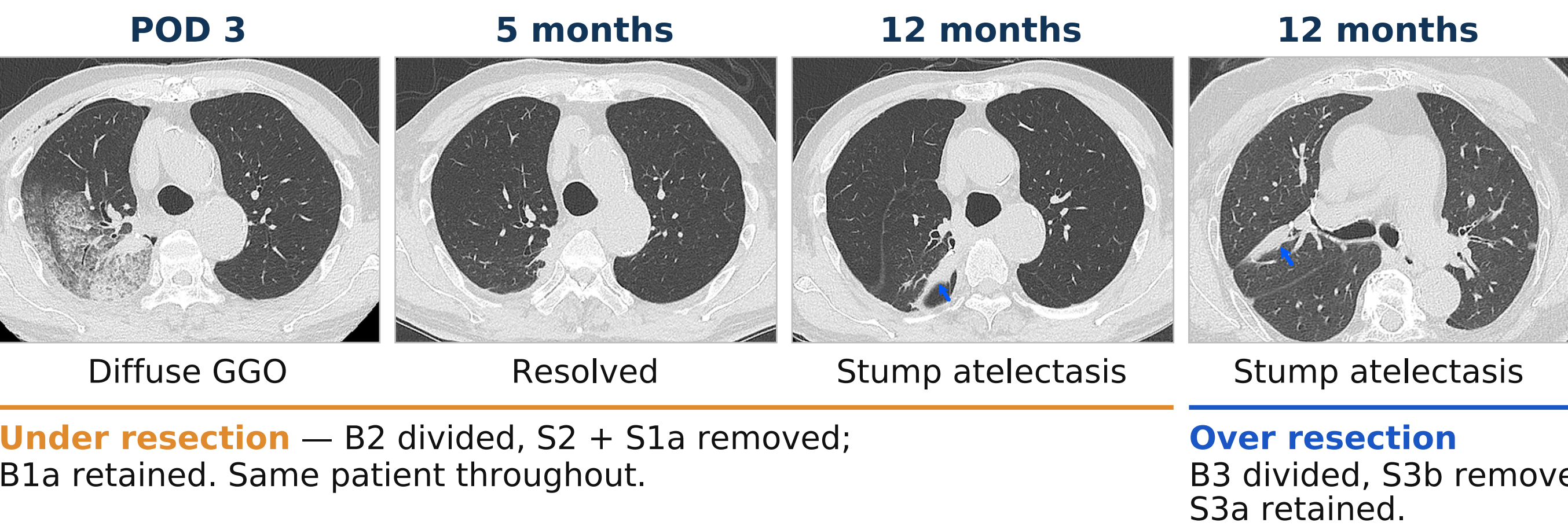


Figure 2. Distribution of discrepancy by lobe.

- Groups were comparable in age, height, weight, smoking history, pulmonary function and surgical approach
- Tumors were smaller in patients with BLPD: median 15 vs 18 mm, P = 0.040

POSTOPERATIVE CT



Arrows indicate atelectasis at the segmental bronchial stump. All findings were asymptomatic and none required intervention. Right upper lobe in both patients.
GGO, ground-glass opacity; POD, postoperative day.

RESULTS — POSTOPERATIVE COURSE

- 3 minor and no major complications with BLPD (major complications, P = 1.000)
- Asymptomatic diffuse ground-glass opacity in the remaining segments in 1 under-resection patient, resolved within months
- Persistent segmental stump atelectasis in 6 patients (1 over, 5 under); all asymptomatic, none required intervention

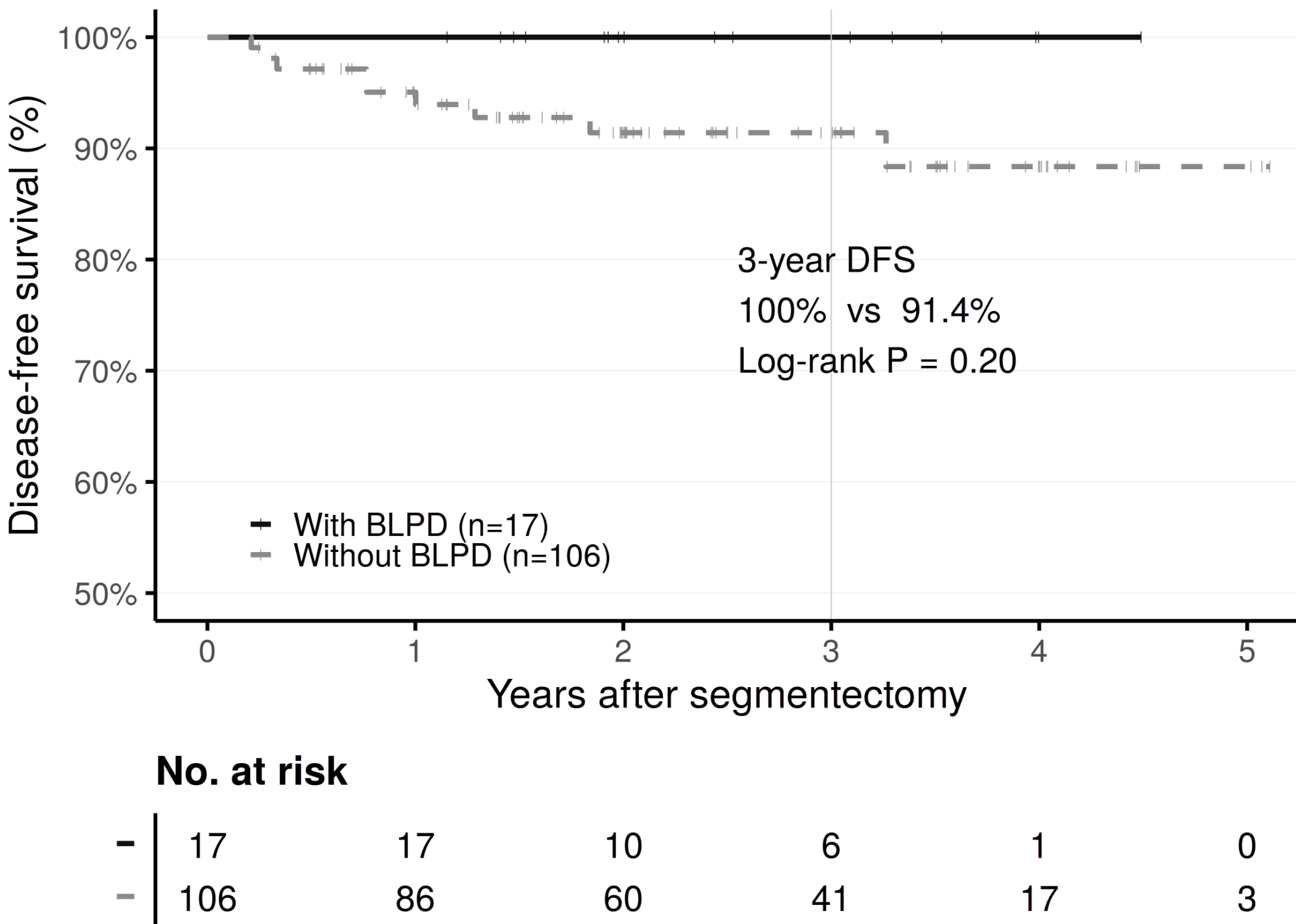


Figure 3. Disease-free survival. No recurrence occurred in any patient with BLPD.

CONCLUSION

BLPD occurred in approximately 14% of segmentectomies, and most cases were intentional. Inadvertent over-resection of the bronchus arose mainly in the left upper lobe. BLPD was not associated with more postoperative complications or with shorter disease-free survival, suggesting that it is a manageable condition.

LIMITATIONS & DISCLOSURES

Single-center retrospective study. Only 17 patients had BLPD and no recurrence occurred in that group, so non-inferiority of disease-free survival cannot be concluded from these data.

AI use disclosure

Claude (Anthropic, 2026) assisted with literature searching, English editing, preparation of the R analysis script, and figure preparation. No patient-identifiable data were entered. All output was verified against source data by the authors, who take full responsibility for the content.

The authors declare no conflict of interest relevant to this study.

Key references

- Saji H, et al. Lancet 2022;399:1607–17.
- Yoshikawa K, et al. Ann Thorac Surg 2002;73:1055–8.
- Sato M, et al. J Thorac Dis 2019;11:972–86.
- Koike Y, et al. Eur J Cardiothorac Surg 2020;57:472–7.
- Takamori S, et al. J Thorac Dis 2025;17:2958–66.

KEY MESSAGE

A sufficient surgical margin should take priority over strict anatomical accuracy in surgical planning and intraoperative assessment.