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BACKGROUND: THE IASLC DEFINITIONS

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One of the objectives of the International Association for the Study of Lung Cancer (IASLC) Staging Project was to propose an international and multidisciplinary definition of complete resection in lung cancer surgery. The objective was discussed 25 years ago, during the International Workshop on Intrathoracic Staging sponsored by the IASLC, and organized and chaired by Prof. Peter Goldstraw in London in October 1996. (1)

After reviewing the relevant published reports and discussing the topic during the meetings of the IASLC Staging and Prognostic Factors Committee (SPFC), the proposed definition was published in 2005. (2) Complete resection had its counterpart -incomplete resection-which was also defined. There also was an intermediate type of resection that did not fulfil all criteria for complete, but had free resections margins. It was called uncertain resection. The definitions and their requirements are:

Complete resection:
- The resection margins (bronchial, vascular, peribronchial, around the tumor or the margins of any resected tissue) must be free of tumor proved microscopically.
- The lung resection has to be accompanied by a systematic nodal dissection or by a lobe-specific systematic nodal dissection. The minimum number of removed lymph nodes was considered to be, at least, six: three from the intrapulmonary and/or hilar nodal stations, and three from the mediastinal nodal stations, always including the subcarinal.
- The capsule of those nodes removed separately and of those located at the margin of the main lung specimen must be intact, without extracapsular tumor invasion.
- The highest mediastinal lymph node removed must be free of tumor.

Incomplete resection is defined by any of the following circumstances:
- Tumor invasion of resection margins.
- Extracapsular involvement of lymph nodes excised separately or of those at the margin of the lung specimen.
- There is evidence of involved lymph nodes, but they have not been removed.
- There is positive pleural or pericardial effusion.

Uncertain resections have free margins, but are associated with one or more of the following situations:

- The intraoperative lymph node assessment does not achieve the standards of systematic nodal dissection or lobe-specific systematic nodal dissection.
- The highest mediastinal lymph node removed is involved.
- There is carcinoma *in situ* at the bronchial margin.
- Pleural lavage cytology is positive.

Complete resection includes the R0 (no residual tumour) category, but requires a certain intraoperative nodal assessment. Incomplete resection is the equivalent to the R1 (microscopic residual tumour) or R2 (macroscopic residual tumour) categories. The uncertain resection had no category in the R factor, but has been accepted by the Union for International Cancer Control for all tumours with free margins but an inadequate nodal assessment, and, specifically for lung cancer, when the highest mediastinal lymph node remove is positive. It is coded as R0(un). (3)

Four different groups have recently validated the IASLC definitions. The three definitions separate groups of significantly different prognosis, which adds to the clinical relevance of the definitions. (4-8)

The definitions are likely to be refined, especially with the introduction of the *minimal residual disease* concept. The application of the liquid biopsy may help understand whether the cancer is fully removed or not, and whether there is a high probability of recurrence. (9)

References

1. Goldstraw P. Report on the International workshop on intrathoracic staging, London, October 1996. *Lung Cancer* 1997;18:107-111.
2. Rami-Porta R, Wittekind C, Goldstraw P. Complete resection in lung cancer surgery: proposed definitions. *Lung Cancer* 2005;49:25-33.
3. Explanatory notes – General. In: Wittekind C, Compton CC, Brierley J, Sobin LH, eds. *UICC TNM Supplement. A Commentary on Uniform Use. Fourth edition*. 4th edition. Oxford, United Kingdom: Wiley-Blackwell; 2012; p:17.
4. Rami-Porta R, Wittekind C, Goldstraw P. Complete resection in lung cancer surgery: from definition to validation and beyond. *J Thorac Oncol* 2020;15:1815-1818.
5. Gagliasso M, Migliaretti G, Ardissone F. Assessing the prognostic impact of the International Association for the Study of Lung Cancer proposed definitions of complete, uncertain, and incomplete resection in non-small cell lung cancer surgery. *Lung Cancer* 2017;111:124-130.
6. Edwards JG, Chansky K, Van Schil P *et al*. The IASLC Lung Cancer Staging Project: analysis of resection margin status and proposals for residual tumor descriptors for non-small cell lung cancer. *J Thorac Oncol* 2020;15:344-359.
7. Osarogiagbon RU, Faris NR, Stevens W *et al*. Beyond margin status: population-based validation of the proposed International Association for the Study of Lung Cancer residual tumor classification recategorization. *J Thorac Oncol* 2020;15:371-382.
8. Yun JK, Lee GD, Choi S *et al*. Validation study of the recommended change in residual tumor descriptors proposed by the International Association for the Study of Lung Cancer for patients with pN2 NSCLC. *J Thorac Oncol* 2021; Feb 16: S1556-0864(21)01668-3. doi: 10.1016/j.jtho.2021.01.1621.
9. Rami-Porta R. The evolving concept of complete resection in lung cancer surgery. Cancers 2021;13, 2583. https://doi.org/10.3390/cancers13112583