Lung Cancer Classification

Lung cancer is classified based on histology, molecular profile, and staging. The main division is between **Non-Small Cell Lung Cancer (NSCLC)** and **Small Cell Lung Cancer (SCLC)**.

I. By Histological Type

A. Non-Small Cell Lung Cancer (NSCLC) (~85%)

- **Adenocarcinoma**
  - Most common subtype (especially in non-smokers)
  - Peripheral lung location
  - Frequently associated with mutations: EGFR, ALK, KRAS
- **Squamous Cell Carcinoma**
- Strongly associated with smoking
- Central/hilar origin
- May show cavitation and keratinization
- **Large Cell Carcinoma**
- Poorly differentiated, aggressive
- Diagnosis of exclusion when no glandular or squamous features
- **Other NSCLC Subtypes**
- Adenosquamous carcinoma
- Sarcomatoid carcinoma

B. Small Cell Lung Cancer (SCLC) (~15%)

- Highly aggressive and rapidly progressive
- Strong association with smoking
- Central origin (major airways)
- Sensitive to initial chemotherapy and radiotherapy
- Early metastasis is common

II. By Molecular Subtype (Mainly for NSCLC)

- EGFR mutations → EGFR tyrosine kinase inhibitors (e.g., osimertinib)
- ALK rearrangements → ALK inhibitors (e.g., alectinib)
- ROS1, RET, BRAF, MET, NTRK, KRAS G12C → Targeted therapies
- PD-L1 expression → Predicts response to immunotherapy (e.g., pembrolizumab)

III. By Stage (TNM Classification)

- **Stage I–II**: Localized disease → surgical resection ± adjuvant therapy
- **Stage III**: Locally advanced → chemoradiotherapy ± surgery
- **Stage IV**: Metastatic disease → systemic therapy (chemo, targeted, or immunotherapy)

Treatment

Surgical Outcomes of Video-Assisted Thoracic Surgery Combined With Computed Tomography-Guided Microwave Ablation for Lung Cancer Presenting as Multiple Ground-Glass Opacities: A 5-Year Retrospective Cohort Study

Type of Study: Retrospective cohort study (5 years)

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Journal: Thoracic Cancer

Purpose: To evaluate the feasibility, safety, and long-term outcomes of combining video-assisted thoracic surgery (VATS) with CT-guided microwave ablation (MWA) in treating synchronous multiple primary lung cancers (sMPLC) presenting as multiple ground-glass opacities (mGGOs).

Conclusions: The combined VATS and CT-guided MWA approach achieved a 100% technical success rate and demonstrated strong 3-year and 5-year survival metrics, with no observed local tumor progression or recurrence.

Critical Review: This single-institution retrospective study offers a bold and innovative combination of VATS and MWA to address the increasingly common issue of mGGOs in early-stage lung adenocarcinoma. While the technical success and survival rates reported are impressive, the lack of a control group, small sample size (n=47), and potential for significant selection bias limit the generalizability of the findings. No details are provided on standardized criteria for nodule selection, ablation parameters, or postoperative surveillance protocols. The “needle and scalpel” rhetoric, though catchy, risks overselling the concept without robust comparative evidence.

Final Verdict: A creative surgical strategy with potential, but its evidence base remains preliminary.

Takeaway for the Practicing Neurosurgeon: Although not directly applicable to neurosurgical practice, the procedural model exemplifies a multidisciplinary, hybrid technique that may inspire similar integrated approaches in neuro-oncology.

Bottom Line: Promising hybrid therapy for sMPLC with mGGOs, but confirmation in controlled, multicenter trials is essential.

Rating: 5.5 / 10

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Categories: Lung Cancer, Thoracic Surgery, Hybrid Procedures, Oncology

Tags: VATS, microwave ablation, ground-glass opacities, mGGOs, sMPLC, lung cancer, thoracic oncology, retrospective study, surgical innovation