

Surgical strategy for multiple GGO lung nodules management without hybrid OR at SYSCC

Considering the increasing prevalence of LDCT screening, the considerations for surgical indications have become more complex, necessitating delicate handling. This is particularly true in cases of multiple ground-glass opacities (GGOs) are often encountered, and require careful and individual assessment to balance the risk of malignancy with the pathological burden of surgical intervention, especially considering potential impacts on lung function.

Clinical guidelines from the American College of Chest Physicians (ACCP) or the Fleischner Society provide management decision standards based on the size, growth, and morphological characteristics of GGOs. However, specific recommendations for managing multiple GGOs often differ slightly due to the complexity and variability of their presentation.

According to literature reports, multiple studies and meta-analyses have compared the treatment outcomes and management strategies of patients with single and multiple GGO lung nodules. Key findings include:

1. Compared to a single GGO, multiple GGOs are often associated with a higher risk of malignancy.
2. Most papers suggest no significant difference in recurrence rates between patients with single and multiple GGOs.
3. The recent rapid rise of Hybrid ORs, integrating preoperative localization of lung nodules with minimally invasive surgical resection, provides a comprehensive and one-time solution for managing bilateral multiple pulmonary nodules.

Since SYSCC joining the National Health Administration's "Low-Dose CT Lung Cancer Screening Program" in July 2022, has faced an increased detection of positive lung nodules, especially in cases that are deep-seated, multiple, and potentially diseased. In the absence of Hybrid OR capabilities, considerations for surgical indications, frequency and interpretation of imaging follow-ups, and selection of surgical methods for such patients are being organized and shared in this report.

Culture-positive and culture-negative empyema after thoracoscopic decortication: A comparison of short-term and long-term outcomes

Speaker:

Ya-Fu Cheng

Organization/Institute:

Division of Thoracic Surgery, Department of Surgery, Changhua Christian Hospital, Changhua, Taiwan

Abstract

Background: Empyema thoracis is known as a serious infectious disease associated with high morbidity and mortality. The perioperative outcomes between culture-positive and culture-negative empyema after thoracoscopic decortication remained controversial, especially since there were no studies reported the survival outcomes between culture-positive and culture-negative empyema.

Methods: This study is a retrospective analysis in a single institute. Patients with empyema thoracis who underwent thoracoscopic decortication between January 2012 and December 2021 were included in the study. Patients were grouped into a culture-positive group and a culture-negative group according to culture results obtained within two weeks after surgery.

Results: There were 1,087 empyema patients who received surgery, 824 patients were enrolled after exclusion. Among these, 366 patients showed positive culture results and 458 patients showed negative results. Longer ICU stays (11.69 vs. 5.64 days, $p < 0.001$), longer ventilator usage (24.70 vs. 14.01 days, $p = 0.002$) and longer post-operative hospital stays (40.83 vs. 28.37 days, $p < 0.001$) were observed in the culture-positive group. However, there was no significant 30-day mortality between the two groups (5.2% in culture negative vs. 5.0% in culture positive, $p = 0.913$). The 2-year survival was not significantly different between the two groups ($p = 0.236$).

Conclusions: Culture-positive and culture-negative empyema patients who underwent thoracoscopic decortication showed similar short-term and long-term survival outcomes. High risk of death was most associated with advanced age, higher CCI score, phase III empyema and cause other than pneumonia.

Title:

Management of Early Lung Cancer:
Result and Challenge of National Lung Cancer Screening – Clinical
Experience of Chung Shan Medical University Hospital

Speaker:

Hsu Chih Huang, M.D. Ph.D

Organization/Institute:

Department of Thoracic Surgery, Chung Shan Medical University
Hospital

Abstract

Based on findings from Taiwan Lung Cancer Screening in Smoker Trail (TALENT) study, there was an approximate 2.6% detection rate for lung cancer in Taiwan. Therefore, low-dose CT screening protocol for lung cancer by Health Promotion Administration (HPA) started since July 2022. In the first year, more than fifty-thousand cases had been completed in this protocol and the overall detection rate were about 1.1% for lung cancer, including 85% for early stage (0 and 1). However, there were still challenge in the clinical practice due to discrepancy for interpretation of results between radiologists, chest physicians, thoracic surgeons and pathologist. Today we will share the experience and preliminary results, and discuss about the challenge of low-dose CT screening protocol for lung cancer in our hospital, focusing on the image interpretation, strategy of management and prospect in the future.

題目：早期肺癌全方位治療及多發性毛玻璃的外科處理 – 奇美經驗

講師 蘇英傑 Ying-Chieh Su

服務單位：奇美醫院胸腔外科 Department of thoracic surgery, Chimei hospital

內文(Abstract)

The widespread use of low-dose computed tomography (LDCT) has led to an increased detection of asymptomatic pulmonary nodules, particularly following the implementation of a general LDCT screening policy in Taiwan in 2022 for patients with a family history of cancer. This policy has notably increased the identification of non-symptomatic sub-centimeter nodules, which are often challenging to localize during surgery, especially when they present as part-solid and with multiple lesions. This complexity necessitates careful consideration regarding the timing and type of surgical intervention to maximize lung preservation.

Since 2017, Chimei Hospital has been utilizing cone-beam CT technology in its operation theaters, also known as hybrid rooms, to enhance the localization of these small pulmonary nodules during thoracic surgeries. As of the first quarter of 2024, more than 750 surgeries have been successfully performed in these hybrid rooms, targeting lesions that were largely of unknown etiology prior to surgery. Approximately 10% of these cases involved multiple nodules, underscoring the complexity in deciding on the treatment approach for multiple sub-centimeter, sub-solid nodules of unknown etiology. This innovative approach has provided significant benefits to the thoracic surgery department by facilitating the precise localization and treatment of these challenging pulmonary nodules.

Title:

Culture-positive and culture-negative empyema after thoracoscopic decortication: A comparison of short-term and long-term outcomes

Speaker:

Ya-Fu Cheng

Organization/Institute:

Division of Thoracic Surgery, Department of Surgery, Changhua Christian Hospital, Changhua, Taiwan

Abstract

Background: Empyema thoracis is known as a serious infectious disease associated with high morbidity and mortality. The perioperative outcomes between culture-positive and culture-negative empyema after thoracoscopic decortication remained controversial, especially since there were no studies reported the survival outcomes between culture-positive and culture-negative empyema.

Methods: This study is a retrospective analysis in a single institute. Patients with empyema thoracis who underwent thoracoscopic decortication between January 2012 and December 2021 were included in the study. Patients were grouped into a culture-positive group and a culture-negative group according to culture results obtained within two weeks after surgery.

Results: There were 1,087 empyema patients who received surgery, 824 patients were enrolled after exclusion. Among these, 366 patients showed positive culture results and 458 patients showed negative results. Longer ICU stays (11.69 vs. 5.64 days, $p < 0.001$), longer ventilator usage (24.70 vs. 14.01 days, $p = 0.002$) and longer post-operative hospital stays (40.83 vs. 28.37 days, $p < 0.001$) were observed in the culture-positive group. However, there was no significant 30-day mortality between the two groups (5.2% in culture negative vs. 5.0% in culture positive, $p = 0.913$). The 2-year survival was not significantly different between the two groups ($p = 0.236$).

Conclusions: Culture-positive and culture-negative empyema patients who underwent thoracoscopic decortication showed similar short-term and long-term survival outcomes. High risk of death was most associated with advanced age, higher CCI score, phase III empyema and cause other than pneumonia.

Title:

Set a bar for cure: redefine the value of pCR and event free survival for resected NSCLC patients by IO+chemo treatment in neoadjuvant setting

Speaker: 李瑞英 醫師

Organization/Institute: 高雄醫學大學附設中和紀念醫院胸腔外科

Abstract

In the past, the standard of care of neoadjuvant and adjuvant is chemo. However, researches show that chemo therapy in neoadjuvant or adjuvant can only increase 5% to 6% overall survival. Immunotherapy has been discussed a lot in recent years, which plays the role in regulating of immune checkpoints in order to eliminate tumor cell. In 2022, Nivolumab plus chemo regimen has been listed in NCCN guideline for neoadjuvant. In CM816, nivolumab plus chemo demonstrate significant improvement in pCR & MPR compared to chemo (pCR: 24% vs 2.2%; MPR: 36.9% vs 8.9%). Meanwhile, nivolumab plus chemo also show long term benefit in EFS. In clinical practice, not only pCR and EFS, how to decrease distant recurrence rate is also one of the important considerations for physicians. Nivolumab plus chemo decrease about 45% risk compared to chemo, especially in CNS. However, for those patients who receive neoadjuvant treatment, who should be given adjuvant after surgery is another key topic to be discussed.

演講摘要

題目: Strategic approach to maximize overall survival for EGFRm+ NSCLC: Cross function collaboration.

摘要:

Targeted therapy has revolutionized the approach to treating non-small cell lung cancer (NSCLC) over the past decade, and the years 2022-2023 are expected to bring even more significant advances in this field. Novel drugs under development, such as EGFR inhibitors and combination therapies that target multiple pathways, are showing promising results in clinical trials, offering hope to those with previously

untreatable forms of NSCLC. Additionally, advancements in molecular profiling and the integration of artificial intelligence with precision medicine are set to further improve personalized treatment approaches, leading to better outcomes for patients with NSCLC. Dr. Luo will give a comprehensive talk about the management of EGFR TKI resistance in NSCLC treatment through cross function collaboration.

Endoscopic treatment for Barrett's esophagus and early esophageal cancer

義大醫院 王文倫醫師

Thermal ablation for Barrett's esophagus (BE) has widely been established in gastrointestinal endoscopy during the last decade. The radiofrequency ablation (RFA) and argon-plasma coagulation (APC) are the mainly used methods previously. However, the perfect tool for BE ablation has not yet been developed: None of the methods is able to guarantee a complete ablation success of 100 %. In addition, stricture formation is reported in 5 to over 10 % of patients. It therefore appears that there is need for further innovation.

Recently, two new endoscopic ablation modalities, hybrid-APC and cryotherapy, showed having a comparable efficacy and a lower complication risk. The rationale for the development of Hybrid-APC was the idea that fluid cushioning prior to APC may lead to a lower rate of complications during clinical application, especially stricture formation. For ablation of BE, the macroscopic complete remission was achieved in 96 % of patients after hybrid APC and 78 % of patients were histologically free from intestinal metaplasia at short-term follow-up. On the other hand, endoscopic cryotherapy involves the application of extreme cold to tissue, resulting in rapid intracellular and extracellular freezing, and eventually cell necrosis. A recent multicenter study revealed that patients reported comparable efficacy, but less postprocedural pain and dysphagia after cryotherapy as compared with RFA.

In this symposium, we will discuss the current status and recent advances in endoscopic ablation for esophageal neoplasia.

Title:

CONCEPT OF COMPLETE RESECTION IN LUNG CANCER. HOW TO IMPROVE OUR RESULTS

Speaker:

Miguel Congregado MD PhD

Organization/Institute:

Quironsalud Infanta Luisa Hospital. Seville. Spain.

Abstract

Lung cancer is a major health problem worldwide. Over the last years, great technical and technological advances have been achieved (le.g. anatomical segmentectomy techniques and RATS robotic assisted thoracic surgery). But even so, the overall results of lung cancer surgery remain poor compared to other tumors, leading the malignant neoplasm with the highest mortality. We must not forget that our ultimate goal is to achieve greater long-term survival with a good quality of life.

In this presentation we will talk about how to improve these results by focusing on the concept of complete resection of lung cancer. The evolution of this concept and what items it must currently fulfill will be explained:

- The resection margins (bronchial, vascular, peribronchial, around the tumor or the margins of any resected tissue) must be free of tumor proven microscopically.
- The lung resection has to be accompanied by a systematic nodal dissection or by a lobe-specific systematic nodal dissection.
- 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.

The concept of incomplete surgery (R0, R1,R2) will also be discussed, to understand that complete resection is something more than R0, introducing the term uncertain resection (R0un) as those cases in which no evidence of residual disease but does not meet all the criteria for complete resection of the tumor. This concept justifies why expected results are not achieved when it was assumed that a complete resection had been performed and showing the statistical differences that exist between these groups when the R0un factor is evaluated.

Finally, the points on how to improve or do it better and the new paradigm changes that can change this changing concept of complete resection are presented

**Title: Advances in energy devices and staplers for safe use
during lung cancer surgery**

Speaker: Yasushi Shintani

Organization/Institute: Department of General Thoracic Surgery, Osaka University

Abstract

A minimally invasive lung cancer surgery procedure involves not only minimal access via ports for thoracoscope and video assistance, but also lung cancer tissue resection performed with minimal disruption to surrounding structures. These procedures typically utilize small incisions, specialized instruments, and advanced imaging techniques to access and remove cancerous tissue. Results of the JCOG0802 study, a multicenter randomized clinical trial with a Japanese population of patients with stage IA non-small cell lung cancer (NSCLC) ≤ 2 cm and a consolidation-to-tumor ratio >0.5 cm, were recently published. In this phase III trial, more than 1000 participants were randomized to a segmentectomy or a lobectomy arm, with the primary objective demonstration of non-inferior overall survival following a segmentectomy. After a mean follow-up period of more than seven years, patients who underwent a segmentectomy had a superior overall five-year survival rate, similar five-year recurrence-free survival rate, and higher rate of local recurrence as compared to those who received a lobectomy. Surprisingly, improved survival in the segmentectomy group appeared to be due to a decrease in death from a second cancer and also, though to a lesser extent, from non-cancer diseases. Consequently, the Japan Lung Cancer Society Guidelines were revised to recommend a segmentectomy as the preferred surgical treatment for small NSCLC cases, leading to increased use of a minimally invasive lung segmentectomy procedure for early-stage lung cancer.

For minimally invasive lung cancer surgery, development of energy devices and automatic suture devices has significantly contributed to the evolution and safety of treatment regardless of the procedures used. Ultrasonic energy devices enable more rapid cutting and less thermal spread as compared to advanced bipolar devices. A key feature is cutting at the tip, which allows for fine dissection like using scissors around vessels and bronchus tissue. To achieve an accurate anatomical segmentectomy, precise identification and dissection of the segmental bronchus, vessels and intersegmental demarcation are necessary. For these procedures, the Harmonic™ 1100 scalpel is useful, as the heat control technology is more advanced as compared to previous models, while its curved fine tip provides faster transection speeds, lower maximum blade temperature, and greater precision for tissue dissection. Powered staplers that use a motor to control both staple firing and the cutting action of the blade have also been developed. Such devices are widely used for minimally invasive surgery to avoid intraoperative hand tremors by the operating surgeon, thereby minimizing tissue damage. Recently, a new surgical stapler designed for one-handed use, the Echelon 3000 Stapler™, has been shown to improve control and access by incorporating powered continuous articulation, a wider articulation angle, and a larger jaw aperture, thus enabling better access and greater control over each transection. In

addition, staple line reinforcement and buttressing are popular surgical techniques used to increase staple line strength, and also help prevent internal bleeding during and after surgery, as well as postoperative air leakage from the fragile lung parenchyma. Additionally, the Echelon Endopath™ Staple Line Reinforcement (SLR) buttressing device provides sterile bioabsorbable staple line reinforcement to reduce potential complications during thoracic surgery procedures.

Gaining understanding regarding the proper use of energy devices and staplers when employed for lung cancer surgery can enhance their effectiveness and safety. This presentation will discuss criteria used for their selection as well as merits, risks, and safety precautions relevant to each step of the surgical process.

Title: Neoadjuvant and adjuvant immunotherapy: new horizons for patients with early-stage NSCLC

Speaker: Kao, Ming-Wei

Organization/Institute: E-DA Hospital, E-DA Healthcare Group

Abstract

The importance of immunotherapy has grown more than ever, ushering in a new paradigm shift in NSCLC treatment. Recently, such a novel therapeutic strategy has been applied to perioperative treatments. Recent trials have shown that perioperative immunotherapy can benefit non-metastatic lung cancer patients, indicating remarkable progress in the field. Two key clinical studies on adjuvant treatment were recently published. The IMpower010 expands on the widely accepted standard of care of surgery followed by adjuvant chemotherapy, and has demonstrated a practice-changing DFS benefit for patients with resected PD-L1+/PD-L1 high, stage II-III NSCLC, which is now translating into a positive OS trend in a well-defined population based on PD-L1 expression. The KEYNOTE-091 subgroup data by PD-L1 status and disease stage are counterintuitive, whereas the equivalent data from IMpower010 are consistent with previous studies in the early-stage and metastatic setting.

Neoadjuvant immunotherapy in operable NSCLC patients has recently demonstrated promising results. In particular, the Checkmate 816 study found that neoadjuvant ICI plus chemotherapy combinations prolonged DFS and resulted in a

pathologic major and complete response. These perioperative immunotherapies are expected to improve overall survival rates in patients with early-stage NSCLC.