

# Comparative validity of the Assess Respiratory Risk in Surgical Patients in Catalonia (ARISCAT) score and Surgical Lung Injury Prediction (SLIP-2) in predicting the incidence of postoperative pulmonary complications in thoracic surgery

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## Abstract

**Introduction:** Postoperative pulmonary complications (PPCs) are a significant cause of morbidity and mortality following thoracic surgery. Early identification of at-risk patients allows for timely intervention and improved outcomes. Several risk stratification tools, such as the Assess Respiratory Risk in Surgical Patients in Catalonia (ARISCAT) score and Surgical Lung Injury Prediction (SLIP-2) model, have been developed to predict PPCs. However, their comparative performance in thoracic surgery patients remains unclear.

**Objective:** To compare the predictive validity of the ARISCAT and SLIP-2 models in predicting the occurrence of PPCs in patients undergoing thoracic surgery.

**Design:** Retrospective observational study.

**Setting:** Medical records of patients who underwent thoracic surgery at Wahidin Sudirohusodo

Hospital, Makassar, from January 2023 to December 2024.

**Results:** A total of 96 thoracic surgery patients were included in this study, with an overall PPC incidence of 66.7%. The ARISCAT score demonstrated an area under the curve (AUC) of 0.743 (95% CI: 0.634–0.852), with a cut-off value of 40.50, yielding a sensitivity of 70.3%, specificity of 68.8%, and accuracy of 69.79%. The SLIP-2 model showed an AUC of 0.706 (95% CI: 0.634–0.852), with a cut-off value of 17.50, a sensitivity of 59.4%, a specificity of 65.6%, and an accuracy of 61.46%.

**Conclusion:** Both the ARISCAT and SLIP-2 scores are useful tools for predicting PPCs in patients undergoing thoracic surgery. However, the ARISCAT score demonstrated superior predictive validity and accuracy compared to SLIP-2 in this cohort.

**Keywords:** ARISCAT, SLIP-2, thoracic surgery, postoperative pulmonary complications, risk prediction.

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## Introduction

Postoperative pulmonary complications (PPCs) refer to any adverse changes in the respiratory tract that occur after surgery and unfavorably impact a patient's clinical course. These complications encompass a range of conditions, including respiratory infections, atelectasis, respiratory failure, exacerbation of chronic obstructive pulmonary disease, pleural effusion, pneumothorax, bronchospasm, and aspiration pneumonitis. (1,2) The PPCs are a significant contributor to postoperative morbidity and mortality, particularly following thoracic surgery, with reported incidences varying widely from 5% to 80%. (3) A 2016 study in Indonesia reported a PPCs incidence of 18.3%, which was higher than that of

post-cardiovascular surgery complications. (4) The occurrence of PPCs is associated with increased hospitalization duration, higher rates of intensive care unit admission, and increased medical costs. (2,5) Notably, the PPCs are the leading cause of death after lung resection, with a mortality rate of 84%. (6)

Pulmonary complications typically manifest 48–72 hours post-surgery due to progressive respiratory decline. Therefore, early detection of respiratory changes is crucial for anticipating and subsequently making a clinical diagnosis of pulmonary complications. (7) The application of clinical risk scores to predict pulmonary complications can help identify high-risk patients. Several clinical risk scores for predicting PPCs after thoracic surgery have been proposed, including the Assess Respiratory in Surgical Patients in Catalonia (ARISCAT) and Model Surgical Lung Injury Prediction 2 (SLIP-2). (5)

The ARISCAT score is a widely recognized tool for predicting PPCs in patients undergoing general, spinal, or local anesthesia. ARISCAT utilizes variables that can be easily and objectively evaluated in clinical practice (8) and can predict PPCs development in high-risk groups, facilitating risk-reduction measures. (9) However, the ARISCAT risk index is considered insufficient for evaluating PPCs in thoracic surgery owing to direct interventions on the thoracic wall, mediastinum, or lungs in such cases. (9)

The SLIP-2 model was designed to predict pulmonary complications, specifically acute respiratory distress syndrome (ARDS), in high-risk patients. A multicenter cohort analysis demonstrated the utility of the SLIP-2 model in predicting postoperative ARDS in high-risk surgical patients. (10) The SLIP-2 score showed good discriminant results with an area under the curve (AUC) of 0.84. (11) However, there is currently no research on the use of the SLIP-2 score to predict PPCs in thoracic surgery. Furthermore, a direct comparison between the ARISCAT score and SLIP-2 in predicting the incidence of PPCs in thoracic surgery patients has not yet been conducted. This study aimed to determine the comparative efficacy of the ARISCAT and SLIP-2 scores in predicting the incidence of PPCs in thoracic surgery patients admitted to the intensive care unit in Makassar.

## Methods

This study employed a retrospective observational design with a diagnostic test approach and was conducted at Wahidin Sudirohusodo Hospital, Makassar, from January 2023 to December 2024. The study population included patients who had under-

gone thoracic surgery. Participants were selected using a total sampling method based on the following inclusion criteria: age  $\geq 18$  years and the availability of complete medical records.

Demographic characteristics, clinical data, and incidence of PPCs were extracted from medical records. The PPCs were defined according to European Perioperative Clinical Outcome (EPCO) criteria. The ARISCAT and SLIP-2 scores were retrospectively calculated for each subject based on the collected data. The primary independent variables were the ARISCAT and SLIP-2 scores. The dependent variable was PPC occurrence. Age and nutritional status were considered control variables in this study.

Statistical analyses were performed using SPSS (version 27). Receiver operating characteristic (ROC) curve analysis was employed to evaluate and compare the predictive performance of the ARISCAT and SLIP-2 scores, assessing their AUC, sensitivity, and specificity. Normality testing was conducted using the Shapiro-Wilk test. Between-group comparisons were analyzed using the Mann-Whitney U test and chi-square test, as appropriate. The workflow encompassed the following steps: extraction of medical record data, calculation of ARISCAT and SLIP-2 scores, identification of PPCs, and analysis of the diagnostic test performance. Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Medicine, Hasanuddin University, Makassar (approval number: 243/UN4.6.4.5.31/PP36/2025).

## Results and discussion

Our study included 96 patients who underwent thoracic surgery. The cohort was predominantly male, with an average age of 36.75 years. Most patients presented with a normal nutritional status, had no reported comorbidities or anemia, and maintained normal oxygen saturation. Most surgical procedures were elective and primarily performed for tumor resection, with an average duration of 120 min. The average length of hospital stay was 8.55 days, and the overall mortality rate observed in this study was 9.4%. **Table 1** shows detailed demographic and clinical characteristics.

**Table 2** indicates that pleural effusion was the most common pulmonary complication, and a higher ARISCAT score was significantly associated with its occurrence ( $p=0.014$ ). For respiratory infection, atelectasis, and pneumothorax, neither the ARISCAT nor SLIP-2 scores showed a statistically significant association. However, the very low incidence of atelectasis (one case) and pneumothorax (four cases) in this study limited the ability to draw firm conclusions for these specific complications.

**Table 3** presents the median ARISCAT and SLIP-2 scores for patients who did and did not develop any PPCs after thoracic surgery, along with their respective p-values from the Mann-Whitney U test. Patients who developed PPCs had a significantly higher median ARISCAT score of 48.83 (range 24.00–91.00) compared to patients who did not develop PPCs, whose median ARISCAT score was 35.00 (range 24.00–67.00), with a p-value of <0.001, which was statistically significant. This indicated a strong association; patients with higher ARISCAT scores were significantly more likely to develop overall PPCs after thoracic surgery. Similarly, patients who developed PPCs had a significantly higher median SLIP-2 score of 21.00 (range 15.00–39.00) compared to patients without PPCs, whose median SLIP-2 score was 17.00 (range 15.00–29.00), with a p-value of 0.001, which was also highly significant. This suggests that higher SLIP-2 scores are significantly associated with an increased likelihood of developing PPCs after thoracic surgery.

**Figure 1** visually supports the conclusion that both the ARISCAT and SLIP-2 scores are predictive of PPCs in thoracic surgery. However, the ROC curve of the ARISCAT score was consistently closer to the ideal top-left corner, indicating its superior diagnostic accuracy and discriminatory power compared to the SLIP-2 score in this context. This visual evidence reinforces the quantitative AUC values and accuracy metrics previously discussed.

Both the ARISCAT and SLIP-2 scores demonstrated good predictive ability for PPCs following thoracic surgery. As illustrated in **Figure 1**, the ARISCAT score achieved an AUC of 0.743 (95% CI: 0.634–0.852), whereas the SLIP-2 score yielded an AUC of 0.706 (95% CI: 0.601–0.810). Both AUC values were considered good ( $AUC \geq 0.7$ ), and their predictive capabilities were statistically significant ( $p < 0.001$ ). The optimal cutoff value for the ARISCAT score was determined to be 40.50, offering a sensitivity of 0.703 and a specificity of 0.688 for predicting PPCs after thoracic surgery. For the SLIP-2 score, the optimal cutoff was 17.50, providing a sensitivity of 0.594 and a specificity of 0.656 (**Table 4**).

**Table 5** presents a comparison of the diagnostic accuracies of the ARISCAT and SLIP-2 scores in predicting PPCs after thoracic surgery. The analysis employed optimal cutoff values determined for each score and utilized the chi-square test to assess statistical significance. Using a cutoff value of  $\geq 40.50$ , 70.3% (45 out of 55) developed PPCs, while 29.7% (19 out of 41) of those with ARISCAT <40.50 developed PPCs. Conversely, among patients who did

not develop PPCs, only 31.3% (10 of 32) had an ARISCAT score of 40.50 or higher. The odds ratio (OR) was 5.211, indicating that patients with an ARISCAT score of 40.50 or higher were over five times more likely to develop PPCs than those with a score below 40.50. The p-value was <0.001, indicating a highly statistically significant association between an ARISCAT score above the cutoff and the occurrence of PPCs. The overall accuracy of the ARISCAT score in predicting PPCs was 69.79%.

Using a cutoff value of  $\geq 17.50$  among patients with SLIP-2, 59.4% (38 out of 49) developed PPCs, while 40.6% (26 out of 47) of those with SLIP-2 <17.50 developed PPCs. Among the patients who did not develop PPCs, 34.4% (11 out of 32) had a SLIP-2 score of 17.50 or higher. The OR was 2.790, indicating that patients with a SLIP-2 score of 17.50 or higher were approximately 2.8 times more likely to develop PPCs than those with a score below 17.50. The p-value was 0.021, indicating a statistically significant association between SLIP-2 score above the cutoff and the occurrence of PPCs, although it was less significant than ARISCAT's p-value. The overall accuracy of the SLIP-2 scores in predicting PPCs was 61.46%.

The incidence of PPCs following thoracic surgery in this study was 66.7%, which is notably higher than that reported in other cohorts. For instance, Admass et al. reported a PPC incidence of 24.5% after post-thoracic surgery. (12) In contrast, Eldaabossi et al. observed PPCs in 20.4% of cases, with pneumonia and atelectasis accounting for 9.2%. (13) Other studies have also reported varying incidences, such as 12.3% for general PPCs (14) and 42.4% for patients undergoing abdominal surgery in Zimbabwe. (15) This variability in PPCs incidence across studies was likely attributable to differences in patient populations, surgical types, definitions of PPCs, and the presence and influence of various risk factors.

PPCs are multifactorial and influenced by numerous risk factors. In thoracic surgery, prolonged intensive care unit (ICU) stay, lower forced expiratory volume in 1 second (FEV1), and higher ARISCAT scores have been identified as significant contributors. (13) Other reported risk factors include advanced age and extreme body mass index ( $BMI > 30$  or  $< 18.5$ ). (14) Hypoalbuminemia ( $< 35$  g/l), American Society of Anesthesiologists (ASA) physical status, male sex, duration of one-lung ventilation (OLV), and prolonged surgical duration are also associated with an increased risk of PPCs. (9,16) Additionally, fluid overload, pre-existing obstructive pulmonary disease, (17) presence of a nasogastric tube, intraoperative blood loss, and suboptimal preoperative peripheral oxygen saturation ( $SpO_2$ ) have

been linked to PPCs. (12)

Our findings demonstrated that the ARISCAT score was significantly higher in patients who developed PPCs after thoracic surgery than in those who did not. This aligned with previous research by Eldaabossi et al., who found higher ARISCAT scores ( $42.8 \pm 10.7$  in the PPCs group vs.  $38.4 \pm 12.7$  without PPCs) to be a significant predictor of PPCs post-thoracic surgery. (13) Similar results were reported by Sarma et al. in major surgery patients (mean ARISCAT  $50.94 \pm 20.79$  with PPCs vs.  $21.23 \pm 19.53$  without PPCs) (14) and by Balkaya et al. in spinal surgery patients. (18)

In this study, the ARISCAT score demonstrated a good discriminatory ability for predicting PPCs post-thoracic surgery, with an AUC of 0.743. At its optimal cutoff value of 40.50, ARISCAT achieved a sensitivity of 0.703, specificity of 0.688, positive predictive value (PPV) of 0.537, negative predictive value (NPV) of 0.737, positive likelihood ratio (LR+) of 2.253, negative likelihood ratio (LR-) of 0.432, and diagnostic accuracy of 69.79%. These results strongly suggested that ARISCAT was an accurate predictor of PPCs following thoracic surgery. This finding was consistent with those of other studies. Ulger et al. found a significant association between high ARISCAT scores and the development of PPCs in elective thoracic surgery with one-lung ventilation. (9) Sarma et al. reported ARISCAT as a reliable predictor of PPCs with a cutoff of 33.5, demonstrating high sensitivity and NPV. (14) ARISCAT's utility has also been reported in other surgical contexts; for instance, Siddiqui et al. found it predictive for cardiac surgery PPCs (AUC 0.751), (16) Jung et al. for lung resection (AUC 0.61), (8) and Arrieta et al. for elderly abdominal surgery patients (AUC 0.7867). (19) Thus, ARISCAT consistently proves to be a sensitive and acceptable risk assessment tool for predicting PPCs in general surgery and specifically in thoracic surgery.

The strength of the ARISCAT score lies in its seven independent variables: recent history of upper respiratory tract infection (URTI), blood oxygen saturation, surgical site, preoperative anemia, surgical duration, patient age, and emergency surgery. Preoperative SpO<sub>2</sub> and URTI are objective indicators of cardiopulmonary function and inflammation, respectively, with URTIs significantly increasing the risk of PPCs. (20,21) Preoperative anemia, surgical incision proximity to the diaphragm, longer surgical duration, and advanced age also significantly contribute to the risk of PPCs. (18) ARISCAT's inclusion of these critical factors enables effective routine assessment, allowing for proactive measures to mitigate risk, optimize outcomes, and reduce healthcare costs. (14)

This study also found that the SLIP-2 score was significantly higher in patients who developed PPCs after thoracic surgery. The SLIP-2 score yielded an AUC of 0.706 for predicting post-thoracic surgery PPCs, indicating good discrimination ability. At a cutoff of 17.50, the SLIP-2 demonstrated a sensitivity of 0.594, specificity of 0.656, PPV of 0.447, NPV of 0.776, LR+ of 1.727, LR- of 0.619, and diagnostic accuracy of 61.46%.

While direct comparisons of SLIP-2 for general PPCs are limited, a study by Koh et al. found SLIP-2 to be effective in predicting the risk of ARDS in 1,562 patients, achieving an AUC of 0.84 with high sensitivity and specificity. (11) The SLIP-2 model was designed to predict acute lung injury/ARDS based on preoperative characteristics and procedure-related factors, including sepsis, high-risk vascular or cardiac surgery, emergency surgery, cirrhosis, surgical site, increased respiratory rate, high fraction of inspired oxygen (FiO<sub>2</sub>), and low SpO<sub>2</sub>. (10,11,22) Although ARDS was not explicitly observed in our thoracic surgery cohort, SLIP-2's ability to predict general PPCs suggested its broader utility.

To the best of our knowledge, this was the first study to directly compare ARISCAT and SLIP-2 in predicting PPCs after thoracic surgery. The results indicated that ARISCAT generally outperformed SLIP-2 in this context, exhibiting higher AUC, sensitivity, specificity, PPV, LR+, and overall diagnostic accuracy. Conversely, SLIP-2 demonstrated a better NPV and lower LR-.

This superior performance of ARISCAT may be partly attributed to the inclusion of age as a parameter, which was absent in SLIP-2. (22) Patients aged  $\geq 65$  years have a significantly higher risk of PPCs owing to age-related cardiorespiratory comorbidities. (23) Additionally, ARISCAT's inclusion of a recent history of respiratory tract infection (within the last month) was a critical advantage. This factor was significantly associated with PPCs in our study, consistent with the established literature, which has shown that preoperative respiratory infections exacerbate respiratory mucosal conditions, increase inflammation, and impair lung defense mechanisms, leading to complications such as pneumonia and atelectasis. (20,21)

Both scores incorporated emergency surgery as a significant risk factor for PPCs, a finding consistent across numerous studies. (20,21) Emergency surgery leads to suboptimal physiological conditions, systemic inflammatory responses, and impaired pulmonary defense, increasing the risk of various PPCs. Furthermore, our study found that lower mean albumin levels were significantly associated with PPCs, aligning with the findings of Nithiuthai

et al. (24) and Ulger, (9) which underscored the role of hypoalbuminemia in increasing the risk of infection. While ARISCAT is a robust preoperative score, its limitation lies in not incorporating intraoperative variables, such as fluid management, ventilation settings, desaturation events, or the use of vasoactive agents. Integrating these factors could potentially enhance the predictive power. (22)

Previous comparisons of ARISCAT with other scales have yielded mixed results. For critically ill Chinese patients, Xu et al. found that ARISCAT's AUC (0.598) was lower than that of Local Assessment of Ventilatory Management During General Anaesthesia for Surgery (LAS VEGAS) (0.625). (25) However, for patients undergoing cardiac surgery, Siddiqui et al. reported that ARISCAT had superior sensitivity, PPV, NPV, and diagnostic accuracy compared with LAS VEGAS, despite both having limited overall predictive value in this high-risk population. (16) These variations highlight the context-specific performance of the risk assessment tools. High-risk factors, such as a preoperative SpO<sub>2</sub> of  $\leq 90\%$ , surgical duration of  $\geq 180$  minutes, or age of  $\geq 80$  years, can significantly increase ARISCAT scores, implying a higher risk of PPCs. (25)

### **Limitations**

A key strength of this study was its novel direct

comparison between the ARISCAT and SLIP-2 scores in the context of thoracic surgery. However, the retrospective design of this study limited the exploration of other potential factors. Additionally, since this was a single-center study conducted solely in Makassar, its generalizability may be restricted.

### **Conclusion**

In this study, the incidence of PPCs following thoracic surgery was 66.7%, with pleural effusion (57.81%) and respiratory infection (42.19%) being the most prevalent complications. Both ARISCAT scores of  $>40.5$  and SLIP-2 scores of  $>17.5$  were significantly associated with the incidence of PPCs. However, the ARISCAT score demonstrated superior diagnostic performance, with a higher AUC, sensitivity, specificity, and overall accuracy compared to SLIP-2.

These findings suggest that the ARISCAT score is recommended as the primary screening tool for predicting PPCs after thoracic surgery because of its high accuracy. Although SLIP-2 can be considered a complementary tool, its predictive capabilities were not as robust as those of ARISCAT in this cohort. Future research with larger sample sizes and prospective designs is warranted to validate these results and investigate additional risk factors that may influence PPC outcomes.

**Table 1.** Characteristics of research subjects

Characteristic	PPCs		p-value
	Yes	No	
Age (years), mean±SD	36.75±18.63	36.15±17.53	0.881 <sup>a</sup>
Gender, n			0.579 <sup>c</sup>
- Male	51	27	
- Female	13	5	
BMI (kg/m <sup>2</sup> ), mean±SD	21.55±3.52	20.83±3.74	0.359 <sup>a</sup>
ASA PS, n			0.480 <sup>e</sup>
- 1	1	0	
- 2	38	20	
- 3	24	10	
- 4	1	2	
Comorbid, n			0.699 <sup>c</sup>
- Yes	10	6	
- No	54	26	
Hemoglobin <10 (g/dl), n			0.747 <sup>d</sup>
- Yes	8	3	
- No	56	29	
Diagnosis, n			0.771 <sup>c</sup>
- Tumor	25	17	
- Infection	20	7	
- Trauma	7	3	
- Fistellar	5	2	
- Corpus alienum	7	3	
Operation duration (minutes), median (min-max)	120 (60–210)	120 (45–420)	0.681 <sup>b</sup>
SpO <sub>2</sub> (%), median (min-max)	98.5 (94–100)	98.5 (90–99)	0.763 <sup>b</sup>
Emergency procedures, n			0.327 <sup>d</sup>
- Yes	9	2	
- No	55	30	
History of infection in the last 1 month, n			<0.001 <sup>c</sup>
- Yes	27	0	
- No	37	32	
Length of stay (days), median (min-max)	8 (1–21)	9 (4–30)	0.177 <sup>b</sup>
Mortality, n			1.000 <sup>d</sup>
- Yes	6	3	
- No	58	29	
Albumin (g/dl), mean±SD	3.30±0.66	3.71±0.75	0.022 <sup>a</sup>
Anesthesia techniques, n			0.818 <sup>e</sup>
- GETA	32	15	
- CEGA	3	1	
- GETA OLV	22	12	
- CEGA OLV	4	3	
- Other	1	2	

Legend: PPCs=postoperative pulmonary complications; SD=standard deviation; BMI=body mass index; ASA PS=American Society of Anesthesiologists Physical Status; SpO<sub>2</sub>=peripheral oxygen saturation; GETA=general endotracheal anesthesia; CEGA=combined epidural general anesthesia; GETA OLV=general endotracheal anesthesia with one-lung ventilation; CEGA OLV=combined epidural general anesthesia with one-lung ventilation.

<sup>a</sup>Independent t-test, <sup>b</sup>Mann-Whitney U test, <sup>c</sup>chi-square test, <sup>d</sup>Fisher's exact test, <sup>e</sup>likelihood ratio.

**Table 2.** Types of post-thoracic surgery pulmonary complications

Diagnosis of pulmonary complications, n		Score			
		ARISCAT, median (min-max)	p-value	SLIP-2, median (min-max)	p-value
Respiratory infection	Yes (27)	49 (24–91)	0.485	21 (16–34)	0.146
	No (69)	41 (24–73)		17 (15–39)	
Pleural effusion	Yes (37)	47 (24–73)	0.014	21 (15–39)	0.086
	No (59)	40 (24–91)		17 (15–34)	
Atelectasis	Yes (1)	49	0.583	21	0.521
	No (95)	43 (24–91)		18 (15–39)	
Pneumothorax	Yes (4)	67.5 (32–91)	0.553	16.5 (16–26)	0.378
	No (92)	42 (24–73)		18 (15–39)	

Legend: ARISCAT=Assess Respiratory in Surgical Patients in Catalonia; IQR=interquartile range; SLIP-2=Surgical Lung Injury Prediction 2.

**Table 3.** Relationship between ARISCAT and SLIP-2 scores and PPCs in thoracic surgery

Parameter	PPCs		p-value
	Yes, median (min-max)	No, median (min-max)	
ARISCAT score	48.83 (24.00–91.00)	35.00 (24.00–67.00)	<0.001
SLIP-2 score	21.00 (15.00–39.00)	17.00 (15.00–29.00)	0.001

Legend: ARISCAT=Assess Respiratory in Surgical Patients in Catalonia; SLIP-2=Surgical Lung Injury Prediction 2; PPCs=postoperative pulmonary complications.

**Table 4.** Summary of comparison of diagnostic test results between ARISCAT and SLIP-2 scores in predicting PPCs in thoracic surgery

Diagnostic parameters	ARISCAT	SLIP-2
AUC	0.743	0.706
Sensitivity	0.703	0.594
Specificity	0.688	0.656
Cutoff	40.500	17.500
PPV	0.537	0.447
NPV	0.737	0.776
LR+	2.253	1.727
LR-	0.432	0.619

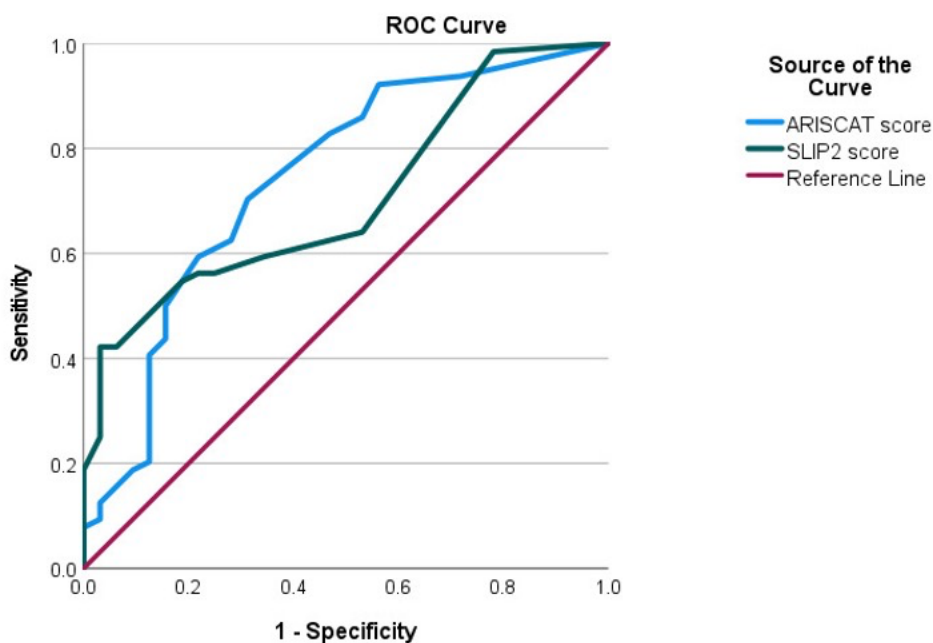
Legend: ARISCAT=Assess Respiratory in Surgical Patients in Catalonia; SLIP-2=Surgical Lung Injury Prediction 2; PPCs=postoperative pulmonary complications; AUC=area under the curve; PPV=positive predictive value; NPV=negative predictive value; LR+=positive likelihood ratio; LR-=negative likelihood ratio.

**Table 5.** Comparison of diagnostic accuracy between the ARISCAT and SLIP-2 scores

	PPCs						p-value	OR	Accuracy (%)
	Yes		No		Total				
	n	%	n	%	n	%			
<b>ARISCAT</b>									
- $\geq 40.50$	45	70.3	10	31.3	55	57.3	<0.001	5.211	69.79
- $< 40.50$	19	29.7	22	68.8	41	42.7			
<b>SLIP-2</b>									
- $\geq 17.50$	38	59.4	11	34.4	49	34.4	0.021	2.790	61.46
- $< 17.50$	26	40.6	21	65.6	47	49.0			

Legend: ARISCAT=Assess Respiratory in Surgical Patients in Catalonia; SLIP-2=Surgical Lung Injury Prediction 2; PPCs=postoperative pulmonary complications; OR=odds ratio.

**Figure 1.** AUC between ARISCAT and SLIP-2 scores in predicting PPCs in thoracic surgery



Legend: AUC=area under the curve; ARISCAT=Assess Respiratory in Surgical Patients in Catalonia; SLIP-2=Surgical Lung Injury Prediction 2; PPCs=postoperative pulmonary complications.

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