RESEARCH PAPER

Evaluation of the Acromio-Axillo-Suprasternal Notch Index as a Predictor of Difficult Airway in Patients Undergoing Elective Surgery Under General Anaesthesia.

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Received: 24th April, 2026; Revised: 20th May 2026; Accepted: 30th June, 2026; Available Online: 10th July, 2026

ABSTRACT

Background: Accurate preoperative prediction of difficult airway remains one of the most important objectives in anaesthetic practice because failure to secure the airway is associated with significant perioperative morbidity and mortality. Although numerous bedside airway assessment tests have been described, none has demonstrated consistently high predictive accuracy when used alone. The Acromio-Axillo-Suprasternal Notch Index (AASI) is a relatively simple anthropometric measurement performed in the supine position that has shown promise in predicting difficult laryngoscopy. The present study evaluated the usefulness of AASI as a predictor of difficult airway in adult patients undergoing elective surgery under general anaesthesia.

Methods: A prospective observational study was conducted at R.L. Jalappa Hospital and Research Centre between May 2024 and October 2025. Forty-eight adult patients aged 18–60 years with American Society of Anesthesiologists (ASA) physical status I–II scheduled for elective surgery requiring endotracheal intubation were included. Preoperative airway assessment included measurement of the Acromio-Axillo-Suprasternal Notch Index. Following induction of anaesthesia, direct laryngoscopy was performed using a Macintosh blade, and laryngoscopic view was graded according to the Cormack–Lehane classification. Mask ventilation difficulty, number of intubation attempts, and the need for additional airway manoeuvres were recorded. Statistical analysis was performed using SPSS version 22.

Results: Among the 48 patients, most demonstrated Cormack–Lehane Grade I (45.8%) or Grade II (41.7%) laryngoscopic views. Difficult laryngoscopy (Grades III–IV) occurred less frequently. Mask ventilation was easy in 95.8% of patients, while additional airway manoeuvres were required in only 4.2%. Mean AASI values were significantly higher in patients with difficult mask ventilation than in those with easy ventilation (0.51 ± 0.06 vs. 0.47 ± 0.03; $p = 0.05$). AASI demonstrated a statistically significant association with Cormack–Lehane grade, whereas only a trend toward increasing AASI values with higher Mallampati class was observed. Mallampati classification also correlated significantly with Cormack–Lehane grading.

Conclusion: The Acromio-Axillo-Suprasternal Notch Index is an objective, simple, and clinically useful bedside predictor of difficult airway. Incorporation of AASI into routine preoperative airway assessment may improve early identification of patients at increased risk for difficult laryngoscopy and mask ventilation, thereby facilitating better airway planning and enhancing patient safety.

Keywords: Difficult airway; Acromio-Axillo-Suprasternal Notch Index; AASI; Difficult laryngoscopy; Cormack–Lehane grading; Mallampati classification; Airway assessment.

How to cite this article: Venkataprakashreddy K, Sujatha MP, Evaluation of the Acromio-Axillo-Suprasternal Notch Index as a Predictor of Difficult Airway in Patients Undergoing Elective Surgery Under General Anaesthesia. Int J Drug Deliv Technol. 2026; 16(7): 771-782. DOI: 10.25258/ijddt.16.7.81
Source of support: Nil.
Conflict of interest: None

INTRODUCTION:

Airway management remains the cornerstone of safe anaesthetic practice. Failure to establish and maintain a patent airway continues to be one of the leading causes of anaesthesia-related morbidity and mortality worldwide. Despite remarkable advances in airway equipment, videolaryngoscopy, supraglottic airway devices, and difficult airway algorithms, unanticipated difficult airway remains a significant clinical challenge. Even a single episode of failed ventilation or delayed tracheal intubation may rapidly result in severe hypoxaemia, aspiration, neurological injury, cardiac arrest, or death. Consequently, accurate preoperative identification of patients at risk for difficult airway is essential for optimizing perioperative planning and improving patient safety.

The American Society of Anesthesiologists defines a difficult airway as a clinical situation in which a conventionally trained anaesthesiologist experiences

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difficulty with face-mask ventilation, tracheal intubation, supraglottic airway placement, or any combination of these. Difficult laryngoscopy has been reported in approximately 1–18% of patients, depending on the patient population, definition used, and operator experience. Because most difficult airways remain unanticipated, anaesthesiologists rely heavily on bedside airway assessment tests to estimate the likelihood of difficult laryngoscopy before induction of general anaesthesia.

Numerous bedside airway assessment tools have been developed over the past several decades. Commonly employed methods include the Modified Mallampati classification, thyromental distance, sternomental distance, upper lip bite test, neck circumference-to-thyromental distance ratio, thyromental height test, and composite scoring systems such as the Wilson score and Simplified Airway Risk Index. Although each test evaluates specific anatomical characteristics relevant to airway management, none possesses sufficient sensitivity and specificity to serve as a standalone predictor. The predictive performance of these assessments is limited by interobserver variability, patient positioning, anatomical diversity, and the multifactorial nature of difficult airway[1].

The Acromio-Axillo-Suprasternal Notch Index (AASI) is a relatively novel anthropometric measurement introduced as an objective bedside predictor of difficult laryngoscopy. Unlike many conventional airway tests that require patients to sit upright or actively cooperate, AASI is measured with the patient lying supine, making it particularly useful in trauma patients, critically ill individuals, or patients with limited mobility. The index is calculated by dividing the length of the upper segment of a vertical line extending from the acromion to the superior border of the axilla by the total length of that vertical line. Previous studies have suggested that an AASI value of approximately 0.49–0.50 is associated with an increased likelihood of difficult laryngoscopy and higher Cormack–Lehane grades.

The theoretical basis of AASI lies in the relationship between thoracic configuration, shoulder anatomy, and the alignment of the oral, pharyngeal, and laryngeal axes during direct laryngoscopy. Patients with higher AASI values are believed to have anatomical characteristics that hinder optimal positioning and visualization of the glottis. Because the measurement is objective, inexpensive, reproducible, and easy to perform using only a ruler, AASI has attracted increasing interest as an adjunct to conventional airway assessment.

However, evidence regarding the predictive value of AASI remains limited, particularly in the Indian population. Variations in body habitus, ethnicity, and anthropometric characteristics necessitate validation of this index across different populations before widespread clinical adoption. Furthermore, comparisons between AASI and established airway assessment methods remain relatively scarce, and additional prospective studies are needed to determine its role within routine preoperative airway evaluation.

The present prospective observational study was therefore undertaken to evaluate the effectiveness of the Acromio-Axillo-Suprasternal Notch Index in predicting difficult airway among adult patients undergoing elective surgery under general anaesthesia. Specifically, the study assessed the association between AASI and Cormack–Lehane laryngoscopic grading, mask ventilation difficulty, and Modified Mallampati classification. The findings may help determine whether AASI can serve as a practical adjunct to existing bedside airway assessment methods and contribute to safer perioperative airway management.

Aim and Objectives:
Primary objective is To evaluate efficacy of acromioaxillosuprasternal notch index in anticipating difficult airway.

MATERIAL & METHOD:
This study was conducted on patients undergoing elective surgeries under general anesthesia at “R. L. Jalappa Hospital and Research Centre, Tamaka, Kolar after getting ethical clearance from Central Ethics committee. It was Cross-sectional study with **Sample Size of 45, done from** May 2024 to October 2025

This prospective observational study was conducted after obtaining approval from the Institutional Scientific and Ethics Committee. Written informed consent was obtained from all participants before their inclusion in the study. Adult patients aged **18–60 years** of either sex, belonging to **American Society of Anesthesiologists (ASA) physical status I or II**, and scheduled to undergo **elective surgery under general anaesthesia requiring endotracheal intubation** were enrolled. Patients undergoing emergency surgeries, those with congenital or acquired anatomical abnormalities of the face, head, neck, or shoulder, and patients with restricted mouth opening (<2 finger breadths) were excluded from the study.

All patients underwent a detailed pre-anaesthetic evaluation on the day before surgery. A comprehensive history was obtained, including demographic details, history of snoring, obstructive sleep apnoea, previous difficult laryngoscopy or intubation, and associated medical conditions known to influence airway management, such as ankylosing spondylitis, degenerative cervical osteoarthritis, and lingual tonsillar hypertrophy. A systematic airway examination was performed, which included assessment of facial and neck anatomy, ability to extend the neck, prominence of the upper incisors, relationship between the upper and lower incisors during jaw closure, mandibular protrusion, inter-incisor distance, visibility of the uvula, palate characteristics, mandibular space, neck length and circumference, and range of motion of the head and neck.

The **Acromio-Axillo-Suprasternal Notch Index (AASI)** was measured preoperatively in all patients. Patients were placed in the supine position with both upper

limbs resting comfortably by their sides. A vertical line (Line A) was drawn from the superior aspect of the acromion process to the superior border of the axilla at the level of the pectoralis major muscle. A second line (Line B) was drawn perpendicular to Line A from the suprasternal notch until it intersected Line A. The segment of Line A above the point of intersection with Line B was designated as Line C. The AASI was calculated using the formula:

AASI = C/A

An AASI value greater than **0.5** was considered predictive of a potentially difficult airway. The measured value was documented before induction of anaesthesia for subsequent analysis.

Following completion of the preoperative assessment, patients were shifted to the operating room where standard monitoring was instituted according to the American Society of Anesthesiologists guidelines. Continuous electrocardiography (5-lead ECG), pulse oximetry (SpO_2), and non-invasive blood pressure (NIBP) monitoring were applied, and baseline heart rate, blood pressure, and oxygen saturation were recorded. An intravenous line was secured using an appropriate-sized cannula, and intravenous crystalloid solution (Ringer's lactate or normal saline) was started. A fully equipped difficult airway cart was kept readily available throughout the procedure.

All patients received standard premedication as per institutional protocol. Following preoxygenation with 100% oxygen for 3–5 minutes, general anaesthesia was induced using standard intravenous induction agents. Neuromuscular blockade was achieved with an appropriate intravenous muscle relaxant to facilitate endotracheal intubation. Patients were ventilated with 100% oxygen for approximately three minutes after administration of the muscle relaxant to ensure adequate oxygen reserve before laryngoscopy.

Patients were positioned in the standard sniffing position using a 10-cm pillow placed beneath the head. Direct laryngoscopy was performed by an experienced anaesthesiologist using an appropriately sized Macintosh laryngoscope blade. The laryngeal view obtained during laryngoscopy was graded according to the **Cormack–Lehane classification**. Grade I indicated complete visualization of the glottic opening; Grade II indicated visualization of only the posterior portion of the glottic opening; Grade III indicated visualization of only the epiglottis; and Grade IV indicated visualization of only the soft palate without visualization of the epiglottis or glottis. For statistical analysis, Grades I and II were classified as **Easy Visualization of the Larynx (EVL)**, whereas Grades III and IV were considered **Difficult Visualization of the Larynx (DVL)**.

After laryngoscopy, endotracheal intubation was performed using an appropriately sized cuffed endotracheal tube. The ease of intubation was assessed and documented. The number of attempts required for successful intubation, the time taken to achieve successful endotracheal intubation, and the requirement for additional airway manoeuvres or adjuncts, such as external laryngeal manipulation, stylet, bougie, or alternative airway devices, were also recorded. Mask ventilation before laryngoscopy was categorized as either easy or difficult based on the anaesthesiologist's assessment.

The primary objective of the study was to evaluate the usefulness of the Acromio-Axillo-Suprasternal Notch Index in predicting difficult laryngoscopy. The parameters recorded included AASI, ease of mask ventilation, Cormack–Lehane grade, time taken for intubation, number of intubation attempts, and the use of additional airway manoeuvres or equipment. These observations were documented using a standardized data collection form for all study participants.

The study involved only routine airway assessment and direct laryngoscopy using a Macintosh laryngoscope, which formed part of the standard anaesthetic management for elective surgical procedures requiring endotracheal intubation. No additional invasive procedures or interventions beyond routine clinical practice were performed. Ethical approval for the study was obtained from the Institutional Scientific and Ethics Committee before commencement of patient recruitment, and all participants provided written informed consent before enrollment.

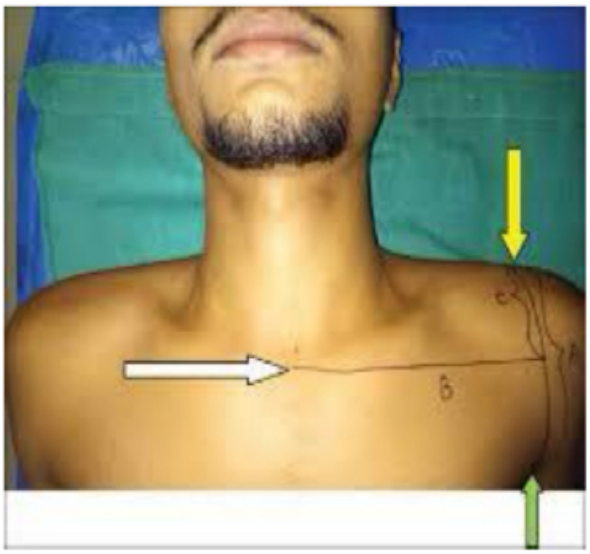

Figure 1: Acromioaxillosuprasternal notch index

Statistical Analysis :The collected data were entered into Microsoft Excel and analyzed using **IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY, USA)**. Continuous variables were expressed as **mean ± standard deviation (SD)**, while categorical variables were presented as **frequency and percentage**.

The association between categorical variables was assessed using the **Chi-square test**, whereas comparisons of continuous variables between two groups were performed using the **independent Student's t-test**. Comparisons among more than two groups were analyzed using **one-way analysis of variance (ANOVA)** followed by appropriate post hoc analysis where applicable. Pearson's correlation coefficient was used to determine the strength of association between continuous variables.

The diagnostic performance of the Acromio-Axillo-Suprasternal Notch Index (AASI) was evaluated using the following parameters:

- **Sensitivity** = True Positive / (True Positive + False Negative) × 100
- **Specificity** = True Negative / (True Negative + False Positive) × 100
- **Positive Predictive Value (PPV)** = True Positive / (True Positive + False Positive) × 100
- **Negative Predictive Value (NPV)** = True Negative / (True Negative + False Negative) × 100
- **Diagnostic Accuracy** = (True Positive + True Negative) / Total Number of Cases × 100

Sensitivity was defined as the ability of the test to correctly identify patients with difficult laryngoscopy (true positives), whereas specificity represented the ability to correctly identify patients without difficult laryngoscopy (true negatives). The positive predictive value represented the probability that patients with a positive test truly had a difficult airway, while the negative predictive value indicated the probability that patients with a negative test truly did not have a difficult airway. Diagnostic accuracy reflected the overall ability of the test to correctly classify patients.

A **p-value <0.05** was considered statistically significant for all analyses.

RESULTS:

A total of **48 patients** who fulfilled the inclusion criteria were enrolled in the study and completed all assessments.

The distribution of the Acromio-Axillo-Suprasternal Notch Index (AASI) demonstrated that **38 patients (79.2%)** had an AASI value of **<0.5**, whereas **10 patients (20.8%)** had an AASI value of **≥0.5**. Thus, the majority of participants had an AASI below the proposed cut-off value, while only a small proportion exhibited elevated AASI values suggestive of a potentially difficult airway.

Table 1: Distribution according to AASI scores

AASI	Count	N %
<0.5	38	79.2%
≥0.5	10	20.8%

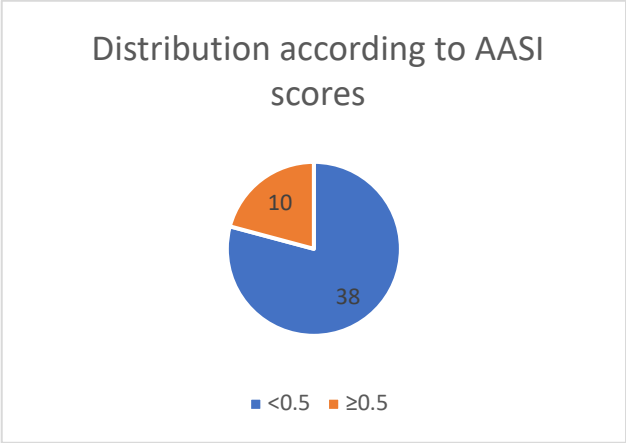

Figure 2: Distribution according to AASI scores

Assessment of laryngoscopic view using the **Cormack–Lehane (CL) grading system** revealed that **22 patients (45.8%)**had Grade I, **20 patients (41.7%)** had Grade II, **5 patients (10.4%)** had Grade III, and **1 patient (2.1%)** had Grade IV laryngoscopic view. Therefore, most patients demonstrated easy laryngoscopic visualization (Grades I and II), whereas only a minority exhibited difficult laryngoscopic views (Grades III and IV).

Table 1: Distribution according to CL grade

CL Grade	Count	N %
1	22	45.8%
2	20	41.7%
3	5	10.4%
4	1	2.1%

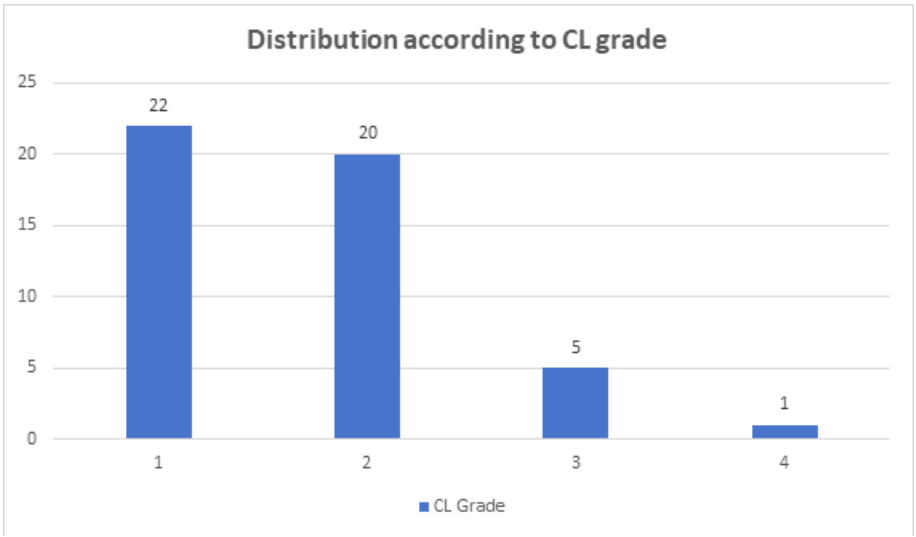

Figure 3: Distribution according to CL grade

Evaluation of the **Mallampati classification** showed that **18 patients (37.5%)** belonged to Class I and **18 patients (37.5%)** to Class II. Mallampati Classes III and IV each included **6 patients (12.5%)**, indicating that approximately three-quarters of the study population had a relatively favorable airway assessment.

Table 3 : Distribution according to Mallampati grade

Mallampati	Frequency	Percent
1.00	18	37.5
2.00	18	37.5
3.00	6	12.5
4.00	6	12.5
Total	48	100.0

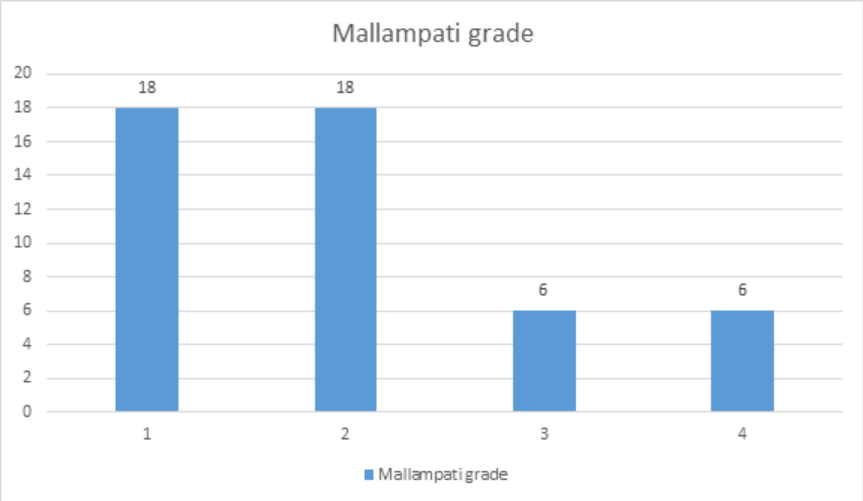

Figure 4 : Distribution according to Mallampati grade

Mask ventilation was **easy in 46 patients (95.8%)**, while **only two patients (4.2%)** experienced difficult mask ventilation. This finding suggests that mask ventilation was uncomplicated in the vast majority of study participants.

Table 4 : Showing difficulty in airway among patients

Mask Ventilation	Count	N %
Difficult	2	4.2%
Easy	46	95.8%

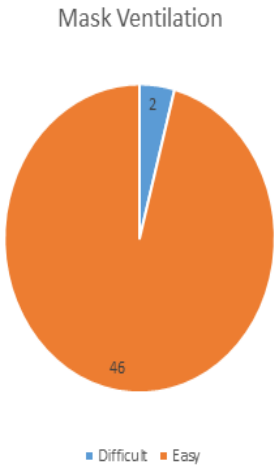

Figure 5 : Showing difficulty in airway among patients

Regarding airway adjuncts, **46 patients (95.8%)** required no additional maneuvers during intubation. A **BURP (Backward, Upward, Rightward Pressure) maneuver** was required in **one patient (2.1%)**, while a **stylet** was used in **one patient (2.1%)**, indicating that adjunctive airway techniques were rarely necessary.

Table 5: Distribution of other methods used among cases

Other methods used	Count	N %
BURP	1	2.1%
No	46	95.8%
Stylet used	1	2.1%

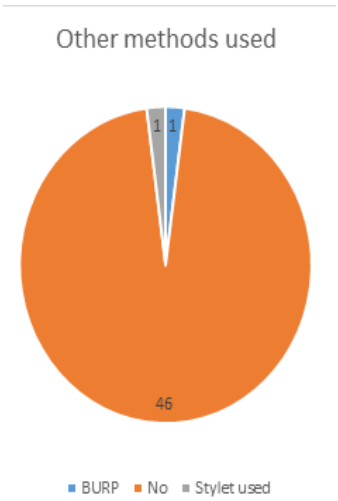

Figure 6: Distribution of other methods used among cases

The relationship between AASI and mask ventilation demonstrated that patients with difficult mask ventilation had a significantly higher mean AASI (**0.51 ± 0.06**) compared with those who underwent easy mask ventilation (**0.47 ± 0.03**). This difference reached statistical significance (**p = 0.05**), suggesting that increasing AASI values may be associated with greater difficulty in mask ventilation.

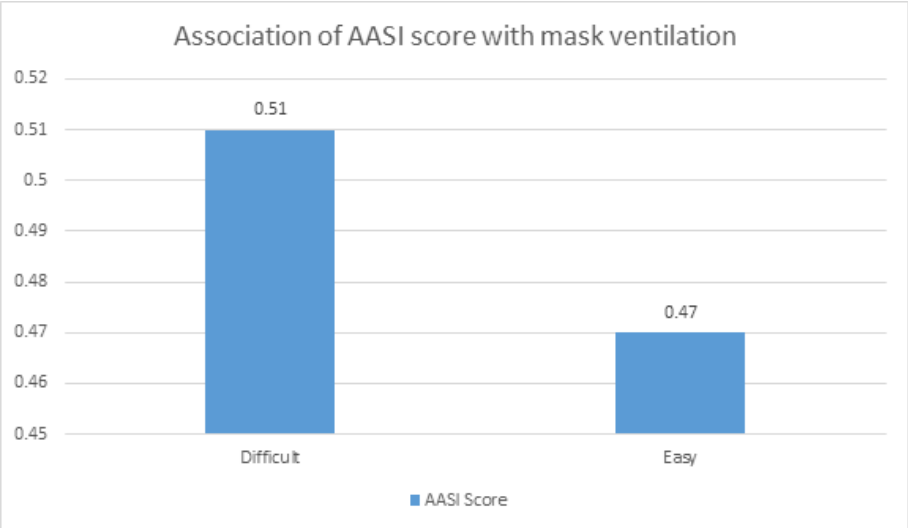

Figure 7 : Association of AASI score with mask ventilation

Table 6 : Association of AASI score with CL grade

CL GRADE	AASI		ANOVA (p-value)
	Mean	SD	
1	.46	.03	0.01* (1*3, 2*3)
2	.47	.02	
3	.52	.01	
4	.55	.	

A significant association was also observed between AASI and Cormack–Lehane grade**. The mean AASI progressively increased with worsening laryngoscopic grade, measuring** 0.46 ± 0.03 **for Grade I,** 0.47 ± 0.02 **for Grade II,** 0.52 ± 0.01**for Grade III, and** 0.55 **for Grade IV. One-way ANOVA demonstrated a statistically significant difference among the groups** (p = 0.01)**, indicating that higher AASI values were associated with increasingly difficult laryngoscopic views.**

Table 7 : Association of AASI score with Mallampati grade

Mallampati	AASI		ANOVA (p-value)
	Mean	SD	
1.00	.46	.02	0.114
2.00	.47	.03	

3.00	.48	.05	
4.00	.50	.05	

Table 8 : Association of mask ventilation with CL grade

CL grade	Mask Ventilation				Chi-square (p-value)
	Difficult		Easy		
	Count	N %	Count	N %	
1	1	50.0%	21	45.7%	**24.095 (0.01)***
2	0	0.0%	20	43.5%	
3	0	0.0%	5	10.9%	
4	1	50.0%	0	0.0%	

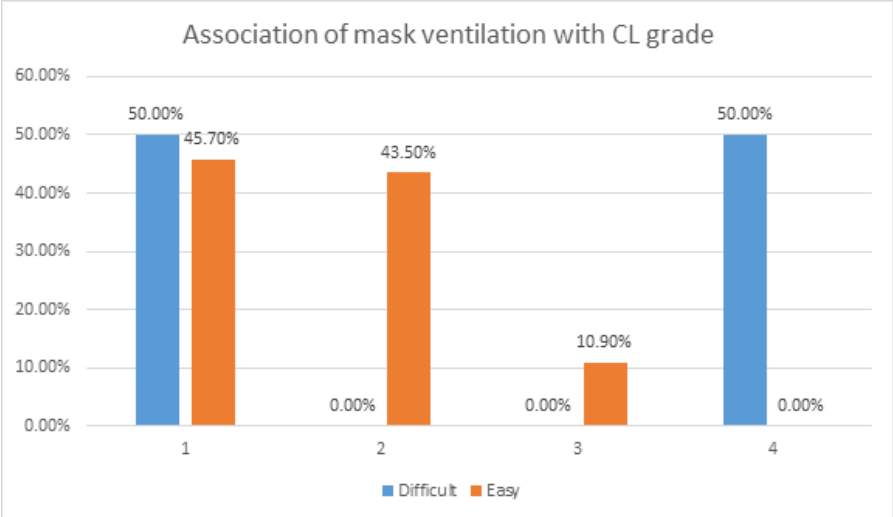

Figure 8: Association of mask ventilation with CL grade

Although the mean AASI showed a gradual increase across higher **Mallampati classes** (0.46, 0.47, 0.48, and 0.50 for Classes I–IV, respectively), this association did not reach statistical significance (**p = 0.114**). Nevertheless, the observed trend suggests that patients with higher Mallampati classes tended to have larger AASI values.

A statistically significant association was found between **Cormack–Lehane grade and mask ventilation** (χ^2 = **24.095, p = 0.01**). Difficult mask ventilation was predominantly observed in patients with poorer laryngoscopic views, particularly those with Grade IV laryngoscopy, whereas patients with Grades I and II generally experienced easy mask ventilation.

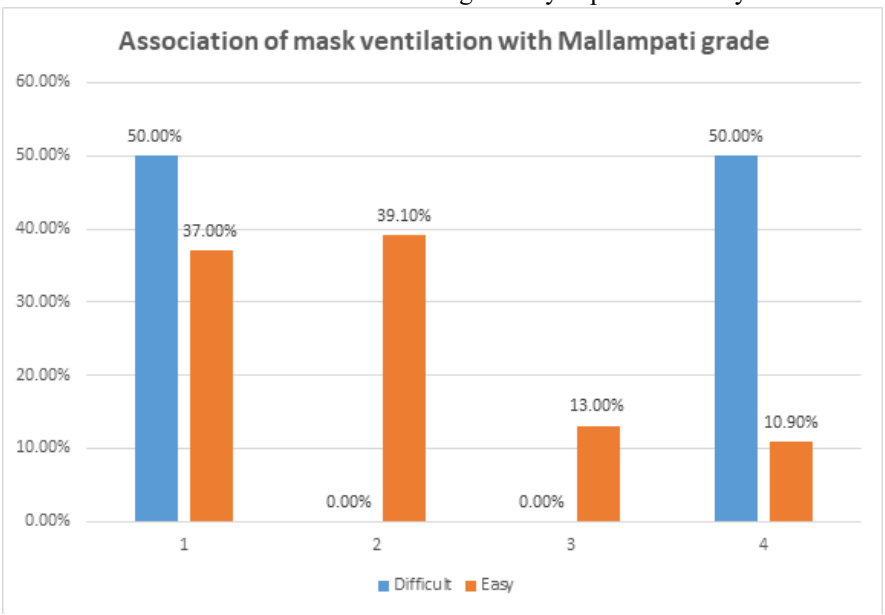

Figure 9 : Association of mask ventilation with Mallampati grade

Table 9 : Association of CL grade with Mallampati grade

Mallampati	CL grade								Chi-square (p-value)
	1		2		3		4		
	Count	N %	Count	N %	Count	N %	Count	N %	
1.00	11	50.0%	7	35.0%	0	0.0%	0	0.0%	22.76 (0.01)*
2.00	8	36.4%	9	45.0%	1	20.0%	0	0.0%	
3.00	3	13.6%	2	10.0%	1	20.0%	0	0.0%	
4.00	0	0.0%	2	10.0%	3	60.0%	1	100.0%	

No significant association was identified between **Mallampati classification and mask ventilation difficulty** (**$\chi^2 = 3.47$, $p = 0.31$**). Although one patient each from Mallampati Classes I and IV experienced difficult mask ventilation, the majority of patients across all Mallampati classes were easily ventilated with a face mask.

A significant association was observed between **Mallampati classification and Cormack–Lehane grade** (**$\chi^2 = 22.76$, $p = 0.01$**). Most patients with Mallampati Class I demonstrated Grade I or II laryngoscopic views, whereas patients with higher Mallampati classes were more likely to exhibit Grade III or IV laryngoscopic views. These findings indicate that increasing Mallampati class is associated with greater laryngoscopic difficulty.

Correlation analysis further supported these observations. The **Acromio-Axillo-Suprasternal Notch Index** demonstrated a **mild but statistically significant positive correlation** with the Mallampati score (**$r = 0.331$, $p = 0.022$**), indicating that increasing AASI values were associated with higher Mallampati classes. Similarly, the **Cormack–Lehane grade** showed a **moderately strong positive correlation** with Mallampati classification (**$r = 0.535$, $p = 0.001$**), suggesting that patients with higher Mallampati scores were more likely to have difficult laryngoscopic views during direct laryngoscopy.

Overall, the findings of the present study suggest that the Acromio-Axillo-Suprasternal Notch Index is significantly associated with difficult mask ventilation and higher Cormack–Lehane grades. Although its association with Mallampati classification did not achieve statistical significance, AASI demonstrated a positive trend with increasing Mallampati class. Furthermore, Mallampati classification showed a significant correlation with Cormack–Lehane grade, reinforcing its usefulness as a preoperative predictor of difficult laryngoscopy.

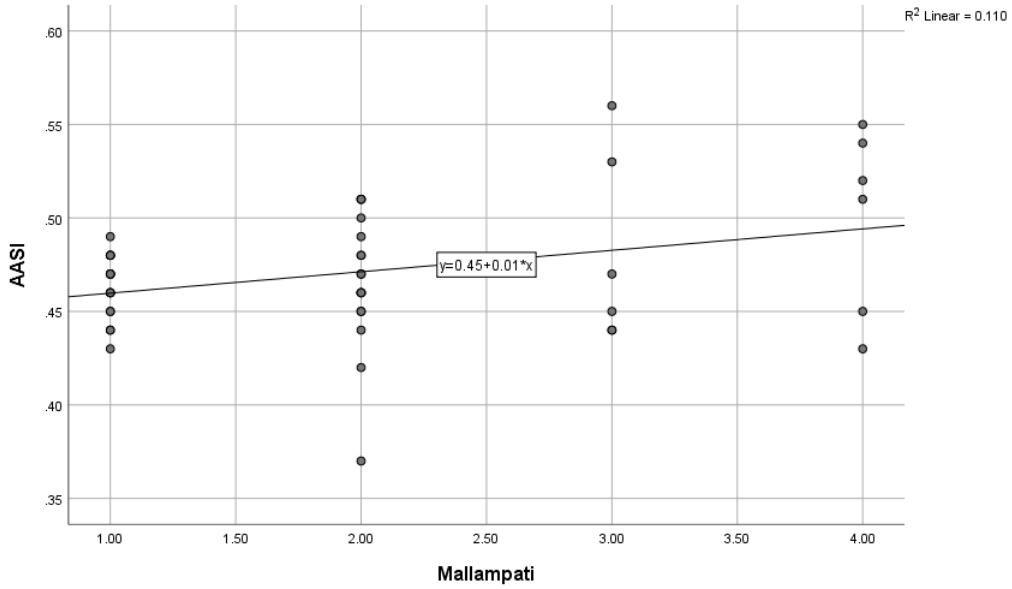

Figure 10 : Correlation of AASI with Mallampati grade

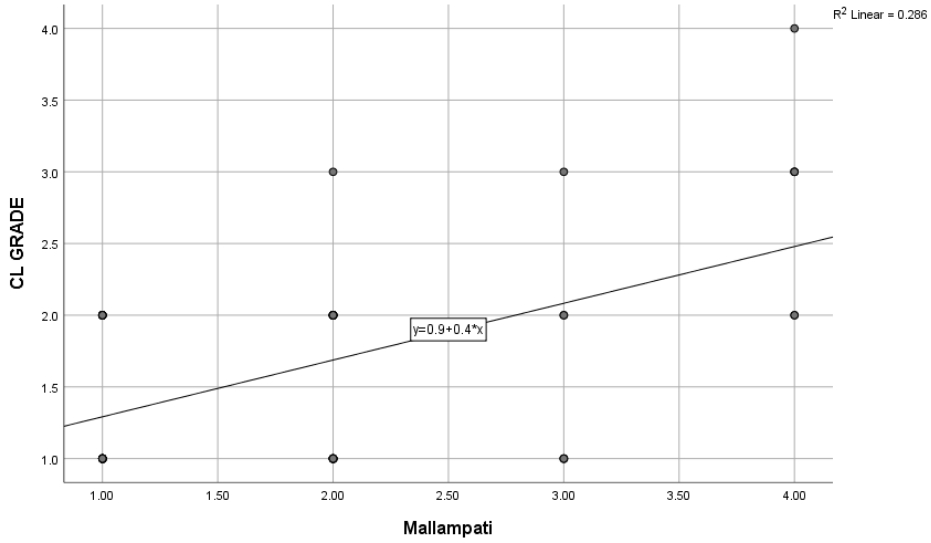

Figure 11 : Correlation of CL grade with Mallampati grade

DISCUSSION:

Difficult airway remains one of the most significant challenges encountered in anaesthetic practice. It is defined as a clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with face-mask ventilation, tracheal intubation, or both. Failure to establish a secure airway promptly may result in severe complications, including hypoxaemia, aspiration, neurological injury, cardiac arrest, and even death. Consequently, accurate preoperative prediction of difficult airway is an essential component of anaesthetic evaluation, enabling appropriate preparation, selection of suitable airway devices, and formulation of alternative airway management strategies. Although numerous bedside airway assessment tests have been proposed, no single test has consistently demonstrated sufficient sensitivity and specificity to reliably predict difficult laryngoscopy in all patients[2-6]. The Acromio-Axillo-Suprasternal Notch Index (AASI) is a relatively simple anthropometric measurement that has recently gained attention as a promising predictor of difficult airway. The present study was undertaken to evaluate the effectiveness of AASI in predicting difficult laryngoscopy and to determine its association with Cormack–Lehane (CL) grading, Mallampati classification, and mask ventilation.

In the present study, most patients demonstrated favourable laryngoscopic views. Cormack–Lehane Grade I was observed in 45.8% of patients, while Grade II was seen in 41.7%. Difficult laryngoscopy, represented by Grades III and IV, was identified in only 12.5% of cases[2]. These findings indicate that the majority of patients undergoing elective surgery under general anaesthesia had uncomplicated laryngoscopic visualization. The incidence of difficult laryngoscopy observed in our study is comparable with previous reports. Prakash et al. reported difficult laryngoscopy (Cormack–Lehane Grades III and IV) in approximately 9.7% of patients, while Rajkhowa et al. observed difficult visualization of the larynx in only 3.6% of their study population[3]. Although minor variations exist among studies due to differences in patient demographics and sample size, the overall findings consistently demonstrate that most patients undergoing elective procedures have favourable laryngoscopic views, whereas truly difficult laryngoscopy remains relatively uncommon.

Assessment of airway anatomy using the modified Mallampati classification revealed that the majority of patients belonged to Mallampati Classes I and II, accounting for 37.5% each, whereas Classes III and IV constituted only 12.5% each. This distribution reflects a predominantly favourable airway profile within the study population. Similar findings have been reported by Nagendran et al., who observed that Mallampati Grade II was the most common classification among their patients. Gupta et al. also demonstrated that the modified Mallampati test remains one of the most reliable bedside predictors of difficult intubation, while Prakash et al. reported that Mallampati Classes III and IV were significantly associated with difficult laryngoscopy. These observations reinforce the continued clinical relevance of the Mallampati classification as an important component of routine preoperative airway assessment.

Mask ventilation was easy in 95.8% of patients, while only 4.2% experienced difficult mask ventilation. This finding indicates that effective face-mask ventilation was achieved in the vast majority of patients despite the presence of difficult laryngoscopy in a small proportion. Although many studies primarily focus on difficult intubation rather than mask ventilation, Kopanaki et al. demonstrated that patients with unfavourable airway assessment indices required assisted airway management significantly more often than those with normal airway parameters. Their findings support the concept that anatomical airway measurements are useful not only for predicting difficult laryngoscopy but also for anticipating challenges during mask ventilation[7]. Similar observations were made in the present study.

Successful endotracheal intubation was achieved without additional airway manoeuvres in 95.8% of patients. Only one patient required the BURP manoeuvre, while another required the use of a stylet, indicating that adjunctive airway techniques were rarely necessary. These findings are comparable to those reported by Kopanaki et al., who observed an increased requirement for assisted intubation techniques among patients with abnormal airway assessment parameters. This highlights the importance of comprehensive preoperative airway evaluation in anticipating the need for additional airway equipment and improving preparedness during anaesthetic management.

One of the principal findings of the present study was the significant association between the Acromio-Axillo-Suprasternal Notch Index and difficult mask ventilation. Patients who experienced difficult mask ventilation had significantly higher mean AASI values than those with easy mask ventilation. This suggests that increasing AASI reflects anatomical characteristics associated with greater difficulty in maintaining airway patency and performing effective mask ventilation. Similar findings have been reported by Nasr-Esfahani et al., who demonstrated that AASI possesses good diagnostic performance for predicting difficult intubation, with a sensitivity of 84.6% and specificity of 77.7%[8]. Likewise, Thomas et al. reported significantly higher AASI values in patients with difficult laryngoscopic visualization compared with those with easy visualization, further supporting the usefulness of AASI as a bedside predictor of airway difficulty[9].

The present study also demonstrated a statistically significant association between AASI and Cormack–Lehane grade. Mean AASI increased progressively with increasing CL grade, indicating that patients with larger AASI values were more likely to experience difficult laryngoscopy. These findings are in agreement with those of Kamranmanesh et al., who originally described AASI and proposed a cut-off value of approximately 0.5 for predicting difficult laryngoscopy. They concluded that AASI demonstrated superior predictive ability compared with the modified Mallampati test[10]. Similar conclusions were reached by Sunkam et al., who reported higher specificity and diagnostic accuracy for AASI than conventional airway assessment tests[11]. Suryawanshi et al. further reported excellent sensitivity of AASI for predicting difficult visualization of the larynx, reinforcing its clinical usefulness as a simple and reproducible bedside assessment tool.

Although no statistically significant association was observed between AASI and Mallampati classification in the present study, there was a progressive increase in mean AASI values with increasing Mallampati class. This trend suggests that patients with poorer airway anatomy tend to have larger AASI values, although the association may not always achieve statistical significance because of sample size limitations. Similar observations were reported by Satheesh et al., who demonstrated that AASI had superior sensitivity and negative predictive value compared with the modified Mallampati classification. Peeceeyen et al. likewise reported higher sensitivity and positive predictive value for AASI, suggesting that it may serve as a valuable adjunct to conventional airway assessment rather than replacing existing methods.

A significant association was identified between Cormack–Lehane grade and mask ventilation difficulty in the present study. Patients with higher CL grades were more likely to experience difficult mask ventilation, indicating that worsening laryngoscopic visualization reflects increasing difficulty in airway management. Similar observations have been reported by Nasr-Esfahani et al., who demonstrated that higher Cormack–Lehane grades were associated with more difficult airway management. Conversely, no significant association was found between Mallampati classification and mask ventilation difficulty. This finding agrees with the observations of Chara et al., who concluded that no individual bedside airway assessment test is sufficiently accurate to predict all aspects of difficult airway management and recommended combining multiple assessment parameters to improve predictive performance.

The present study also demonstrated a significant association between Mallampati classification and Cormack–Lehane grade, with higher Mallampati classes corresponding to progressively poorer laryngoscopic views. Similar findings have been reported by Prakash et al. and Gupta et al., both of whom identified higher Mallampati classes as significant predictors of difficult laryngoscopy. Furthermore, correlation analysis in the present study demonstrated a statistically significant positive relationship between AASI and Mallampati classification, as well as between Mallampati classification and Cormack–Lehane grade. These findings indicate that deterioration in one airway assessment parameter is accompanied by worsening of the others. Comparable correlations have been reported by Senapathi et al., who demonstrated a positive relationship between AASI and Cormack–Lehane grading, and by Sajjad et al., who reported excellent diagnostic accuracy and strong agreement between AASI and Cormack–Lehane grading.

Overall, the findings of the present study suggest that the Acromio-Axillo-Suprasternal Notch Index is a simple, non-invasive, inexpensive, and reliable bedside screening tool for predicting difficult laryngoscopy. AASI showed a significant association with mask ventilation difficulty and Cormack–Lehane grading and demonstrated positive correlation with established airway assessment parameters. Although it should not be used as a standalone predictor, incorporating AASI into routine preoperative airway evaluation alongside conventional tests such as the modified Mallampati classification may improve the identification of patients at risk for difficult airway management. Early recognition of these patients allows better preparation, appropriate selection of airway devices, timely implementation of alternative airway strategies, and ultimately contributes to improved patient safety and favourable perioperative outcomes.

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