Magill Medical

SafeLM® Video Laryngeal Mask System

in Pediatric Surgery

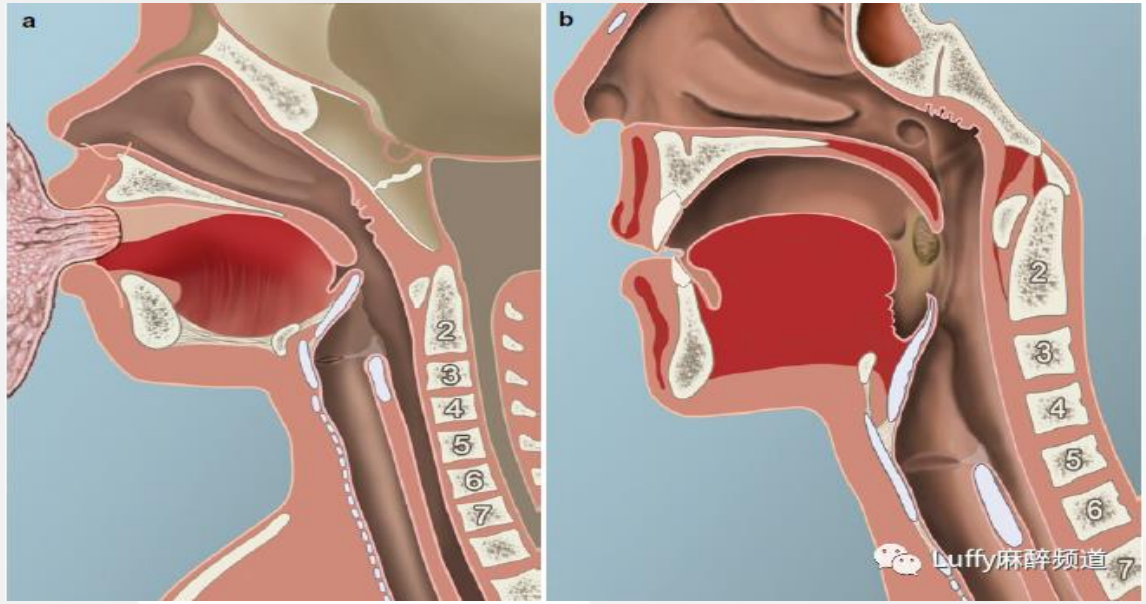
Directory

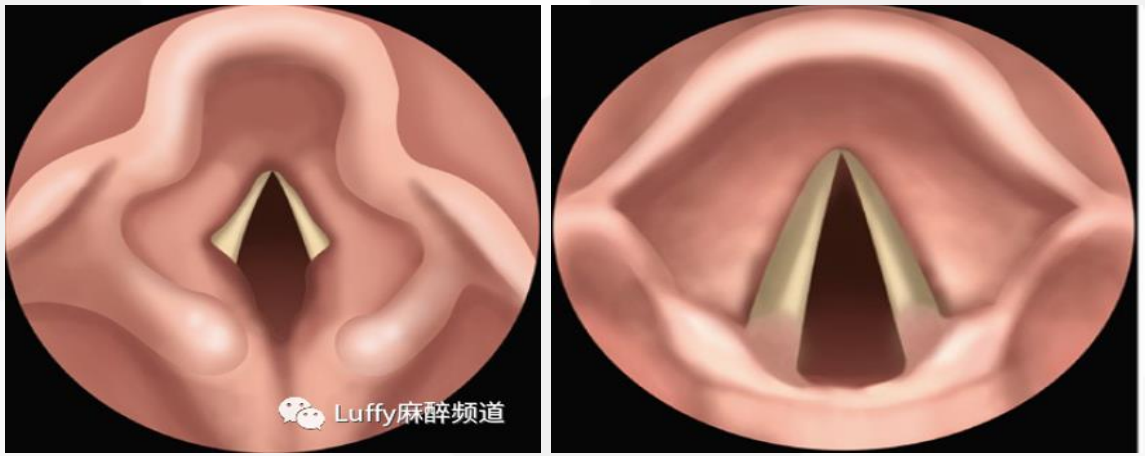
Clinical Challenges in Pediatric Airway Management

Special anatomical characteristics of the airway in children:

- Big head, short neck, and large tongue;
- The larynx is located at a relatively high position (the glottis is at the 3rd to 4th level of the neck), and the larynx tilts towards the head and the anterior side;
- The epiglottis is long and hard, U-shaped, and located higher than in adults, at a 45° Angle above the glottic opening;
- The laryngeal cavity is narrow and funnel-shaped, with the narrowest part located at the level of the cricoid cartilage

Airway management in children is more difficult than that in adults

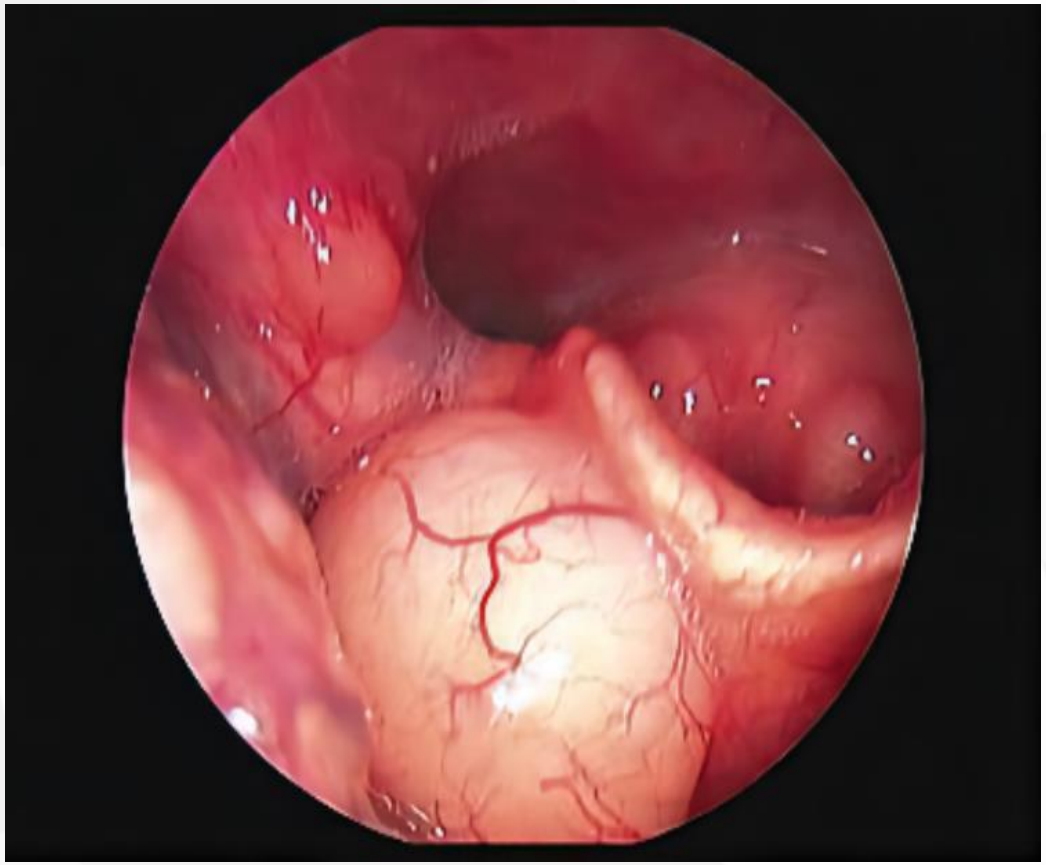




Clinical Challenges in Pediatric Airway Management

Physiological characteristics of the larynx in children:

- The vocal cords and mucous membranes are tender, so laryngeal edema is prone to occur;
- Airway hyperresponsiveness, rich mucosal blood vessels, poor ciliary movement, weak clearance ability, prone to congestion and edema due to infection, leading to airway obstruction.



Airway management in children is prone to airway hyperreactive complications such as airway mucosal injury and laryngospasm

Clinical problems existing in current pediatric airway management tools

ETT

- Difficulty in exposing the glottis: The epiglottis is long and hard, in a "U" shape, and displaced forward, blocking the line of sight and causing difficulty in exposing the glottis
- Intubation injury: Even minor damage to the ciliary epithelium of the airway in children can lead to epithelial edema, and complications such as laryngospasm and bronchospasm are prone to occur after intubation
- Perioperative allergic reaction: NMBA are the leading allergens of perioperative allergic reactions in pediatric surgeries

Pediatric airway management tools

Clinical problems

LMA

- Difficulty in placement: Blind insertion of laryngeal masks makes it impossible to observe the conditions around the glottis, and the special anatomical structure of children leads to inaccurate positioning of the laryngeal mask. It is impossible to determine under clear vision whether the difficulty in insertion is caused by the improper selection of the laryngeal mask
- Implantation injury: Repeated adjustment of the laryngeal mask position during blind insertion leads to airway soft tissue injury
- Risk of reflux and aspiration: During the operation, it is impossible to observe the reflux of gastric contents, and there is a risk of reflux aspiration, especially in pediatric laparoscopic surgeries

The clinical advantages of SafeLM® video laryngeal mask

The necessity of visualization for airway management in children

- Visual insertion addresses the limitations of the special airway anatomical structure in children on laryngeal masks. It enables the insertion of laryngeal masks at the ideal anatomical position under visual conditions, enhancing the success rate of insertion and reducing the occurrence of laryngeal mask insertion difficulties resulting in ETT due to improper selection of laryngeal mask models

- Visualization avoids the injury of soft tissues in the throat caused by repeated adjustment of the laryngeal mask and reduces the occurrence of adverse airway events such as bleeding and pain in the larynx after surgery

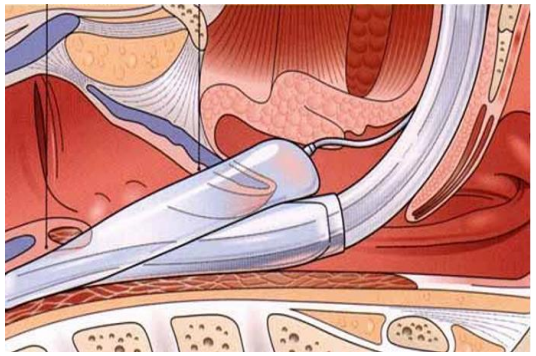
- Visualization can observe the conditions around the glottis. In case of reflux and aspiration, the gastric tube can be promptly aspirated and lowered for treatment, thus avoiding the occurrence of aspiration pneumonia

- Visual insertion can ensure a tight fit between the laryngeal mask and the throat, increase OLP, expand the clinical indications of the laryngeal mask, convert some ETT into LMA, reduce the use of NMBA, and to a certain extent, prevent perioperative allergic reactions

The clinical advantages of SafeLM® video laryngeal mask

Increase the success rate of insertion and reduce postoperative complications

- Improve the success rate of insertion: The videoscope provides video guidance throughout the process to ensure that the laryngeal mask is placed in the ideal anatomical position
- Reduce postoperative complications: SafeLM reduces the number of times the laryngeal mask is repeatedly adjusted, avoids soft tissue damage around the throat, and reduces the occurrence of bleeding and pain in the throat after surgery in children

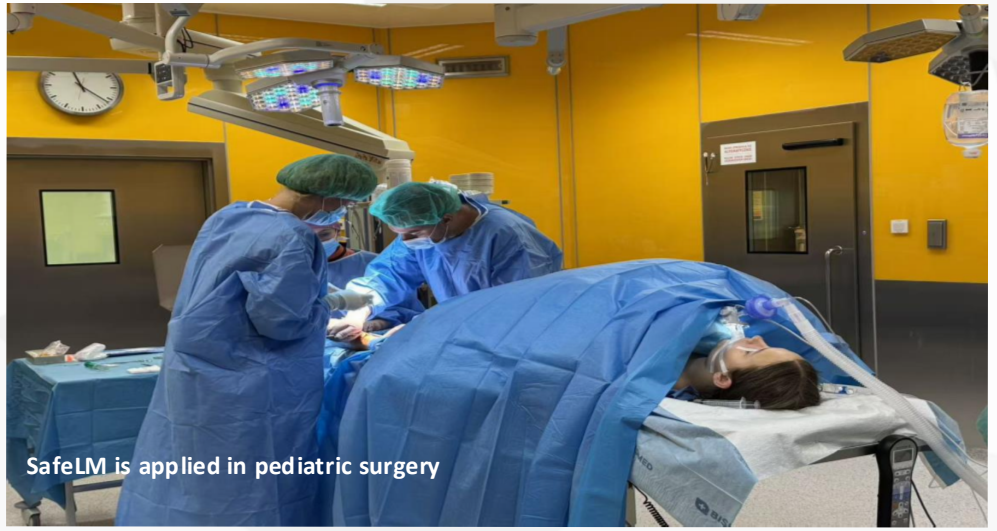


The clinical advantages of SafeLM® video laryngeal mask

Continuously observe the glottis to prevent reflux and aspiration , or displacement leakage

- Aspiration treatment under SafeLM prevents reflux aspiration and laryngospasm caused by insufficient aspiration of airway secretions
- The SafeLM split design enables real-time monitoring and continuous observation of the conditions around the glottis, especially for laparoscopic surgeries with high abdominal pressure, to prevent the risks of air leakage and reflux aspiration
- The split machine is equipped with an intelligent airway monitoring function. If the laryngeal mask is displaced or secretions occur, it can automatically identify and alarm, thereby effectively preventing the occurrence of aspiration pneumonia caused by the reflux of gastric contents into the airway.

SafeLM intelligent airway monitoring function


SafeLM is applied in pediatric surgery

Clinical Advantages

Expand the clinical indications of laryngeal masks to prevent perioperative allergic reactions

- SafeLM OLP 30-40 cmH2O can eliminate the relative contraindications of laryngeal masks during long-term surgery and large changes in body position, such as displacement, air leakage, reflux and aspiration, and expand the clinical indications of laryngeal masks
- Studies have shown that perioperative allergic reactions are mainly related to the use of NMBA. SafeLM can transform part of the ETT airway management into a surgery that retains the LMA airway management for spontaneous breathing, to a certain extent avoiding the use of NMBA and preventing perioperative allergic reactions.

Acta Anaesthesiol Scand. 2017 Mar;61(3):290-299. doi: 10.1111/aas.12855.

Anaesthetic hypersensitivity reactions in France between 2011 and 2012: the 10th GERAP epidemiologic survey

C Tacquard [1], O Collange [1], P Gomis [2], J-M Malinovsky [2], N Petitpain [3], P Demoly [4 5], S Nicoll [6], P M Mertes [1]

Table 6 Distribution of the drugs responsible for IgE-IHR between 1989 and 2012.

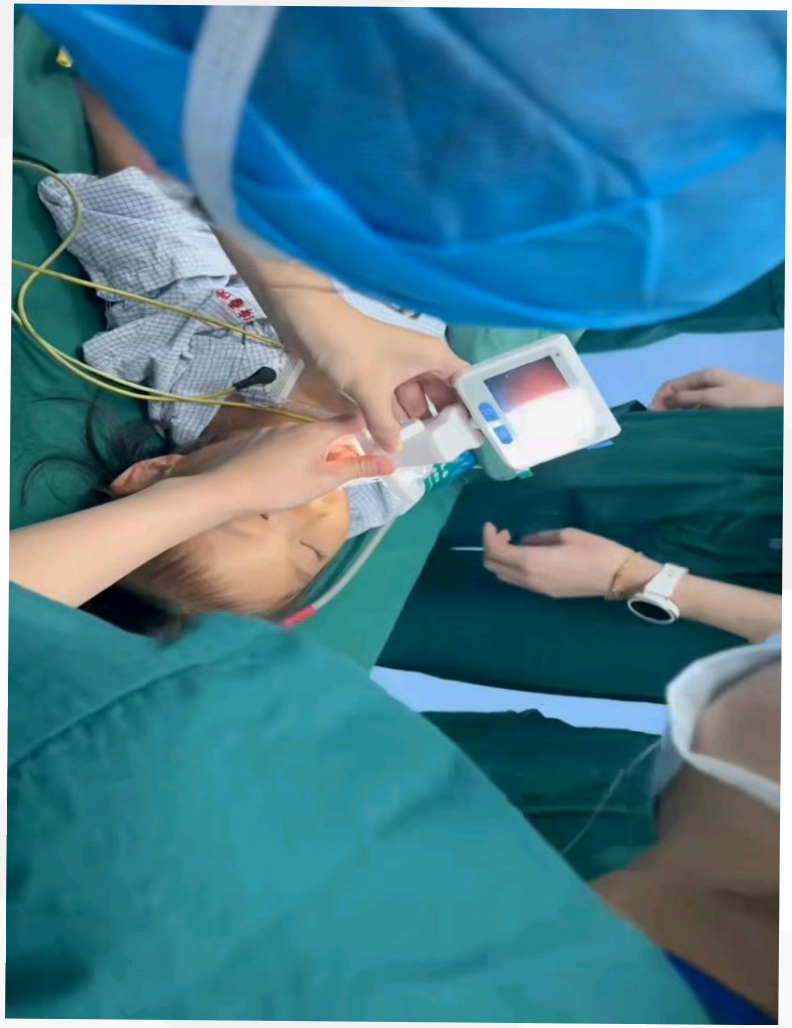
	1989 *n* = 821	1992 *n* = 813	1994 *n* = 1030	1996 *n* = 734	1998 *n* = 486	2000 *n* = 518	2002 *n* = 502	2004 *n* = 406	2007 *n* = 602	2012 *n* = 489
NMBAs	81.0	70.2	59.2	61.6	69.2	58.2	54.0	49.6	48.0	60.6
Latex	0.5	12.5	19.0	16.6	12.1	16.7	22.3	26.4	20.3	5.2
Hypnotics	11.0	5.6	8.0	5.1	3.7	3.4	0.8	1.4	0.8	2.2
Opioids	3.0	1.7	3.5	2.7	1.4	1.3	2.4	1.4	1.8	1.4
Colloids	0.5	4.6	5.0	3.1	2.7	4.0	2.8	4.6	2.3	0.6
Antibiotics	2.0	2.6	3.1	8.3	8.0	15.1	14.7	12.2	17.9	18.2
Other	2.0	2.8	8.3	2.6	2.9	1.3	3.0	4.4	7.1	11.8

The economic value of SafeLM® video laryngeal mask

- It is applied in pediatric day surgery to increase the proportion of day surgery in elective surgeries
- Shorten the anesthesia induction time and recovery time, and improve the turnover efficiency of the operating room
- Reduce the occurrence of postoperative complications such as sore throat and bleeding, improve the quality of postoperative recovery, and shorten the hospital stay of patients

Clinical case

SafeLM was used in pediatric orthopedic surgeries in the **Children's Hospital** Affiliated to **Warsaw Medical University (2025)**



Magill SafeLM® Video Laryngeal Mask

Seeing forward, shaping the future!

Magill Medical
Innovation for Better Health