PICU必备技能之

小儿气管插管

contents

ANYONE CAN
INTUBATE

我们的目标

每一个医生都掌握插管

01

气管插管适应症

1 窒息、呼吸心跳骤停

2 呼吸衰竭：重症肺炎、脓胸、气胸、血胸

3 自主呼吸障碍：格林巴利、延髓麻醉、脊髓损伤等

4 严重神经疾病：脑干脑炎、脑膜炎、脑外伤，癫痫持续

5 意外伤害：严重外伤、电击伤、中毒。

6 气道梗阻，气道大量分泌物、急性喉炎伴III°喉梗阻

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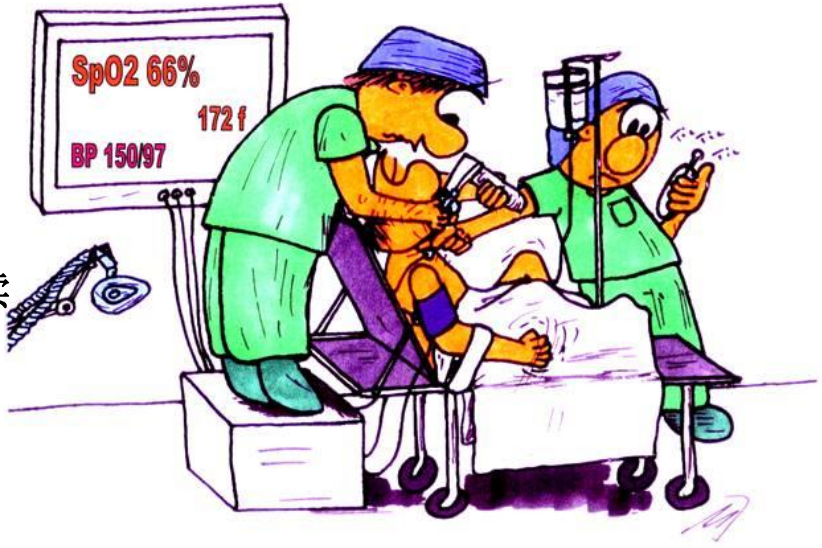


02 气管插管准备

设 备

1 喉镜

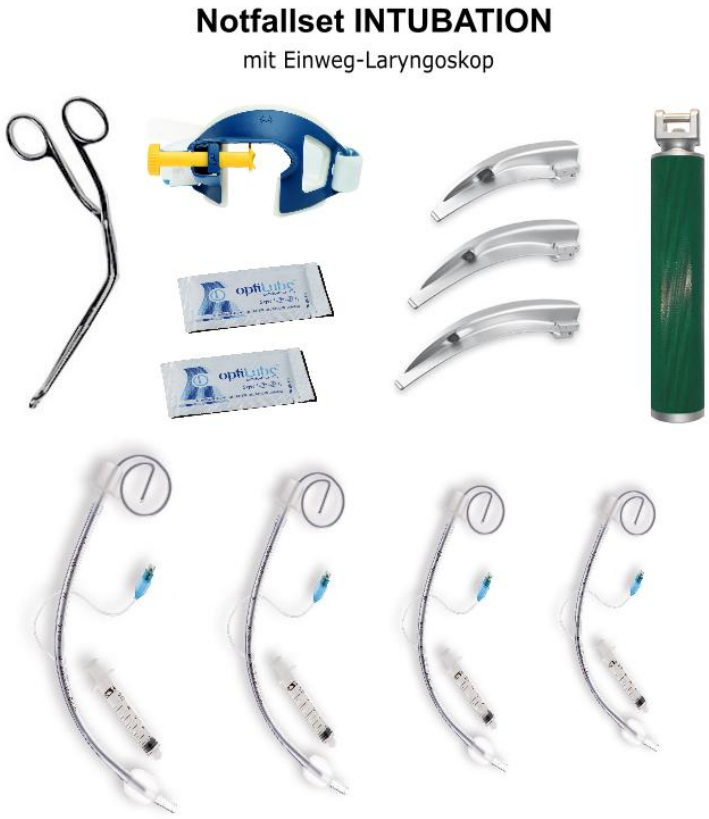
2 插管钳

3气管插管

4 导丝

5 复苏囊

6 吸引器



药 物

1 阿托品

2 咪达唑仑

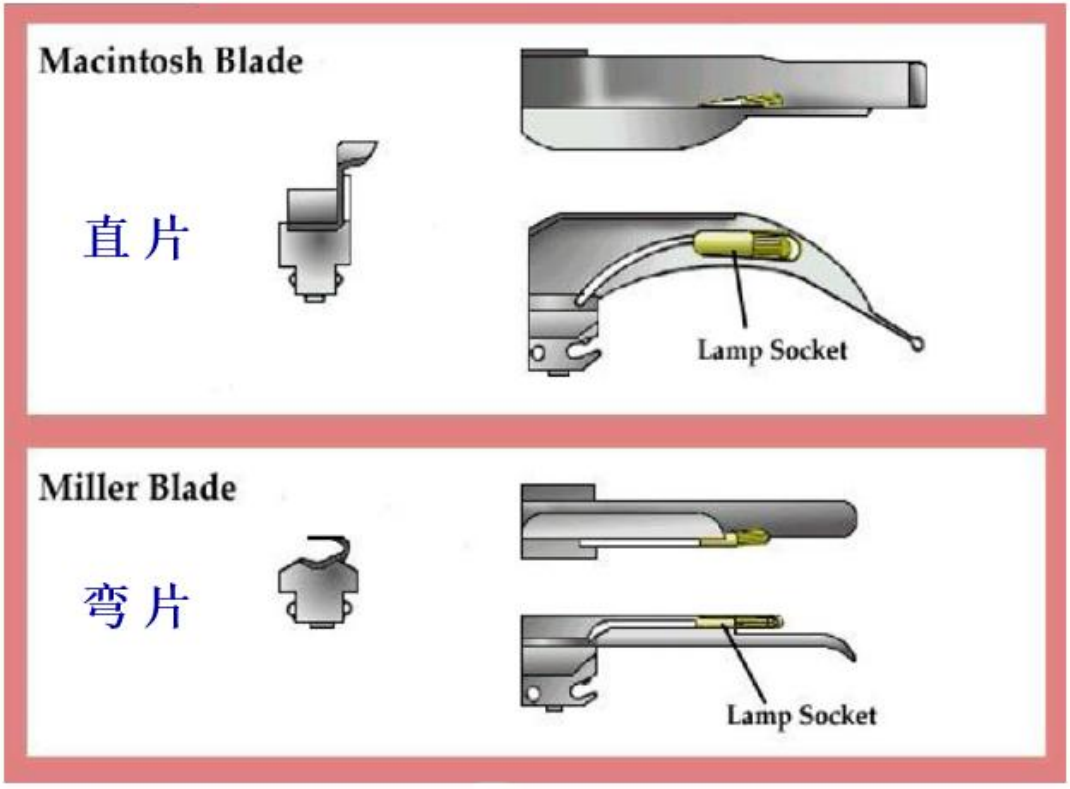
3 罗库溴胺

4 肾上腺素

02 喉镜

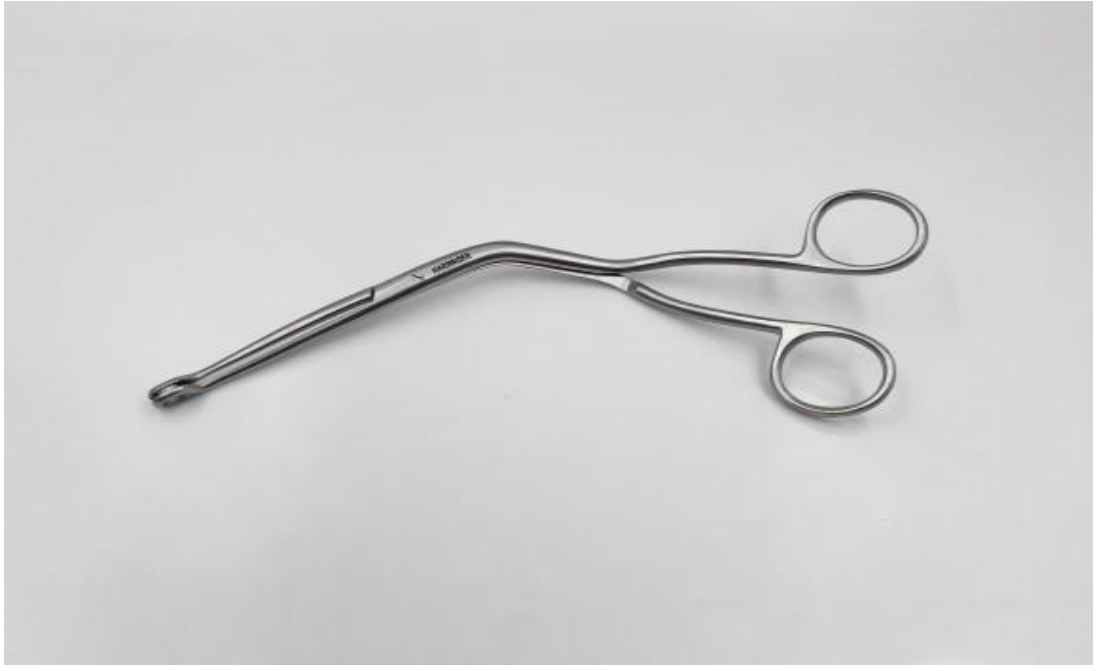
新生儿穹窿部弯曲度较小，弯叶片不容易暴露会厌。

02 喉镜



新生儿穹窿部弯曲度较小，弯叶片不容易暴露会厌，新生儿用直片

02 插管钳



经鼻插管需要插管钳协助

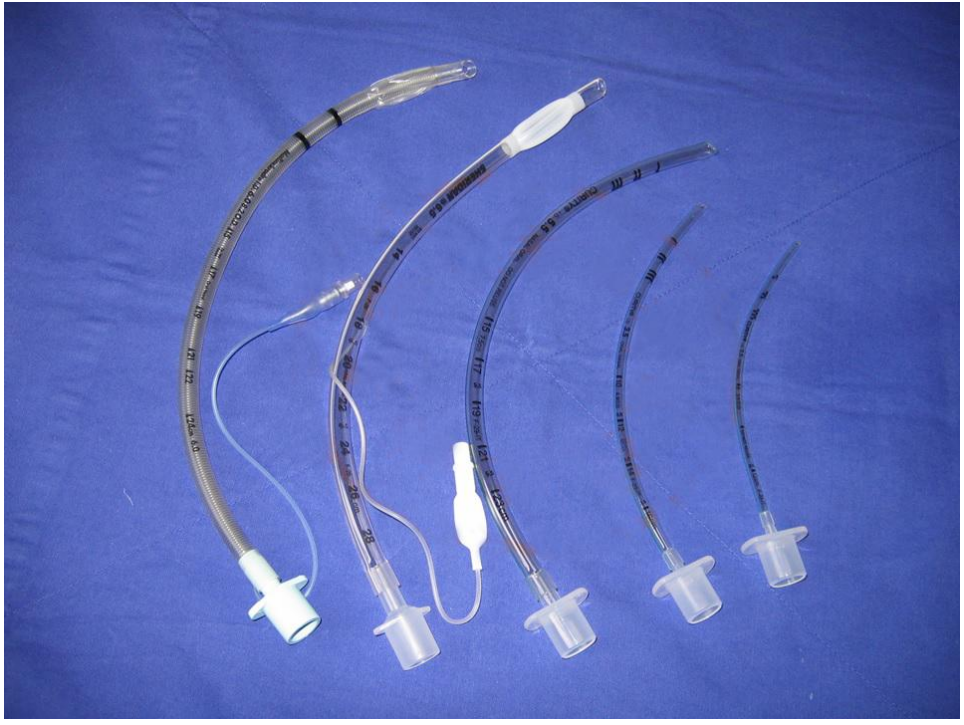
气管导管

导管类型：

无套囊--- 新生儿及婴幼儿

有套囊---儿童及成人

导管型号= 导管内径 (4号=4mm)



气管插管器械

套囊导管优点

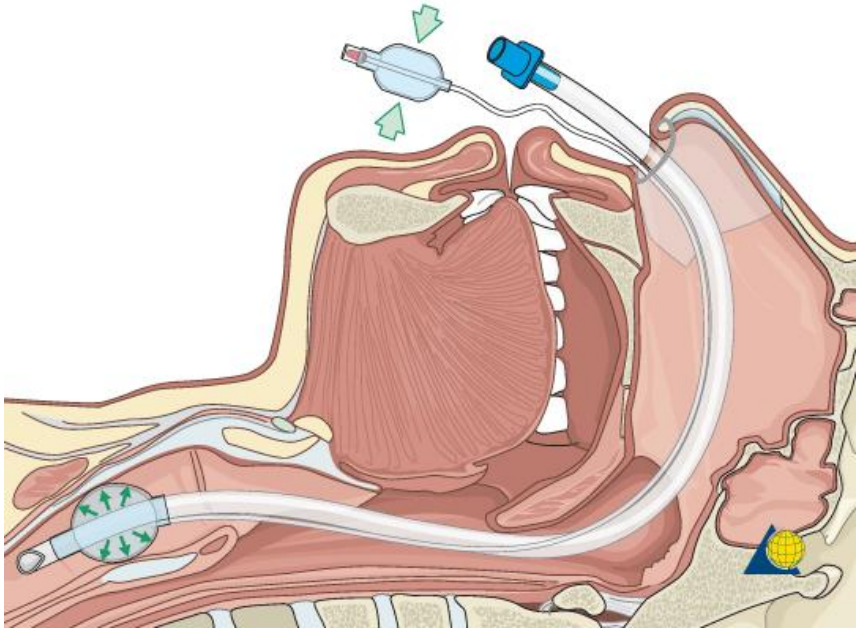
1 减少漏气
2 减少换管的概率
3 提高高压通气的效率
4 减少误吸
5 增加呼吸机监测的精确性
6 减少空气的影响
7 降低使用粗管时的并发症
（如声门下粘膜缺血坏死）

气管插管器械

套囊导管缺点

1 套囊压迫管壁引起坏死狭窄

2 需用较细的管道



01

气管插管器械

导管型号：

1. 简易估计：导管外径=患儿小指粗细

2 新生儿采用3-3.5号

3. 2岁以上儿童 导管型号= 年龄/4 + 4

4 年长儿童一般采用6号

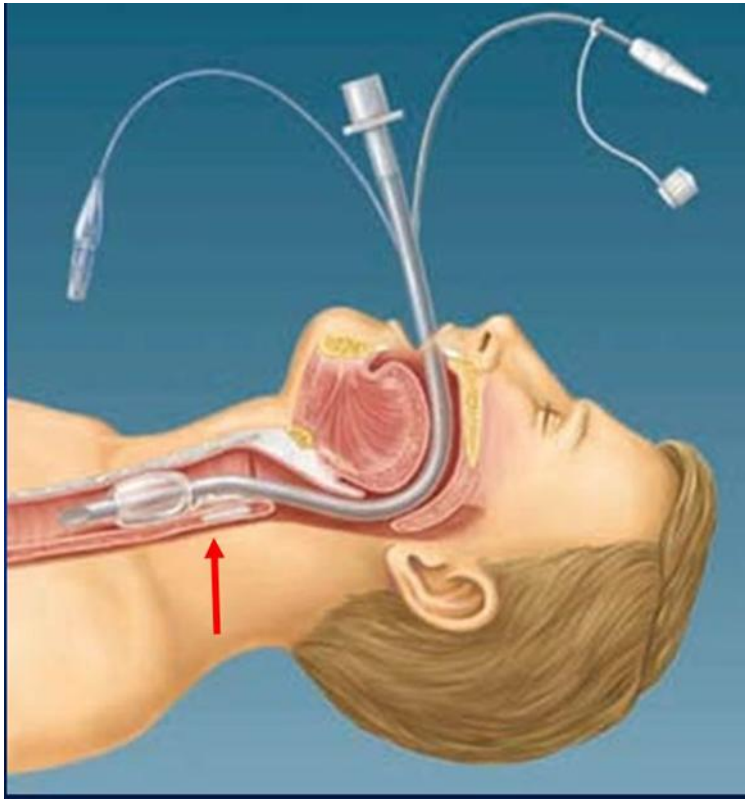
01 气管插管方法

插管深度（cm）

1.导管内径X 3

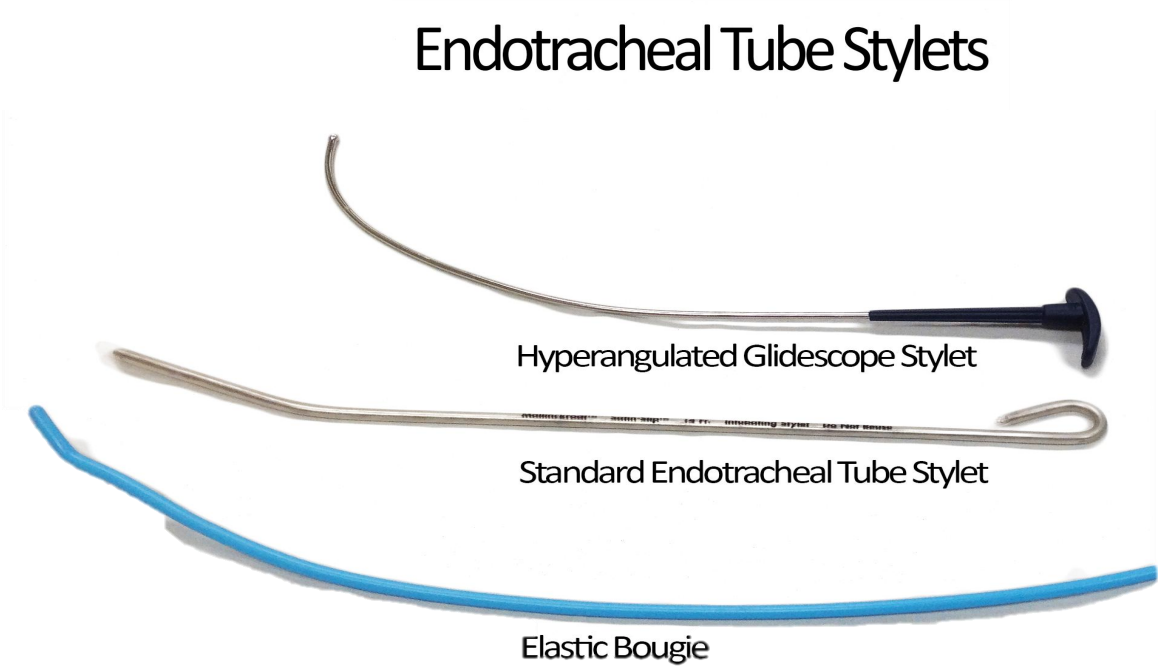
2岁以上= 年龄/2 + 12

注：经鼻插管深度比经口插管深度多2cm



02

气管导丝



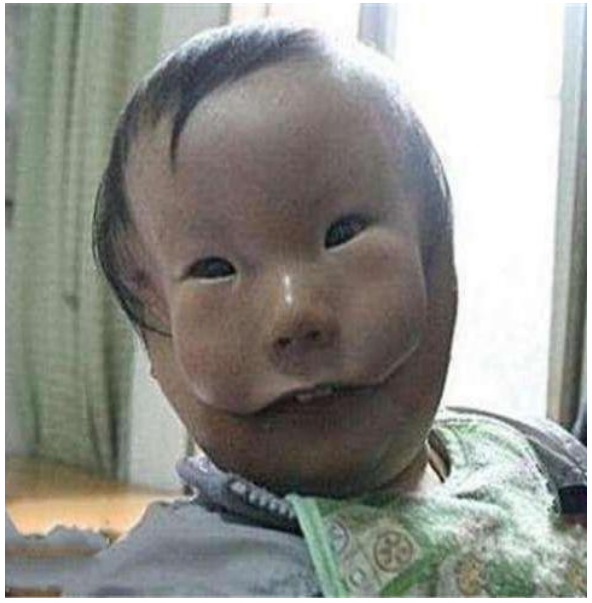
根据型号，选择不同的粗细导丝

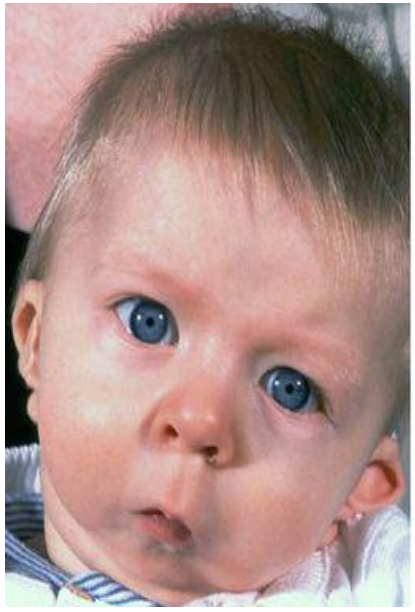
困难气道评估

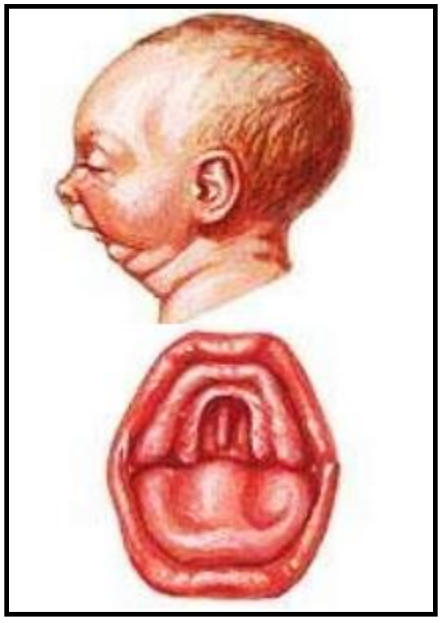
LEMON	
Look externally	外观：是否存在面部畸形，外伤
Evaluate(332)	评估（3-3-2原则）：张口≥3指，下颏-舌骨≥3指，舌骨-甲状软骨上切迹≥2指
Mallampati	Mallampati分级：舌与口咽部的相对体积，Ⅲ-Ⅳ提示困难气道可能性大
Obstruction/ Obesity	梗阻/肥胖：声门上肿物，感染，声带肿物等
Neck mobility	颈部活动度

困难气道评估 Look externally

体型和面容： 是否有头面部损伤、 小下颌（Pierre-Robin ）



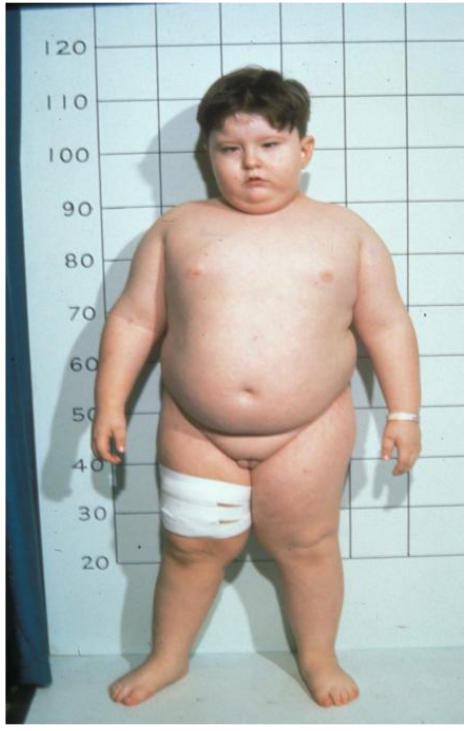


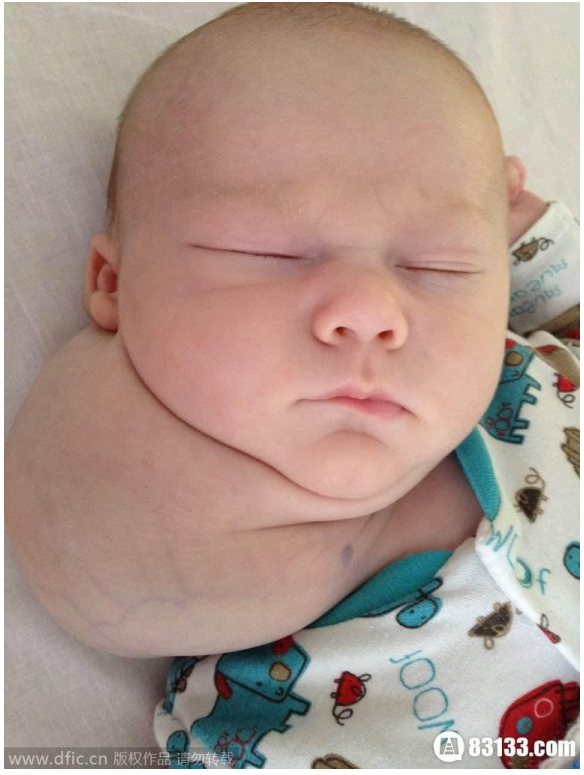


困难气道评估

Obesity/Obstruction

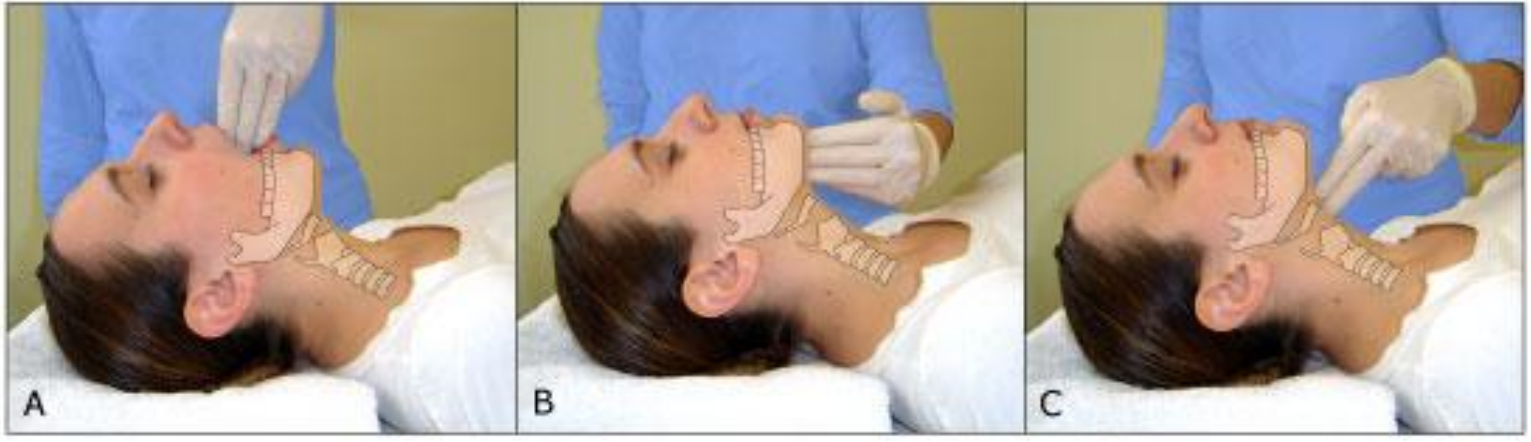
体型和面容： 是否过度肥胖（Prade—Willi）、 气道梗阻





困难气道评估

The 3-3-2 rule

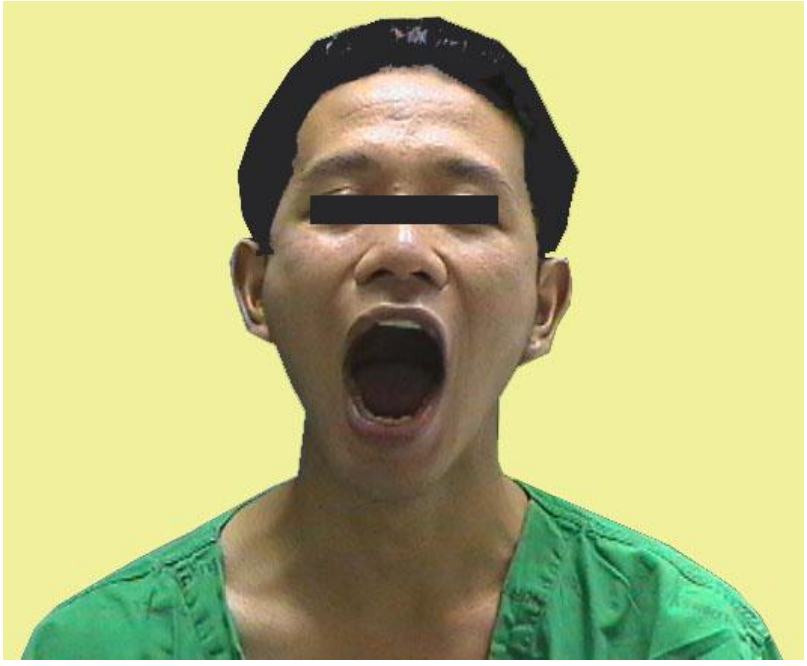


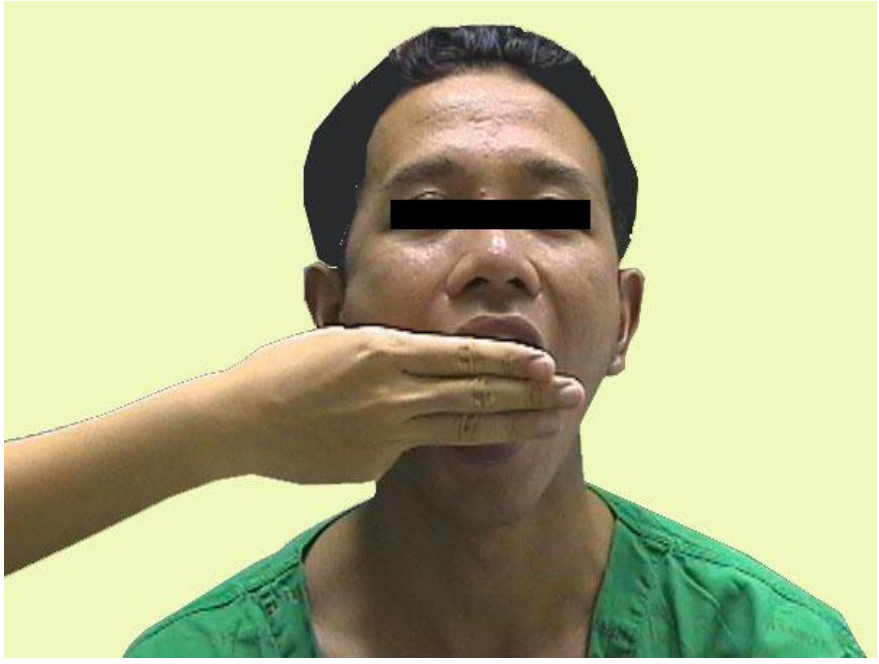
A pratical tool for predicting the difficult airway on the field

01

困难气道评估

开口度： 上下门齿间距 ≥3 cm/ 三横指

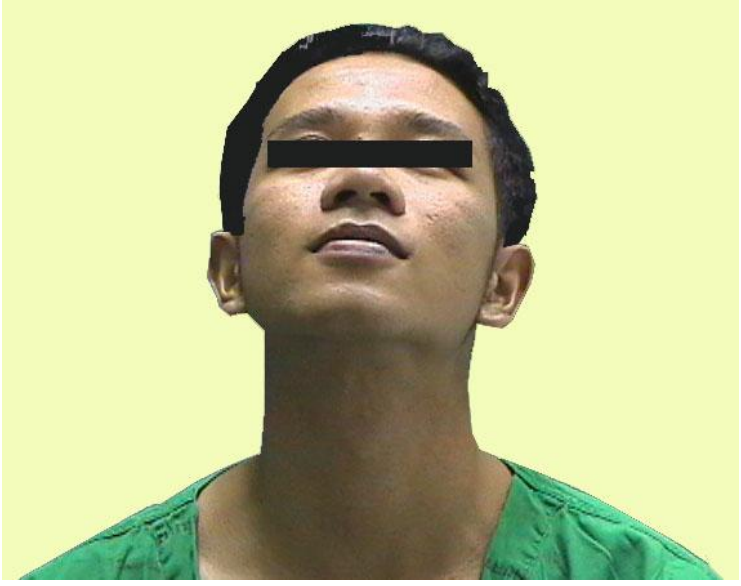


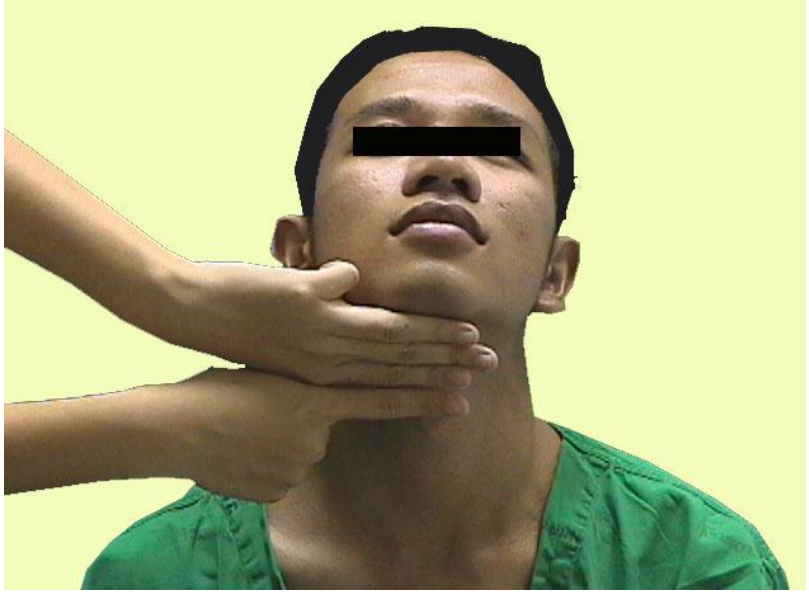


01 困难气道评估

颏颌距离 ： 颏部至下颌内侧面的距离≥3 cm/ 三横指

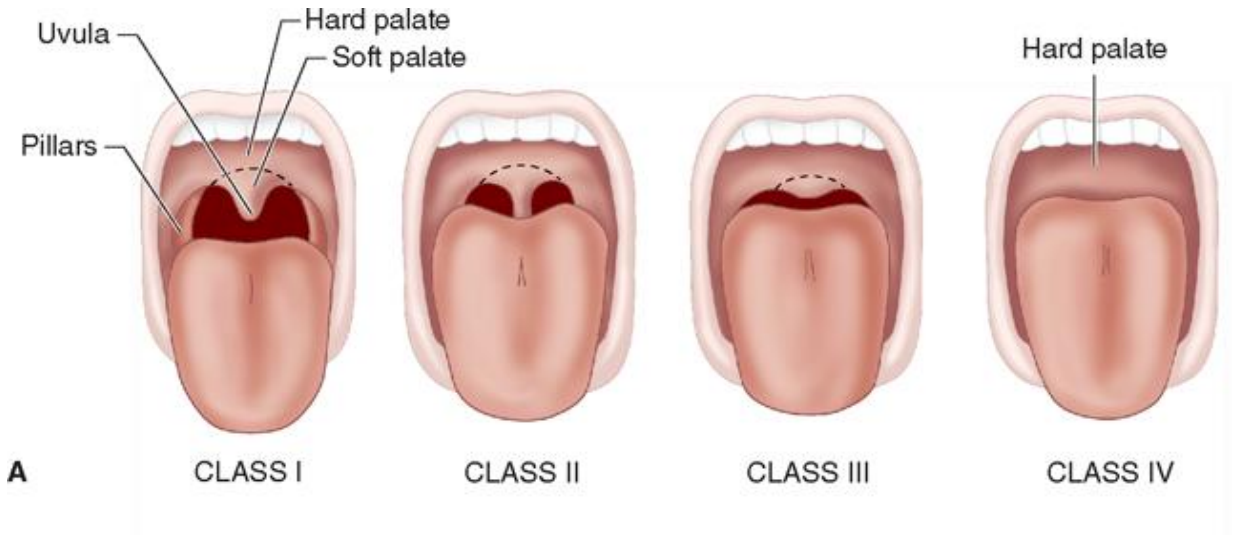
颌甲距离 ： 下颌内侧面至甲状切迹的距离≥2 cm/ 二横指





01 困难气道评估

Mallampati Score

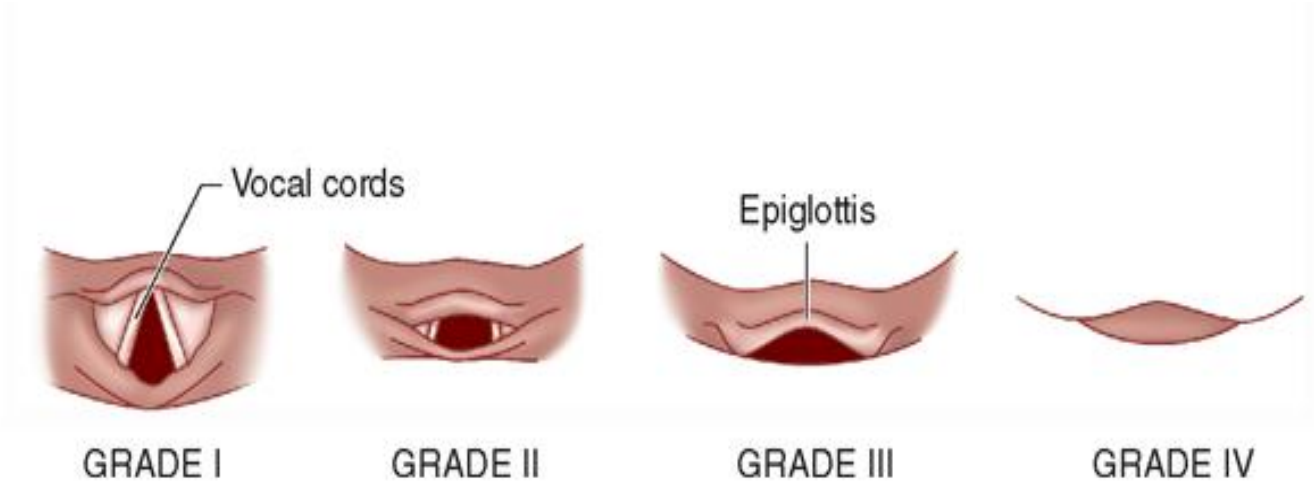


视野清晰　　软腭+部分扁桃体　　仅见悬雍垂　　仅见硬颚

3、4---困难气道，可能会发生插管困难

01

困难气道评估

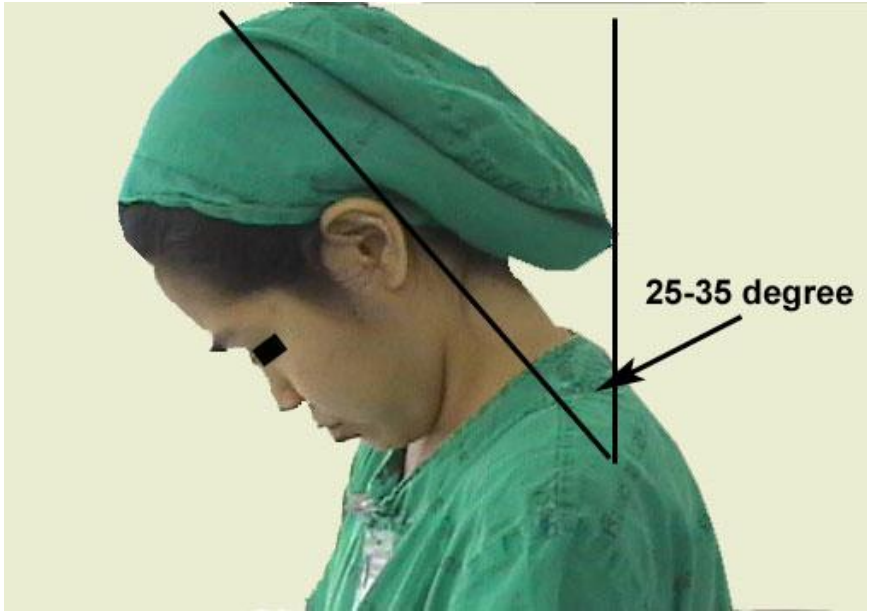


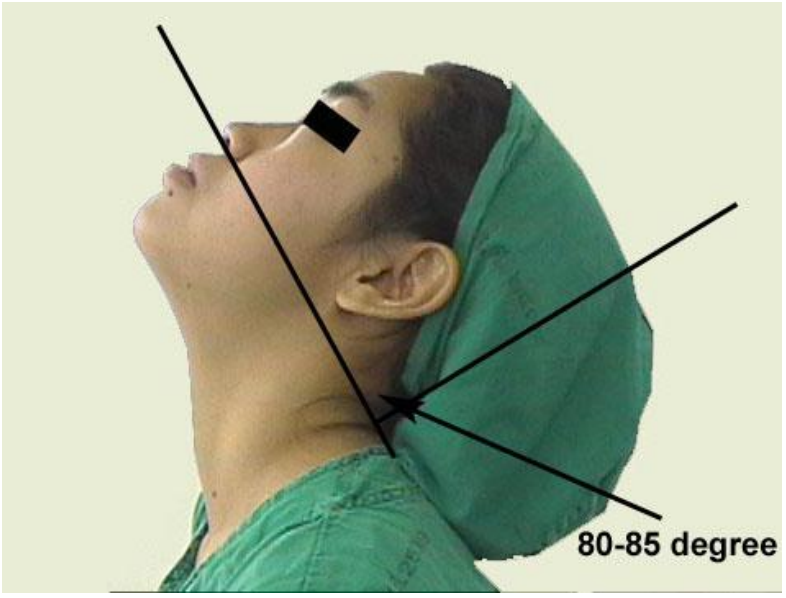
声门清晰　　部分声门　　仅见会厌，不见声门　　不见会厌

3、4---困难气道，可能会发生插管困难

困难气道评估

颈部仰伸

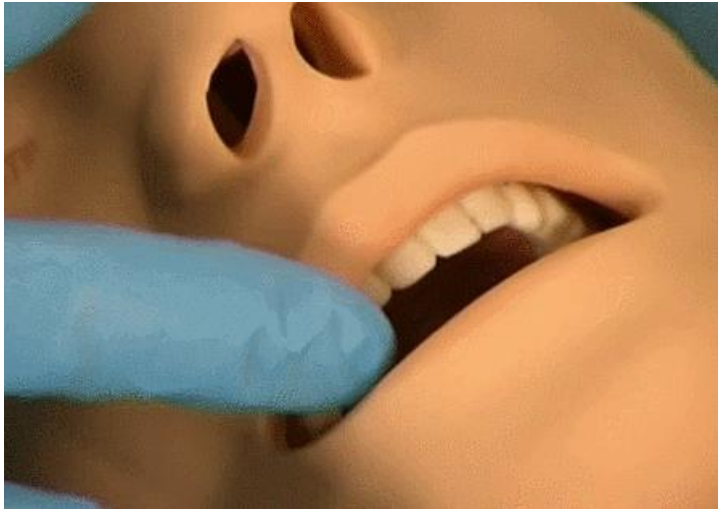




04 插管流程----加压给氧，充分氧合

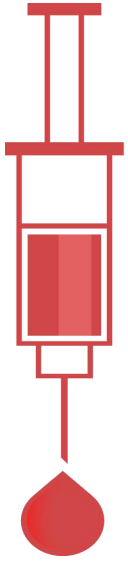
04

插管流程----清理呼吸道，暴露视野



04 插管流程----术前给药，快速诱导插管

气管插管“鸡尾酒”



咪达唑仑：0.1-0.3mg/kg　IV

阿托品：0.02mg/kg　IV

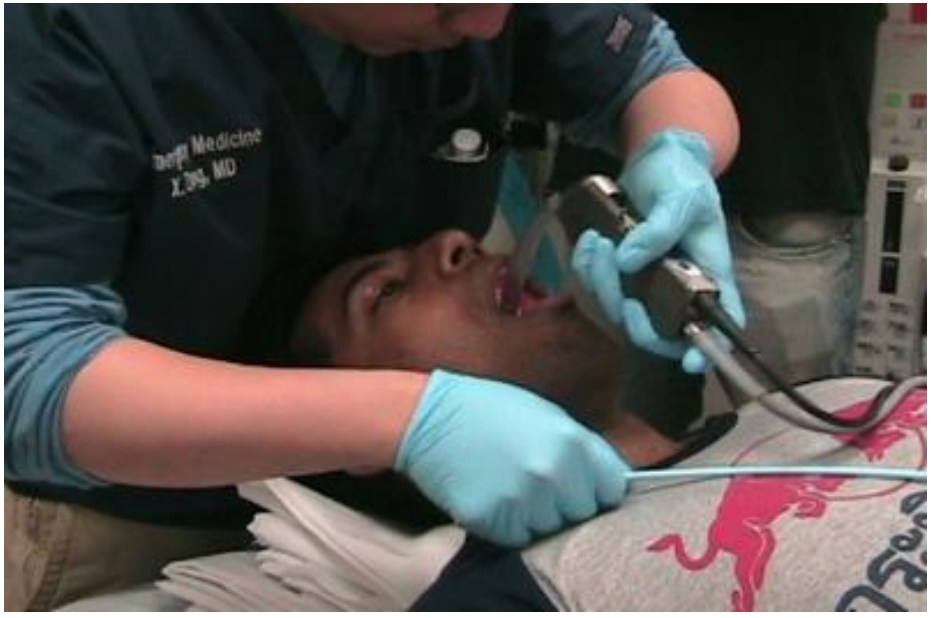
氯胺酮 1-2 mg/kg IV

罗库溴胺 1 mg/kg 或维库溴胺 0.2 mg/kg IV

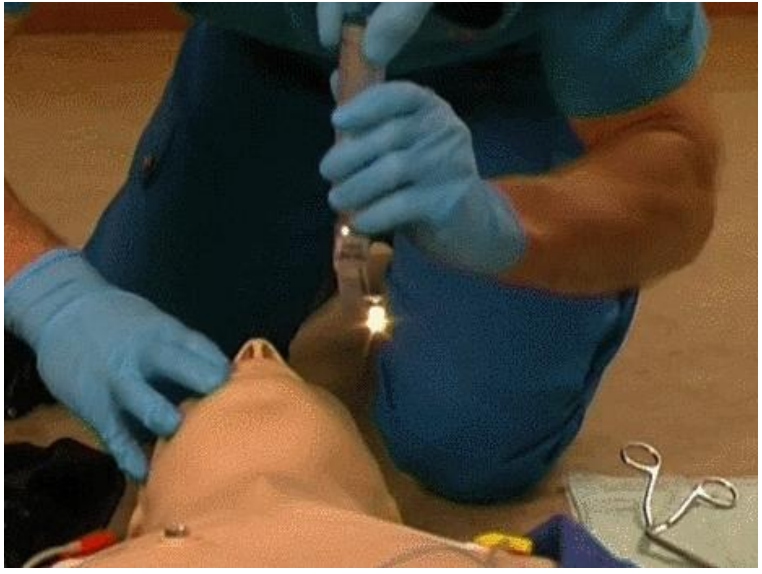
插管流程----插管途径

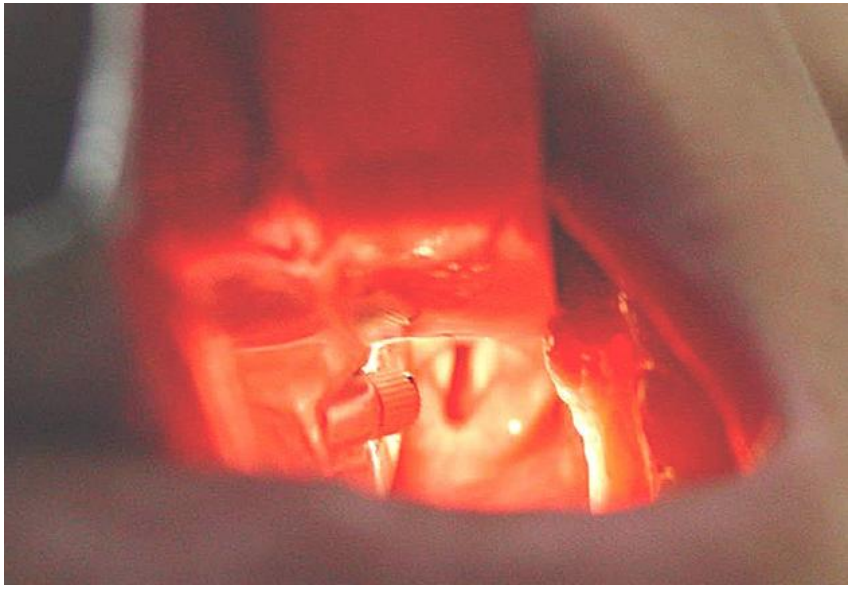
插管途径：

- 经口腔插管
- 经鼻腔插管
- 盲插
- 经纤支气管镜插管



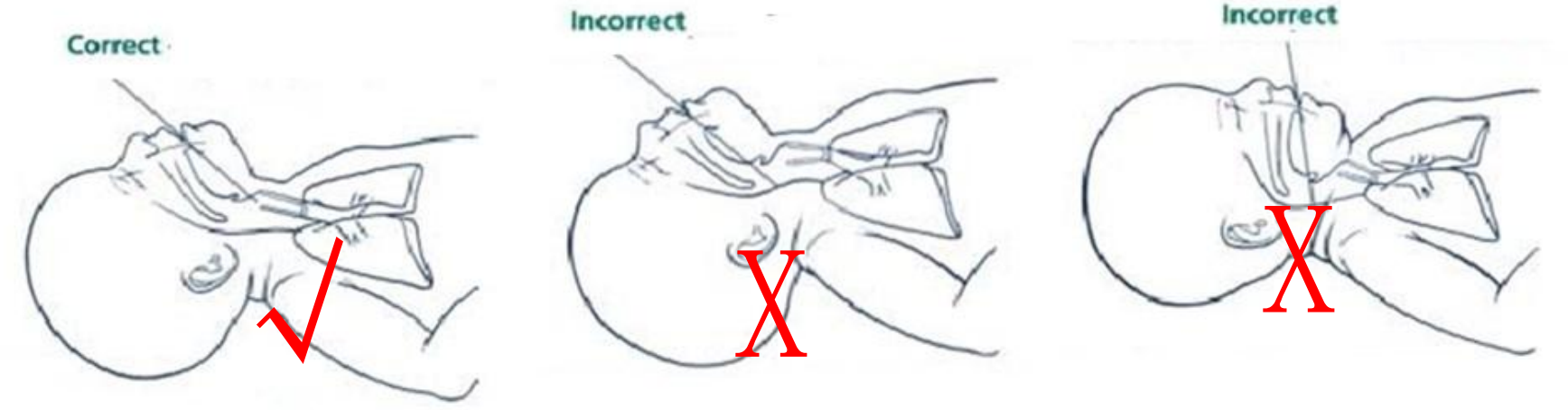
插管流程--气管插管方法





setp 1 摆体位

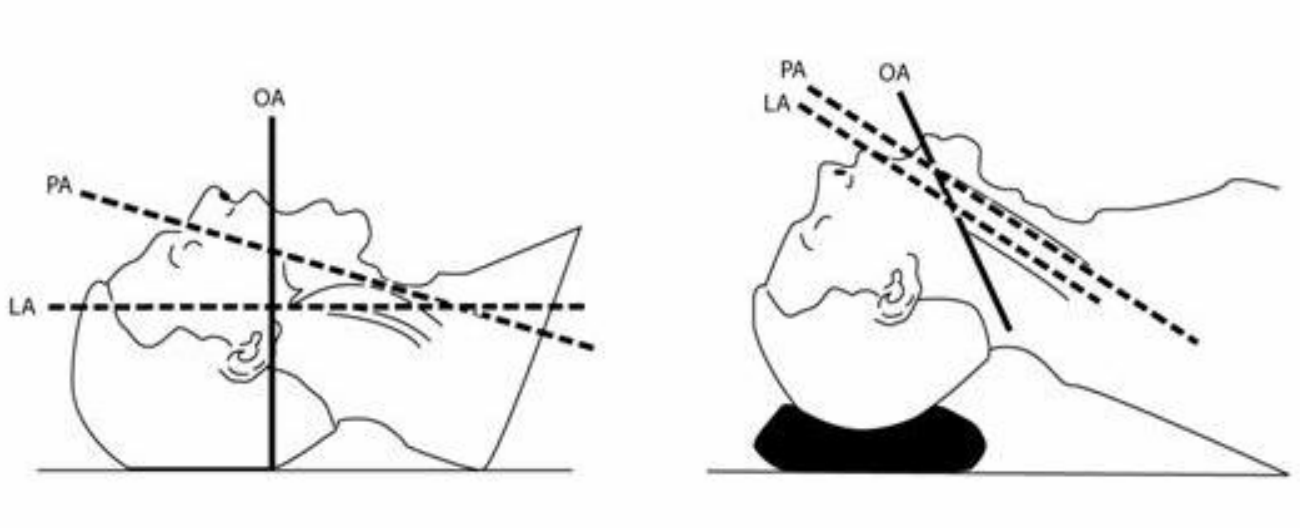
“鼻吸气”位 、“嗅花位”



Key: 固定头部避免颈部屈曲及过伸　　口、咽、喉三轴线尽量呈一直线

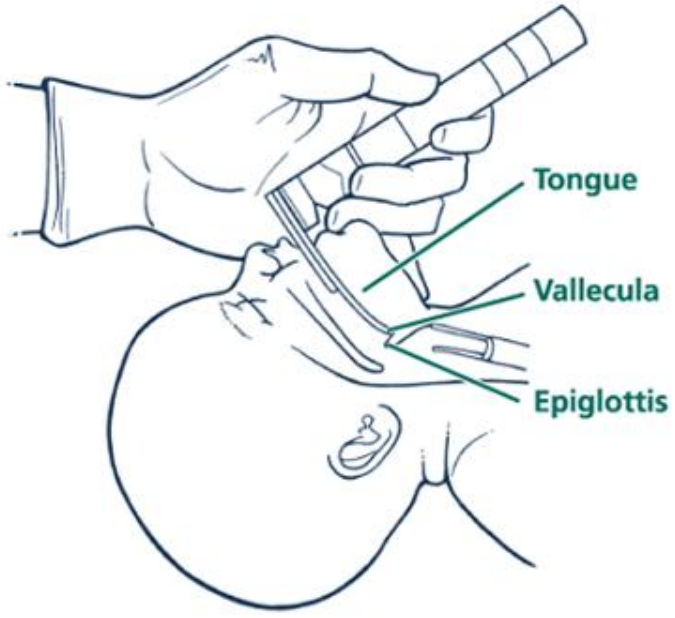
step 1 摆体位

“鼻吸气”位 、“嗅花位”



KEY: 口、咽、喉三轴线尽量呈一直线

step 2 插入喉镜



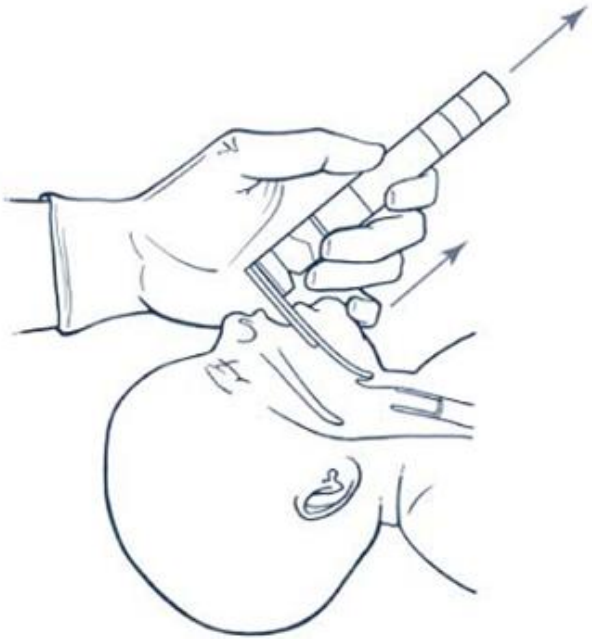
① 左手握喉镜的镜柄，将镜片从口腔的右角插入

② 移喉镜到口腔中部，推病人舌头向左侧。

③ 将镜片沿口腔中部徐徐前进至舌根会厌谷。

注意：如果未见会厌，可能是推入太深，镜片直接误入食管。

step 3 暴露视野



① 弯镜片将顶端插入会厌谷

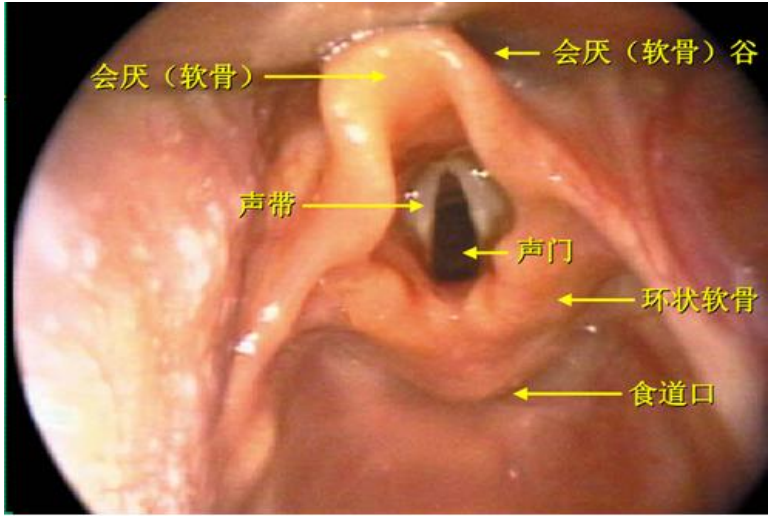
提起舌根，暴露声门

① 直镜片越过会厌，直接上提

会厌使声门显露

注意：不要以门齿或上牙龈为支点，不可有旋转动作

step 4 寻找声门



① 可能需要压迫环状软骨帮助暴露声门
② 吸引分泌物
③ 准确辨认倒“V”字声带及声门

step 5 插入导管

① 左手保持住视野，右手拿导管成“持笔式”插管

① 插入导管，声带线达声门水平

② 动作轻柔，遇阻力不可强行插入，必要时可换小半号的导管

① 操作时间不超过20秒

step 6 检查固定

① 退导丝

② 进插管

③ 放牙垫

④ 撤喉镜

⑤ 听呼吸

⑥ 贴胶布

step 7 后续工作

① 调呼吸机参数

② 连接呼吸机

③ 床边片

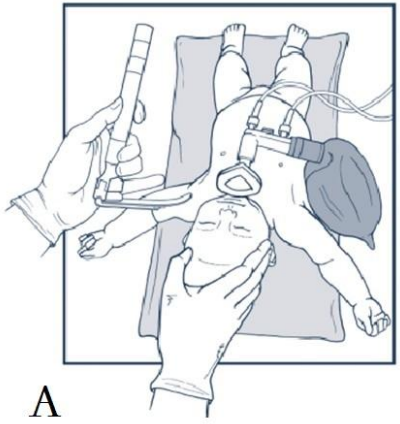
④ 血气分析

⑤ 心电监护

⑥ 临床观察

（呼吸、反应、对抗）

经口气管插管方步骤总结



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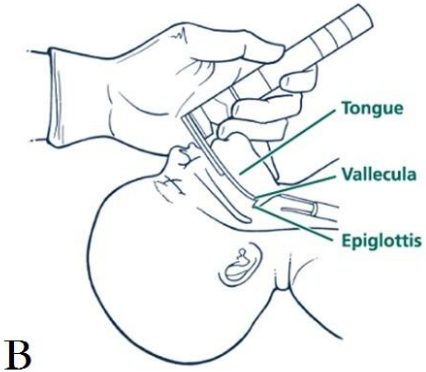

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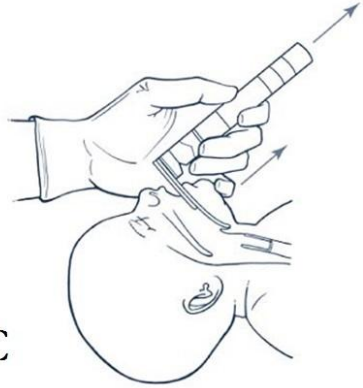

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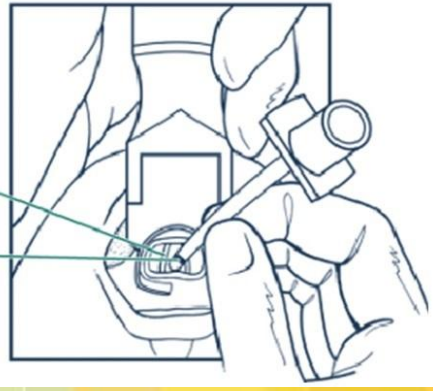


D

E

04

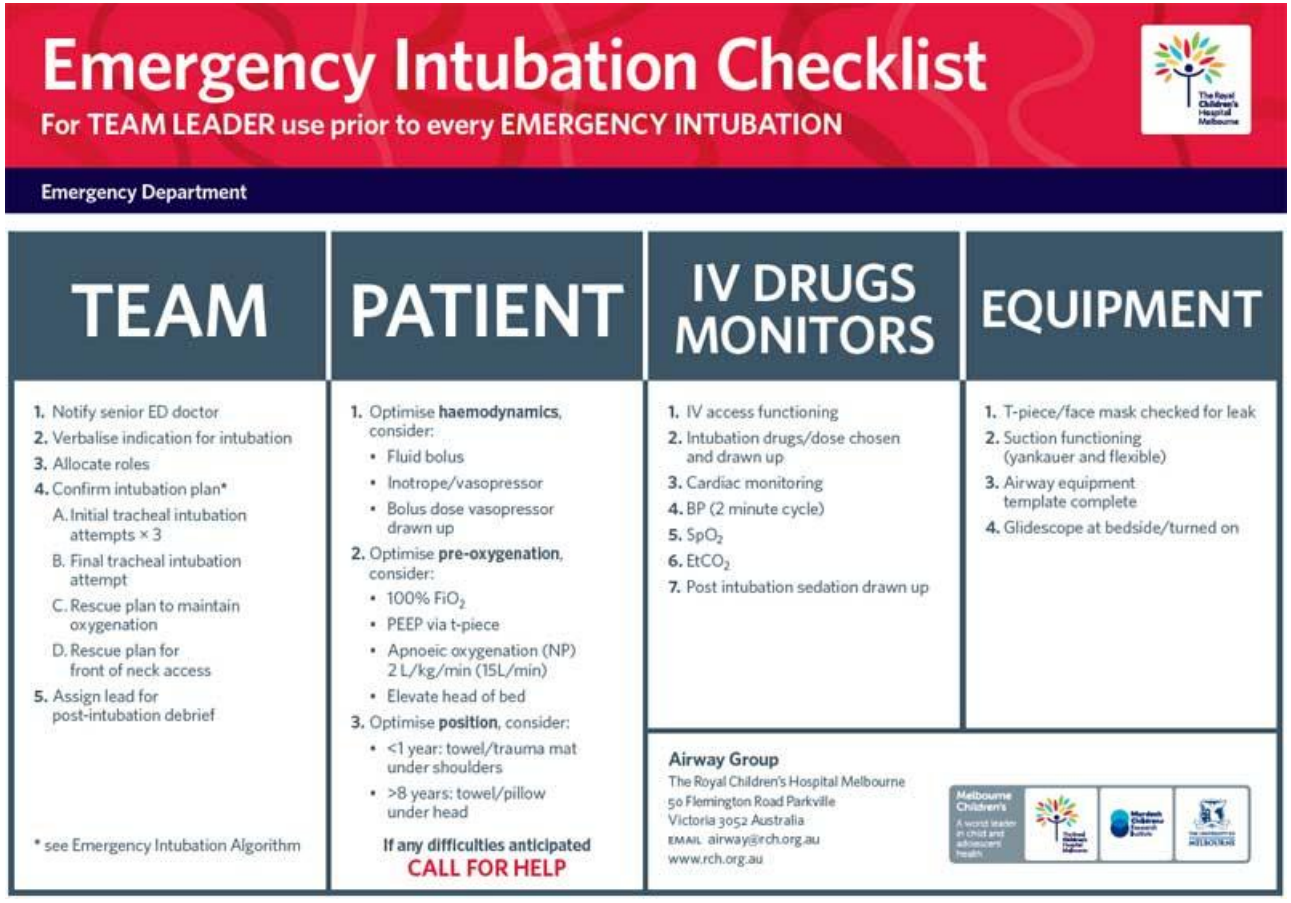
气管插管判断

气管插管在气管内三个金标准

1. 亲眼看到导管越过声门
（或直视气管导管在声带内）
2. 呼气末二氧化碳
3. 用纤支镜定位

辅助判断气管导管位置的方法：

1气管导管可见“白雾”；
2辅助通气时胸廓活动良好；
3双肺听诊呼吸音对称一致；
4. X线摄片



Emergency Intubation Checklist

For TEAM LEADER use prior to every EMERGENCY INTUBATION

The Royal Children's Hospital Melbourne

Emergency Department

TEAM

1. Notify senior ED doctor
2. Verbalise indication for intubation
3. Allocate roles
4. Confirm intubation plan*
   - A. Initial tracheal intubation attempts × 3
   - B. Final tracheal intubation attempt
   - C. Rescue plan to maintain oxygenation
   - D. Rescue plan for front of neck access
5. Assign lead for post-intubation debrief

* see Emergency Intubation Algorithm

PATIENT

1. Optimise **haemodynamics**, consider:
   - Fluid bolus
   - Inotrope/vasopressor
   - Bolus dose vasopressor drawn up
2. Optimise **pre-oxygenation**, consider:
   - 100% FiO_2
   - PEEP via t-piece
   - Apnoeic oxygenation (NP) 2 L/kg/min (15L/min)
   - Elevate head of bed
3. Optimise **position**, consider:
   - <1 year: towel/trauma mat under shoulders
   - >8 years: towel/pillow under head

If any difficulties anticipated
CALL FOR HELP

IV DRUGS MONITORS

1. IV access functioning
2. Intubation drugs/dose chosen and drawn up
3. Cardiac monitoring
4. BP (2 minute cycle)
5. SpO_2
6. $EtCO_2$
7. Post intubation sedation drawn up

EQUIPMENT

1. T-piece/face mask checked for leak
2. Suction functioning (yankauer and flexible)
3. Airway equipment template complete
4. Glidescope at bedside/turned on

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Melbourne Children's
A world leader in child and adolescent health

Rapid Sequence Intubation

AIRWAY

YOU ARE TEH BEST

First10EM

Thank you

感谢聆听，祝您健康美丽一生！