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可视气管导管在全麻手术患者气道插管中的应用及安全性评价

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摘要 目的:探讨可视气管导管在全麻手术患者气道插管中的应用及安全性。**方法:**选取2014年10月-2016年12月在广东省第二人民医院麻醉科行全麻手术的患者220例,其中使用可视气管导管进行插管的110例记为观察组,使用普通气管导管进行插管的110例记为对照组。对比两组患者的插管次数、插管时间和并发症发生率,对比两组患者麻醉诱导前(T_0)、麻醉诱导后(T_1)、气道插管后(T_2)、气道插管后5 min(T_3)心率(HR)、收缩压(SBP)、舒张压(DBP)及血氧饱和度(SpO_2)的变化情况。**结果:**观察组的插管时间和插管次数较对照组降低($P<0.05$); T_1 时间点两组患者的HR、SBP、DBP均低于 T_0 、 T_2 、 T_3 时间点,差异有统计学意义($P<0.05$); T_0 、 T_1 、 T_2 、 T_3 两组患者HR、SBP、DBP、 SpO_2 比较无统计学差异($P>0.05$);观察组的喉痛发生率为0.91%,显著低于对照组的7.27%,差异有统计学意义($P<0.05$)。**结论:**全麻手术患者气道插管时使用可视气管导管插管效果满意,可有效的减少插管时间和插管次数,安全性较高,值得临床推广应用。

关键词:可视气管导管;全麻;气道插管;应用;安全性

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Application and Safety of Visual Endotracheal Tube in Tracheal Intubation in Patients with General Anesthesia Operation

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ABSTRACT Objective: To explore the application and safety of visual endotracheal tube in tracheal intubation in patients with general anesthesia operation. **Methods:** 220 patients with general anesthesia operation in Department of Anesthesiology, Guangdong No.2 provincial people's hospital from October 2014 to December 2016 were selected, 110 patients were treated with visual endotracheal intubation as observation group, 110 patients were treated with general endotracheal intubation as control group. The number of intubation, intubation times and complication rate in the two groups were contrasted, compared the heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP) and oxygen saturation (SpO_2) in the two groups at before induction of anesthesia (T_0), after induction of anesthesia (T_1), airway intubation (T_2), 5 min after intubation (T_3). **Results:** The number of intubation and intubation times in the observation group were significantly less than those in the control group, the differences were statistically significant ($P<0.05$); At each time point, the HR, SBP, DBP and SpO_2 in the two groups were no significant difference ($P>0.05$); The HR, SBP, DBP and SpO_2 in the two groups at T_1 were significantly less than T_0 , T_2 , T_3 , the differences were statistically significant ($P<0.05$); The incidence of throat pain in the observation group (0.91%) was significantly less than that in the control group (7.27%), the difference was statistically significant ($P<0.05$). **Conclusion:** Use visual endotracheal tube in tracheal intubation in patients with general anesthesia operation is satisfactory, can effectively reduce the time of intubation and intubation times, and has good security, it is worthy of clinical application.

Key words: Visual endotracheal tube; General anesthesia; Tracheal intubation; Application; Safety

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前言

气管插管是医院麻醉科、ICU、手术室等科室常用的一项操作^[1,2]。对全身麻醉的患者进行气道插管可以有效的防止患者出现误吸和缺氧,对于一些需要注射肌肉松弛药才能达到手术条件的患者,因注射肌肉松弛药后患者难以维持呼吸,必须进行气管插管来连接呼吸机,以保证患者能在手术过程中保持呼吸通畅^[3,4]。多种因素均能影响气管插管的插管次数和插管时

间,包括患者的最大张口角度、咽喉部情况、声门暴露情况、口腔颌面部的结构、操作者熟练程度等^[5,6]。普通的气管导管由于操作视野较差,对患者的张口度和口、咽、喉部空间均有较高的要求,对于达不到要求的患者往往需要延长插管时间和次数,甚至会出现气管插管失败,从而对患者的手术进行造成较大的影响^[7]。据相关研究报道^[8],在所有因麻醉事故而导致患者去世的病例中,有30%左右属于困难气道处理失败,因此寻找高效的插管工具对于患者的生命健康有重大的意义。可视气管导管是一种内嵌小型摄像头的新型气管导管,操作者在插管过程中可通过影像观察到患者气道内的情况,为快速高效的插管提供

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了便利^[9,10]。本研究旨在探讨可视气管导管在全麻手术患者气道插管中的应用及安全性,以期为临床选择合适的气管导管提供指导,现做如下报道。

1 资料与方法

1.1 一般资料

选取 2014 年 10 月 -2016 年 12 月在广东省第二人民医院麻醉科行全麻手术的患者 220 例作为研究对象,纳入标准:①所有患者均行经口气道插管;②均无气道插管困难史;③患者及其家属知情同意,并签署知情同意书。排除标准:①急性喉炎者;②严重凝血功能障碍者;③心肺功能异常者。按照随机数字表法分为观察组和对照组各 110 例。观察组男 61 例,女 49 例,年龄 36-73 岁,平均年龄(52.6±9.3)岁,美国麻醉医师协会(ASA)分级:I 级 41 例,II 级 69 例,手术种类:普外科 42 例,骨科 29 例,妇产科 16 例,头颈外科 23 例。对照组男 59 例,女 51 例,年龄 38-76 岁,平均年龄(53.3±10.2)岁,ASA 分级:I 级 38 例,II 级 72 例,手术种类:普外科 40 例,骨科 30 例,妇产科 18 例,头颈外科 22 例。两组患者的一般资料上经比较无统计学差异($P>0.05$)。

1.2 气道插管方法

所有患者均采用静脉全麻,咪达唑仑 0.03 mg/kg,舒芬太尼 0.4 μg/kg,丙泊酚 1 mg/kg 和顺阿曲库胺 0.2 mg/kg。对照组采用普通气管导管,插管过程如下:将患者头枕垫高 10cm 左右,患者仰卧,头后仰,使口轴线、喉轴线与咽轴线夹角缩小,利于插管。选择大小合适的气道导管,操作者位于患者头顶侧方,

用手指将患者口腔推开,从口腔右侧进入、渐进、渐移向中线,推移舌体,暴露悬雍垂。镜片沿舌根深入,同时提起镜柄,暴露会厌的上缘,镜片顶端伸至会厌,将其挑起暴露声门。固定镜片位置,从口腔右侧伸入气管导管,直至导管斜面开口伸入声门,将管芯微微向一个方向旋转,将导管伸入气管,一般推进到声门下 2-4 cm,切忌过深,插管深度即门齿至管端深度。插管成功后放置牙垫,取出喉镜,向气管导管套囊中注入 3-5 mL 空气,插管完毕。观察组采用可视气管导管,操作步骤和对照组一致,但在操作过程中可以通过显示屏观察口咽部、声门、气道情况,根据影像提示来调整导管位置。

1.3 评价指标

记录并对比两组患者的插管次数和插管时间,于麻醉诱导前(T_0),麻醉诱导后(T_1),气道插管后(T_2),气道插管后 5min(T_3)检测两组患者的心率(HR)、收缩压(SBP)、舒张压(DBP)及血氧饱和度(SpO_2),并进行对比,统计两组患者术后并发症发生例数并计算并发症发生率。

1.4 统计学方法

选用 SPSS20.0 对所有数据进行统计分析,计数资料以率(%)表示,进行 χ^2 检验,定量资料以均值±标准差($\bar{x} \pm s$)表示,进行 t 检验,以 $\alpha=0.05$ 为检验标准。

2 结果

2.1 两组患者的插管次数和插管时间对比

观察组插管时间和插管次数较对照组降低($P<0.05$),详见表 1。

表 1 两组患者的插管次数和插管时间对比

Table 1 Comparison of intubation times and intubation time between the two groups

Groups	n	Intubation times(frequency)	Intubation time(s)
Control group	110	1.28±0.32	42.12±18.31
Observation group	110	1.00±0.00	30.06±9.39
t	-	9.177	5.127
P	-	0.000	0.000

2.2 两组患者生命体征指标对比

T_0 、 T_1 、 T_2 、 T_3 两组患者的 HR、SBP、DBP、 SpO_2 比较无统计

学差异($P>0.05$); T_1 时间点两组患者的 HR、SBP、DBP 均低于 T_0 、 T_2 、 T_3 时间点,差异有统计学意义($P<0.05$)。详见表 2。

表 2 两组患者在不同时间点的 HR、SBP、DBP、 SpO_2 对比

Table 2 Comparison of HR, SBP, DBP, SpO_2 between the two groups at different time points

Groups	Times	HR(times/min)	SBP(mmHg)	DBP(mmHg)	SpO_2 (%)
Control group(n=110)	T_0	76.22±11.03*	129.36±13.37*	77.45±9.06*	98.26±1.02
	T_1	65.08±9.31	102.17±10.25	66.31±8.14	97.12±1.21
	T_2	80.33±12.16*	125.98±11.69*	78.15±10.02*	97.33±1.15
	T_3	74.24±10.11*	119.69±14.32*	71.37±8.34*	98.02±1.11
Observation group (n=110)	T_0	76.53±11.34*	127.93±14.24*	76.98±8.87*	98.23±1.01
	T_1	65.11±9.38	103.05±10.02	66.35±8.93	96.89±1.18
	T_2	79.02±10.54*	127.38±11.58*	77.31±9.01*	97.36±1.20
	T_3	73.38±9.97*	119.31±13.26*	70.15±8.26*	98.04±1.08

Note: Compared with T_1 time point, * $P<0.05$.

2.3 两组患者手术后并发症发生情况对比

两组患者的喉溃疡、气管炎发生率比较差异无统计学意义

($P>0.05$), 观察组的喉痛发生率为 0.91%, 显著低于对照组的 7.27%, 差异有统计学意义($P<0.05$), 详见表 3。

表 3 两组患者手术后并发症发生情况对比[n(%)]

Table 3 Comparison of postoperative complications between the two groups[n(%)]

Groups	n	Throat pain	Laryngeal ulcer	Tracheitis
Control group	110	8(7.27)	6(5.45)	3(2.73)
Observation group	110	1(0.91)	2(1.82)	0(0.00)
χ^2		4.171	1.167	1.352
P		0.041	0.280	0.245

3 讨论

全身麻醉是一种临床上常用的麻醉方式,通过将麻醉药物经呼吸道吸入、静脉注射或肌肉注射进入到患者体内,使得患者中枢神经系统暂时性的受到抑制。全身麻醉的患者临床表现为神志消失、全身痛觉消失、神经反射受到抑制和骨骼肌松弛^[11-13]。在麻醉过程中可以通过调控注入患者体内的药量,或调节麻醉时间来调整中枢神经系统受到抑制的程度。当药物随着人体代谢排出体内后,患者的中枢神经系统逐渐恢复正常,对患者术后生活无影响^[14,15]。由于患者在全身麻醉后咳嗽反射、吞咽反射、喷嚏反射等反射受到抑制,失去了自我保护的能力,很容易导致反流误吸的发生,同时患者麻醉后常发生呕吐,倘若呕吐物不能及时排出也易导致误吸,进而导致患者出现严重的并发症甚至死亡^[16,17]。气管插管是一种将特制的气管导管经声门置入气管的技术,气管插管可以将呼吸道和消化道隔离开来,从而防止其他异物进入呼吸道,降低误吸的风险,同时能够及时吸出气管内分泌物,保持呼吸道通畅^[18,19]。目前临床上常用的气管导管并无内嵌小型摄像头,在进行插管是操作者视野受阻较为严重,使得插管次数和插管时间相应增加^[20,21]。可视气管导管能通过自带的摄像头实现气道情景影像化,方便操作者调整导管位置,实现快速高效插管^[22,23]。

在本次研究中,观察组的插管时间和插管次数较对照组减少($P<0.05$),说明使用可视气管导管比普通气管导管在气管插管上更加快速高效,可以明显的降低插管次数和插管时间,和相关研究结果一致^[24]。究其原因,大部分患者的口、咽、喉不能处在同一条直线上,从而在气管插管时会对导管造成卡顿,同时因导管的进入,可视空间变得更为狭小,普通的气管导管由于操作视野受阻,较难准确的调整导管位置,从而增加了插管时间和次数。可视气管导管可以通过自带摄像头全程查看咽喉、气道的情况,可以清晰的观察声门和周围组织的位置情况,从而准确调节导管位置,实现快速高效插管^[25,26]。本研究结果还显示,在各个时间点两组患者生命体征指标无明显差异($P>0.05$); T_1 时间点两组患者的 HR、SBP、DBP 均低于 T_0 、 T_2 、 T_3 时间点,差异有统计学意义($P<0.05$),说明两组患者在插管过程中 HR、SBP、DBP、 SpO_2 变化程度较为接近, T_1 时刻因麻醉诱导使得两组患者 HR、SBP、DBP 降低,后因气管导管插入引发了患者机体应激反应,导致上述指标再次升高^[27,28]。在并发症发生率中,观察组的喉痛发生率显著低于对照组,差异有统计学意义($P<0.05$),主要是因为普通气管导管插管次数多且时间长,从而增加了导管和咽喉的接触,进而加大了对咽喉的损伤,造成术后喉痛的症状出现,而可视气管导管则可以较好的规避此类情况发生,减少并发症发生率,和相关研究结果一致^[29,30]。

综上所述,在全麻手术患者气道插管时使用可视气管导管可有效的减少插管时间和插管次数,减少并发症发生率,值得临床推广应用。

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