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·临床研究·

免气腹腹腔镜阑尾切除术在老年患者中的临床应用

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[摘 要] **目的** 探讨免气腹腹腔镜阑尾切除术在老年阑尾炎患者治疗中的安全可行性。**方法** 回顾性分析2015年7月至2017年10月重庆医科大学附属永川医院胃肠外科收治的120例老年阑尾炎患者的临床资料。患者均施行阑尾切除术,按照手术方式的不同分为免气腹腹腔镜阑尾切除术(免气腹组)55例、腹腔镜阑尾切除术35例(气腹组)、开腹阑尾切除术患者30例(开腹组)。观察并记录患者的CO_2结合率、手术时间、出血量、皮下血肿形成、皮下气肿形成、酸中毒、腹腔脏器损伤情况及意外的血管损伤。记录患者术后肛门排气时间、腹痛持续时间、伤口愈合、发热、住院时间等术后恢复情况。**结果** 3组患者均顺利完成手术,免气组、气腹组手术时间均短于开腹组,差异具有极显著性统计学意义($P<0.01$),但免气腹组与气腹组差异无统计学意义($P>0.05$);术中出血量3组间比较差异无统计学意义($F=0.492$,$P>0.05$);3组患者术前CO_2结合率差异无统计学意义($F=0.34$,$P>0.05$),术后气腹组CO_2结合率明显高于免气腹组与开腹组($F=100.189$,$P<0.05$);肛门排气时间,术后免气腹组、气腹组均早于开腹手术组,3组比较差异有统计学意义($F=27.683$,$P<0.01$);但免气腹组与气腹组之间差异无统计学意义($P>0.05$);腹痛时间,术后免气腹组与气腹组均短于开腹组,差异具有极显著性统计学意义($P<0.01$),免气腹组与气腹组之间差异无统计学意义($P>0.05$);平均住院时间,免气腹组、气腹组均短于开腹组,差异具有极显著性统计学意义($P<0.01$),免气腹组与气腹组间差异无统计学意义($t=-0.412$,$P>0.05$)。3组患者发生酸中毒、皮下血肿、皮下气肿、肺部感染等感染指标差异无统计学意义($P>0.05$)。3组患者均获得随访,中位随访时间为16个月(8~24个月)。开腹组有1例盆腔脓肿形成,2例术后肠粘连肠梗阻再次入院。3组患者均无切口疝形成,无阑尾残株炎发生。**结论** 免气腹腹腔镜阑尾切除术可以避免腹腔镜手术需要建立气腹引起的手术风险,同时还保留微创的优势,有利于老年阑尾炎患者的恢复。

[关键词] 免气腹;腹腔镜;开腹;老年;微创;阑尾切除术

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Clinical application of laparoscopic appendectomy without pneumoperitoneum in elderly patients

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Abstract: Objective To explore the feasibility and security of gasless laparoscopic appendectomy in the treatment of patients with senile appendicitis. **Methods** Retrospectively analyzed the clinical data of 120 elderly patients with acute suppurative appendicitis who underwent appendectomy in Yongchuan hospital Chongqing medical university from July 2015 to October 2017. Among them, 55 patients were treated with laparoscopic appendectomy without pneumoperitoneum (gasless laparoscopic surgery group), 35 patients received laparoscopic appendectomy (laparoscopic group), and 30 patients underwent open appendectomy (open abdomen group). The CO_2 binding rate, duration of operation, amount of bleeding, subcutaneous hematoma, subcutaneous emphysema, acidosis, abdominal viscera injury and accidental vascular injury were observed and recorded. The postoperative anal exhaust time, duration of abdominal pain, wound healing time, fever and hospitalization stays were recorded. **Results** Three groups of patients were successfully completed surgery, the operation time of gasless laparoscopic surgery group and laparoscopic group were shorter than that of open abdomen group, the difference had outstanding statistical significance ($P<0.01$), but there was no significant difference between gasless laparoscopic surgery group and laparoscopic group ($P>0.05$). There was no significant difference in intraoperative blood loss of the three groups ($F=0.492$, $P>0.05$). There was no significant difference in preoperative CO_2 binding rate of the three groups ($F=0.34$, $P>0.05$). The postoperative CO_2 binding rate of the laparoscopic group was significantly higher than those of the other two groups ($F=100.189$, $P<0.05$). The postoperative anal exhaust time of gasless laparoscopic surgery group and laparoscopic group were earlier than that of open abdomen group, the difference were statistically significant in three groups ($F=27.683$, $P<0.01$), but there was no significant difference between gasless laparoscopic surgery group and laparoscopic group ($P>0.05$); the duration of abdominal pain of gasless laparoscopic surgery group and laparoscopic group were shorter than that of open abdomen group, the difference was extremely statistically significant ($P<0.01$), while there was no significant difference between gasless laparoscopic surgery group and

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laparoscopic group($P>0.05$). The hospitalization duration of gasless laparoscopic surgery group and laparoscopic group were shorter than that of open abdomen group, the difference was extremely statistically significant($P<0.01$), there was no significant difference between gasless laparoscopic surgery group and laparoscopic group($t=-0.412$, $P>0.05$). There was no significant difference in acidosis, subcutaneous hematoma, subcutaneous emphysema and pulmonary infection between three groups($P>0.05$). All patients were followed up for ranged from 8 to 24 months, the median time was 16 months. In the open abdomen group, 1 case of pelvic abscess after operation occurred, 2 cases of ileus caused by postoperative intestinal adhesion were re-hospitalized. There were no incision hernia and stump appendicitis occurred in the three groups. **Conclusion** Gasless laparoscopic appendectomy is safe and feasible, it can avoid the surgery risk of establishing pneumoperitoneum, meanwhile retain the advantages of minimally invasive surgery, which is beneficial to the recovery of patients with senile appendicitis.

Keywords: gasless; laparoscope; laparotomy; elderly; minimally invasive; appendicectomy

近年来阑尾炎的发病率呈上升趋势,西方国家高达10%,我国发病率为4% ~8.5%,居腹部外科急诊病种首位,尤其是老年患者的发病率逐年增高明显[1]。阑尾炎一旦确诊应尽早手术切除阑尾。目前临床常用的手术方式有传统的开腹手术及微创腹腔镜手术。传统开腹手术创伤大,腹腔镜手术需要建立CO_2气腹及全身麻醉,对患者身体的一般情况及心肺功能有一定要求,增加了老年阑尾炎患者手术风险。老年急性阑尾炎患者常合并心脑血管疾病、呼吸系统疾病或肝肾功能不全等,耐受全身麻醉及建立CO_2气腹风险较大,选择一种更为安全、创伤小、对身体情况要求小的手术方式有重要意义。免气腹腹腔镜手术可在腰硬联合麻醉下进行,无需建立CO_2人工气腹,同时还能保留微创的优势。现免气腹技术在临床也有开展,例如免气腹腹腔镜胆囊手术、免气腹腹腔镜阑尾手术、免气腹腹腔镜乙状结肠肿瘤手术。而免气腹腹腔镜阑尾切除术的研究多是减孔腹腔镜阑尾切除术,切口大多选择在右下腹麦氏点,此方法在患者炎症较重、发病时间长于24 h的情况下,术中操作相对困难,且易造成副损伤。本研究回顾性分析2015年7月至2017年10月重庆医科大学附属永川医院胃肠外科收治的120例老年阑尾炎患者的临床资料,通过比较免气腹腹腔镜阑尾切除术、腹腔镜阑尾切除术及开腹阑尾切除术的指标来探讨免气腹腹腔镜阑尾切除术在老年阑尾炎患者的治疗中的安全可行性。

1 资料与方法

1.1 临床资料

本组老年阑尾炎患者120例,其中男69例,女51例;年龄60 ~85岁,平均65岁;合并慢性阻塞性肺疾病89例,高血压71例;冠心病45例,糖尿病31例。患者均施行阑尾切除术,其中施行免气腹腹腔镜阑尾切除术55例(免气腹组),施行腹腔镜下阑尾切除术35例(气腹组),施行开腹阑尾切除术患者30例(开腹组)。排除标准:①免气腹腹腔镜组中转气腹和腹腔镜手术组的患者中转开腹;②术中证实为其他疾病的患者。2组患者一般情况比较,差异无统计学意义($P>0.05$),具有可比性,见表1。

表1 3组患者临床资料比较

组别	n	年龄(岁)	男/女(例)	BMI(kg/m^2)
免气腹组	55	66 ±6.0	32/23	21.9 ±1.4
气腹组	35	65 ±5.0	20/15	22.1 ±1.3
开腹组	30	63 ±8.0	17/13	21.7 ±2.1
P		>0.05	>0.05	>0.05

1.2 治疗方法

患者术前明确急性阑尾炎的临床诊断。由同一组医师完成阑尾切除术。免气腹组选择腰硬联合麻醉,腹腔镜Trocar置孔分别选择在脐部、脐左侧腹直肌外缘以及耻骨联合上方2 cm处做分别长约1 cm、1 cm、0.5 cm戳孔。麦氏点使用组合式腹壁提拉器悬吊腹壁,若暴露困难,可加一穿刺孔置入5爪拉钩遮挡大网膜及肠管。术者探查腹腔明确阑尾炎诊断,分离阑尾系膜,生物夹夹闭阑尾动脉,游离阑尾系膜至阑尾根部,生物夹夹闭阑尾,离断后取出阑尾,清理腹腔脓液,探查有无活动性出血,再关闭切口,标本送病检。

气腹组选择全身麻醉,其中腹腔镜术中CO_2气腹压力控制在12 mmHg(1 mmHg=0.133 kPa),腹腔镜Trocar置孔分别选择在脐部、脐左侧腹直肌外缘以及耻骨联合上方2 cm处做分别长约1 cm、1 cm、0.5 cm戳孔。术者探查腹腔明确阑尾炎诊断,分离阑尾系膜,生物夹夹闭阑尾动脉,游离阑尾系膜至阑尾根部,生物夹夹闭阑尾,离断后取出阑尾,清理腹腔脓液,探查有无活动性出血,然后释放气腹,再关闭切口,标本送病检。

开腹组选择腰硬联合麻醉,由麦氏切口入腹,切口长度为4 ~6 cm,找到阑尾后,分别结扎、离断阑尾动脉及阑尾根部,取出阑尾后探查无活动性出血,逐层关闭腹腔,标本送病检。

3组患者术后根据胃肠道功能恢复的情况后给予

患者流质饮食,给予患者抗炎、抑酸护胃、补液、对症支持等处理;注意腹痛及肛门排气排便的情况;观察有无伤口感染、腹痛、发热等。

1.3 观察指标

观察并记录患者的手术时间、出血量、皮下血肿形成、皮下气肿形成、酸中毒、腹腔脏器损伤情况及意外的血管损伤。记录患者术后肛门排气时间、腹痛持续时间、伤口愈合、发热、住院时间等术后恢复情况。

1.4 统计学分析

应用 SPSS 19.0 统计软件进行分析,计量资料以均数±标准($\bar{x} \pm s$)表示,组间比较先行方差分析,若差异有统计学意义,则采用成组 t 检验和重复测量方差分析。计数资料的比较采用 χ^2 检验或 Fisher's 确切概率法。$P<0.05$ 为差异有统计学意义,$P<0.01$ 为差异具有极显著性统计学意义。

2 结果

2.1 3 组患者手术时间、出血量比较

120 例患者均顺利完成手术。气腹组、免气腹组手术时间均短于开腹组,差异有极显著性统计学意义($t=-9.767$,$P<0.01$),术中出血量 3 组之间差异无统计学意义($F=0.492$,$P>0.05$),见表 2。

表 2 3 组患者手术时间、出血量比较

组别	n	手术时间(min)	术中出血量(mL)
免气腹组	55	58.56±9.11	7.25±3.23
气腹组	35	57.83±10.79	7.31±3.86
开腹组	30	89.43±15.95	8.03±4.01
t/F		0.347、-9.767、-9.196	0.492
P		>0.05 <0.01 <0.01	>0.05 >0.05 >0.05

2.2 3 组患者术中、术后患者 CO_2 结合率变化

3 组手术前 CO_2 结合率差异无统计学意义($F=0.34$,$P>0.05$),术后气腹组 CO_2 结合率明显升高超过了免气腹组与开腹组($F=100.189$,$P<0.05$),见表 3。

表 3 3 组患者术中、术后 CO_2 结合率变化(mmol/L)

组别	n	术前	术后
免气腹组	55	28.16±0.54	28.13±0.12
气腹组	35	28.14±0.55	30.60±0.148
开腹组	30	28.13±0.57	28.10±0.16
t/F		0.177、0.243、0.068	100.189
P		>0.05	<0.05

2.3 3 组患者并发症发生情况

开腹组术中 4 例因炎症刺激所致肠管肿胀、粘连,暴露困难,延长切口至 8 cm;免气腹组术中 1 例出现阑尾动脉损伤出血,使用 hemelock 夹于阑尾动脉根部夹闭止血;气腹组中未出现相关邻近脏器损伤;开腹组开腹过程中出现皮下及肌间血管损伤 5 例,通过电凝及结扎均能有效止血。

3 组患者酸中毒、皮下血肿、皮下气肿、肺部感染等指标比较差异无统计学意义($P<0.05$),但开腹手术患者术后发生伤口感染及发热明显多于其他组,差异有统计学意义($P<0.05$);术后免气腹组与气腹组患者肛门排气时间早于开腹组,差异有极显著性统计学意义($P<0.01$);但免气腹组与气腹组之间差异无统计学意义($P>0.05$),3 组比较差异有极显著性统计学意义($F=27.683$,$P<0.01$),见表 4。术后免气腹组与气腹组的患者腹痛持续时间短于开腹组($P<0.01$),免气腹组与气腹组之间差异无统计学意义($P>0.05$),3 组比较差异有极显著性统计学意义($F=99.542$,$P<0.01$);免气腹组与气腹组患者的住院时间短于开腹组,差异具有极显著性统计学意义($P<0.01$),气腹组与开腹组间差异无统计学意义($P>0.05$),见表 5。

表 4 3 组患者术后并发症比较[例(%)]

组别	n	酸中毒	皮下血肿	皮下气肿	伤口感染	肺部感染	发热
免气腹组	55	0(0)	0(0)	0(0)	3(5.045)	8(14.54)	7(12.73)
气腹组	35	2(5.71)	0(0)	1(2.86)	2(5.71)	10(28.57)	5(14.29)
开腹组	30	0(0)	1(3.33)	0(0)	11(36.67)	7(21.21)	10(33.33)
P		>0.05	>0.05	>0.05	<0.01	>0.05	<0.05

表 5 3 组患者术后指标比较($\bar{x} \pm s$,d)

组别	n	肛门排气时间	腹痛持续时间	住院时间
免气腹组	55	1.98±0.65	1.38±0.97	6.04±0.84
气腹组	35	1.85±0.49	1.17±0.38	6.11±0.93
开腹组	30	3.03±0.96	3.67±0.80	7.60±0.77
t		0.967、-5.972、-6.037	1.220、-10.626、-15.585	-0.412、-8.668、-7.035
P		>0.05、<0.01、<0.01	>0.05、<0.01、<0.01	>0.05、<0.01、<0.01

2.4 术后随访

3 组患者均获得随访,中位随访时间为 8 个月(2~18 个月),开腹组患者有 1 例盆腔脓肿形成,2 例术后肠粘连肠梗阻再次入院,免气腹组患者及气腹组患者没有盆腔脓肿及肠粘连肠梗阻发生,3 组患者均无切口疝形成无阑尾残株炎发生。

3 讨论

阑尾炎的发病率居普外科急诊第一位[2]。一旦确诊为阑尾炎,则应积极手术治疗[3-4];阑尾炎患者中,老年患者所占比例越来越大,老年患者大多存在心脑血管基础疾病、呼吸系统疾病、肝肾功能不全或水电解质、酸碱平衡紊乱,加之急诊手术常常没有时间进行术前准备,手术风险及术后并发症的发生概率大大增加[5],而老年阑尾炎患者由于高龄、基础疾病多、抵抗力低下等原因,恢复起来就更为困难。传统开腹手术使用腰硬联合麻醉,由于手术创伤较大,术后恢复较慢,感染相关并发症多,住院时间长[6-8]。腹腔镜手术使用全身麻醉,由呼吸机辅助呼吸,还须建立 CO_2 人工气腹,存在相关并发症,所以选择腹腔镜手术对患者身体情况,尤其是心肺功能有一定要求[9]。因此,老年阑尾炎患者在选择手术方式时,应该选择创伤小、对心肺功能影响小、对身体情况要求低、更为安全有效的手术方式。

有学者认为,免气腹腹腔镜手术的术后并发症发生率比腹腔镜手术高[10]。本研究中免气腹组、气腹组手术时间相当,比开腹组时间短,这可能与开腹组需要开、关腹,及小切口暴露相对困难等因素相关;随着免气腹腹腔镜技术的成熟,手术医生在术中对出血及手术副损伤的控制能力,已经超越了开腹手术[11-12];3 组手术中,仅气腹组 CO_2 结合率升高,可能与建立 CO_2 人工气腹有关,CO_2 吸收入血,加之膈肌上抬,肺顺应性下降,严重时甚至发生酸中毒,使患者内环境紊乱,甚至出现高钾血症、心律失常等,并可使心血管系统对心律失常不敏感[13-15]。老年阑尾炎患者常合并较多基础疾病,发生酸中毒可能会诱发严重的心肺疾病,腹腔镜手术后发生肺部感染的概率大于另外 2 组,可能与术中使用全身麻醉及呼吸机相关,影响患者恢复;而免气腹手术则能较好地避免上述情况[16-17]。开腹手术的伤口感染率高,腹痛持续时间长、肛门排气慢、住院时间长,恢复缓慢,则与其创伤大、开腹手术探查效果差、腹腔脓液清除困难等关系密切[18-20]。老年阑尾炎患者术后并发症给其身体和心理都带来严重的负担,而免气腹腹腔镜手术中患者清醒,呼吸情况及血流动力学相对稳定,同时很好地降低了术后并发症的发生率,有利于患者的手术安全及术后恢复。本组 55 例免气腹腹腔镜手术中,术中操作体验感较好,视野暴露较好,仅 2 例肥胖患者合并回肠后位阑尾的患者操作困难较大,其余患者手术均顺利完成。术中出血控制好,患者生命体征波动小,即便有尘肺病史、肺功能较差的患者也能安全完成手术。

大量研究表明,手术时间、手术创伤、手术对心肺功能的压力、手术出血量是影响手术安全及术后恢复的重要因素[21-22]。并发症的发生,往往决定了患者的住院时间、住院花费、恢复效果[23-27];这些也会影响患者的住院心情及对医生、医院的评价。老年阑尾炎患者往往合并心肺基础疾病,手术风险高,且老年阑尾炎患者身体一般情况欠佳,术后恢复较慢,感染控制较困难,为老年阑尾炎患者选择一种更为安全可行的手术方式显得尤为重要。本研究认为,免气腹腹腔镜手术创伤小、手术时间短、对心肺功能压力小、住院时间短、恢复快;老年患者行阑尾切除术时选择免气腹腹腔镜手术,有利于患者的手术安全,能大大降低患者发生肺部感染、酸碱平衡紊乱、切口感染等手术相关并发症的风险,在手术及术后住院治疗过程中更好地保护呼吸系统、心脑血管系统,患者可以更快更好地恢复。

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