

· 外科专栏 ·

克氏针在腹腔镜下袖状胃切除术中的减孔应用

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[摘要] 目的 探索腹腔镜下袖状胃切除术中克氏针和缝线法挡肝的可行性及安全性,并对克氏针的用法做出了改良。方法 选择代谢综合征并行腹腔镜下袖状胃切除手术治疗的患者88例,随机分为缝线组和克氏针组,各44例。缝线组常规缝线至腹壁与膈肌脚,呈“V”型挡肝,克氏针可分别选取不同位点,挡肝或挡腹腔内脂肪暴露视野。比较2组肝功能、住院时间、手术时间、住院费用、术中情况(肝脏有无出血)及克氏针并发症(感染、出血等)。结果 缝线组住院时间为(4.80±0.70)d,住院费用(52 423.22±3 956.57)元,手术时间为(100.14±5.51)min,肝脏出血2例,克氏针组住院时间为(4.77±0.80)d,住院费用(50 986.61±4 114.21)元、手术时间为88.00(5.75)min、肝脏出血0例。2组在住院时间和住院费用差异无统计学意义($P>0.05$),手术时间及肝脏出血情况2组比较差异有统计学意义($P<0.05$)。2组术前丙氨酸转氨酶、天冬氨酸转氨酶差异无统计学意义($P>0.05$),术后第1天的丙氨酸转氨酶、天冬氨酸转氨酶差异无统计学意义($P>0.05$)。结论 与缝线法相比,克氏针的应用可明显扩大术野暴露范围,有效缩短手术时间,不增加套管针的使用,无相关并发症的发生,在安全性、美观、人力、经济等方面取得了较大优势,应用效果值得肯定。

[关键词] 代谢综合征;胃切除术;克氏针 doi:10.3969/j.issn.1007-3205.2024.08.010

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Application of Kirschner wire in laparoscopic sleeve gastrectomy

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[Abstract] **Objective** To explore the feasibility and safety of using Kirschner wire and suture to block the liver in laparoscopic sleeve gastrectomy, and to improve the use of Kirschner wire. **Methods** A total of 88 patients with metabolic syndrome undergoing laparoscopic sleeve gastrectomy were randomly divided into suture group ($n=44$) and Kirschner wire group ($n=44$). In the suture group, the conventional suture to the abdominal wall and diaphragm foot was "V" type to block the liver. With the use of Kirschner wire, different sites could be selected to block the liver or block the exposure field of fat in the abdominal cavity. The liver function, length of hospitalization, duration of operation, hospitalization expenses, intraoperative condition (presence or absence of liver bleeding) and complications of Kirschner wire (infection, bleed, etc.) were compared between the two groups. **Results** The length of hospitalization of patients in the suture group was (4.80±0.70) d, hospitalization expenses were (52 423.22±3 956.57) yuan, the duration of operation was (100.14±5.51) min, and there were 2 patients with liver bleeding.

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The length of hospitalization of patients in the Kirschner wire group was (4.77 ± 0.80) d, hospitalization expenses were ($50\,986.61 \pm 4\,114.21$) yuan, the duration of operation was 88.00 (5.75) min, and there was no patient with liver bleeding. There was no significant difference between the two groups in terms of the length of hospitalization and the hospitalization expenses ($P > 0.05$), but there was significant difference between the two groups in terms of the duration of operation and liver bleeding ($P < 0.05$). There was no significant difference in ALT and AST before operation and at 1 d after operation ($P > 0.05$). **Conclusion** Compared with the suture method, the application of Kirschner wire can significantly expand the exposure range of the operation field, effectively shorten the duration of operation, does not increase the use of trocar, and has no related complications. It has great advantages in safety, beauty, manpower, and economy, and the application effect is favorable.

[Key words] metabolic syndrome; gastrectomy; Kirschner wire

代谢综合征 (metabolic syndrome, MetS) 通常被认为是一组以下五种疾病中至少存在三种的临床症候群: 腹型肥胖、高血压、高血糖 (糖尿病或葡萄糖不耐受)、高脂血症 (高三酰甘油或低血清高密度脂蛋白)^[1-4], 病因复杂且与慢性肾脏疾病、血管疾病、癌症等疾病相关^[5-8]。流行病学研究表明, 全世界有超过 10 亿人患有 MetS, 并且数量不断上升^[9]。目前, 我国减重手术主要方式为 Roux-en-Y 胃旁路术 (Roux-en-y gastric bypass, RYGB)、袖状胃切除术 (sleeve gastrectomy, SG)^[10-13]。近年来研究证实, 手术治疗在可持续的减重效果、肥胖相关并发症的改善以及降低死亡风险等方面更具优势^[14-19]。此外, 减重手术操作往往面临肝左外叶及腹腔内脂肪遮挡手术视野的问题, 往往需要增加套管针 (trocar) 及助手人员来取得满意的手术操作空间。随着外科的发展, 越来越多的肝脏暴露方法走入我们的视野, 其中缝线法悬吊肝脏和肝脏牵拉器牵拉肝脏在国内普遍应用^[20-22]。本研究暴露术野的方法采用了克氏针及缝线法, 在肝功能、手术时间、住院费用、住院时间、肝脏出血情况等方面进行比较。现报告如下。

1 资料与方法

1.1 一般资料 本研究选取 2023 年 1—2 月期间在河北医科大学第一医院临床诊断为代谢综合征并行腹腔镜下袖状胃切除手术治疗的患者共计 88 例, 患者分为缝线组 ($n=44$) 与克氏针组 ($n=44$), 收集并统计 2 组基本资料, 包括: 性别、年龄等; 临床资料包括体重指数 (body mass index, BMI)、住院时间、手术时间、住院费用、术中情况 (肝脏有无出血) 及克氏针并发症 (感染、出血等)。检验指标包括: 术前 (T0) 丙氨酸转氨酶、天冬氨酸转氨酶水平, 术后第 1

天 (T1) 丙氨酸转氨酶、天冬氨酸转氨酶水平。2 组性别、年龄、BMI、等一般资料比较差异无统计学意义 ($P > 0.05$), 手术时间及肝脏出血情况比较差异有统计学意义 ($P < 0.05$), 见表 1。

本研究经医院伦理委员会的审批及批准 (批准号: 20220667)。所有患者及家属均知情意且签署知情同意书。

表 1 2 组一般情况比较

Table 1 Comparison of general data between the two groups

($n=44$)

组别	性别(例数)		年龄 (M, QR, 岁)	BMI($\bar{x} \pm s$)
	男性	女性		
缝线组	13	31	31.50(9.75)	39.35 \pm 6.73
克氏针组	15	29	33.50(7.75)	39.56 \pm 7.15
$\chi^2/Z/t$ 值	0.453		1.222	0.328
P 值	0.369		0.721	0.669

1.2 手术方法 克氏针组: 患者予插管全身麻醉, 取平卧位或分腿位, 头高脚低。于患者脐部上方建立 10 mm 观察孔, 压力为 14 mmHg。左侧腹和右侧腹分别建立 12 mm 主操作孔及 5 mm 副操作孔。选取剑突下 2 cm 处为穿刺点, 用克氏针 (直径 1.5 mm) 尖端刺破皮肤, 拔出克氏针用钝端, 与患者腹壁呈 $60^\circ \sim 80^\circ$ 夹角, 腹腔镜直视下穿刺入腹腔, 肠钳挑起肝左叶, 将克氏针置入膈肌脚或肝左叶下方, 棉纱布置于克氏针下方, 防止误伤肝脏造成肝脏出血)。操作完成, 乳胶套管覆盖克氏针尖端, 防止误伤, 然后以布巾钳固定腹壁外侧的克氏针于腹壁。术毕腹腔镜下取出克氏针, 穿刺点可用组织胶水粘合。一般来说, 暴露效果好的时候, 1 根克氏针足以完成手术暴露全程。部分患者腹腔内脂肪过多或麻醉因素等原因, 造成手术空间小, 可加用第 2 根克氏针, 选取穿刺点为剑突下 2 cm 偏左位置, 操作同上,

将克氏针置入腹腔内,为避免损伤出血,放入棉纱布,以克氏针灵活配合术者操作,暴露术野。该克氏针可由熟练的扶镜手独立操作,整个手术过程只需术者和扶镜手即可完成。

缝线组:患者麻醉方式及手术体位同上。常规建立观察孔及操作孔后,采用2-0规格倒刺线,进入腹腔后,于腹腔镜观察下,首先缝于腹壁上,固定后术者左手持无损伤抓钳抬起肝脏暴露膈肌脚,右手持针器抓住缝针,穿过膈肌脚处组织后缝至腹壁或镰状韧带处,拉紧缝线后呈“V”型结构以阻挡肝脏,术毕剪掉缝线取出即可。

1.3 统计学方法 应用SPSS 25.0统计软件分析数据。计量资料采用独立样本t检验;不符合正态

分布的资料比较采用非参数秩和检验。计数资料比较采用 χ^2 检验。 $P < 0.05$ 为差异有统计学意义。

2 结 果

2.1 2组住院情况及肝脏出血比较 手术时间及肝脏出血情况2组比较差异有统计学意义($P < 0.05$),2组在住院时间和住院费用比较差异无统计学意义($P > 0.05$),见表2。

2.2 2组肝功能比较 2组术前丙氨酸转氨酶、天冬氨酸转氨酶差异无统计学意义($P > 0.05$),术后第1天的丙氨酸转氨酶、天冬氨酸转氨酶差异无统计学意义($P > 0.05$),见表3。

表2 2组住院情况及肝脏出血的比较

Table 2 Comparison of hospitalization and liver bleeding between the two groups

(n=44)

组别	住院时间($\bar{x} \pm s$, d)	住院费用($\bar{x} \pm s$, 元)	手术时间($\bar{x} \pm s$, min)	肝脏出血(例数, %)
缝线组	4.80 ± 0.70	52 423.22 ± 3 956.57	100.14 ± 5.51	2(4.54)
克氏针组	4.77 ± 0.80	50 986.61 ± 4 114.21	88.00 ± 5.75	0(0.00)
t/Z/ χ^2 值	0.141	1.669	7.719	1.431
P 值	0.495	0.371	<0.001	0.003

表3 2组肝功能指标的比较

Table 3 Comparison of liver function indexes between the two groups

(n=44, U/L)

组别	丙氨酸转氨酶($\bar{x} \pm s$)		天冬氨酸转氨酶	
	T0	T1	T0($\bar{x} \pm s$)	T1(M, QR)
缝线组	44.11 ± 39.42	47.47 ± 37.31	27.99 ± 16.79	26.20(19.45)
克氏针组	47.50 ± 39.34	49.74 ± 30.11	31.23 ± 23.35	27.90(19.80)
t/Z 值	0.081	0.308	0.748	1.195
P 值	0.785	0.252	0.346	0.232

3 讨 论

腹腔镜下手术操作中,术区视野的暴露是至关重要的。减重手术中,游离胃大弯与大网膜的过程中,肝左外叶及腹腔脂肪的遮挡往往造成阻碍^[23]。因此,获得良好的术野可以大幅度减少手术难度及手术时间,大大提高了手术的安全性。其中,缝线法悬吊肝脏和肝脏牵拉器牵拉肝脏已经逐渐普遍。我们团队认为,针对BMI值相对较低或肝左外叶相对没有那么肥大的患者,熟练的外科医生可以较快的找到膈肌脚进行缝线法肝脏悬吊,完成术野暴露。一些肝左外叶肥大的患者,膈肌脚位置缝线过程中往往因为肝脏组织抬起效果差,进入缝针的过程中更容易造成肝脏组织的划伤出血。我们团队统计的病例发现,克氏针组并没有出现肝脏出血的情况,缝线组出现了2例肝脏出血情况,一些研究发现,肝脏

牵拉会导致一过性的肝功能升高^[24-25]。本研究结果可见丙氨酸转氨酶较术前升高2组相比,术后第1天肝功能指标差异无统计学意义($P > 0.05$)。此外,在安全性上,我们团队应用克氏针目前为止均未出现穿刺点处术后出血、感染等并发症的发生。由此,克氏针的应用在安全性上优于缝线组。

在手术时长上,缝线组为(100.14 ± 5.51) min,克氏针组为(88.00 ± 5.75) min。实际情况中,克氏针从选取穿刺位置到膈肌脚的位置用时大约在1 min左右就可完成,缝线法的到达膈肌脚后呈“V”型或者“W”型抬起肝脏的过程约需10 min左右,在同样3孔法中,部分肝脏肥厚的患者需要耗费更多时间,操作不慎更易造成肝脏出血。由此,克氏针组在手术用时上明显少于缝线组。

在住院费用上,缝线组为(52 423.22 ± 3 956.57)元,克氏针组为(50 986.61 ± 4 114.21)元,

研究中2组虽然并未存在显著性,可能的原因是由于病例不足导致。本研究显示克氏针相对 trocar 价格更低,且缝线组部分患者暴露术野不佳时,往往会增加切割闭合器组件的使用,造成缝线组在住院费用上较克氏针组更高。由此,克氏针的使用在通过暴露视野可以减少 trocar 的同时,具有一定的经济优势。

克氏针作为骨科常用材料,在临床中容易获得^[26-29]。关于克氏针型号的选用,直径1.5 mm为最优选,部分直径1 mm克氏针穿刺入腹腔后暴露术野过程中会出现弯曲。同时,认为直径1.5 mm较直径2 mm克氏针更为安全,不容易损伤腹壁血管。关于克氏针的选取位置,本研究显示体会如下,剑突下2 cm的选取位置更适合应用于挡肝左外叶,此位置偏左2 cm的位置,可负责防止腹腔脂肪遮挡视野。部分肝左外叶肥厚的患者,难以暴露至膈肌脚,单根不足以肝左叶部分的术野暴露。郑学静等^[30]多采用2根克氏针呈“V”型抬起肝脏,从而暴露术野。本研究显示单根克氏针可灵活沿着术者游离的方向抬起肝脏,游离至近端胃底时,术者可应用抓钳抬起胃部,同时上方的肝脏也会被抬起,此时克氏针可由扶镜手单手操作,重点负责及时轻挑肝脏或阻挡腹腔脂肪即可。一般情况下,单根克氏针的灵活调整足以暴露术野。一些BMI值高的患者,腹腔内脂肪肥厚覆盖在胃部,尤其是在胃底部分,严重影响术野。面临这种情况,往往需要建立第4个 trocar 帮助术者去游离胃大弯侧网膜。此时,可在剑突下2 cm偏左的位置加用1根克氏针,扶镜手灵活配合术者挡住腹腔脂肪,可以减少 trocar 的使用,满足部分患者的美观需求。此外,常规缝线法悬吊肝脏的术者,在腹腔脂肪过多影响术野时,为减少 trocar 的使用,也可在剑突下2 cm偏左的位置加用克氏针暴露术野。

综上所述,克氏针在腹腔镜下袖状胃切除术中辅助暴露术野,具有操作简单快捷、安全性高、经济性较高等优势,且能满足患者美观性要求。此外,对缝线法挡肝技术不熟练的外科医生,甚至是经验丰富的外科医生都具有很大帮助,应用效果值得肯定。

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