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腹腔镜结肠切除术经自然腔道标本提取的研究进展*

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摘要:与开腹结肠手术相比,腹腔镜结肠手术可以减少术后并发症发生率,缩短住院时间。为了进一步优化腹腔镜结肠手术的预后,减少出口创伤成为促进恢复的一种有效方式。经自然腔道标本提取(natural orifice specimen extraction, NOSE)是减少出口创伤的方法之一。NOSE 通过自然腔道取出标本并在体内进行肠吻合从而减少腹腔镜结肠手术出口创伤。NOSE 技术的潜在优点包括疼痛更少,恢复更快,住院时间更短,美容效果更好,切口疝发生率更低。NOSE 技术带来的问题包括:腹腔感染,术后的结果,术后疼痛、手术部位功能恢复和肿瘤学预后是否理想。该综述旨在描述 NOSE 在结肠癌手术中应用的研究进展,为 NOSE 更好地应用于临床提供依据。

关键词:腹腔镜;结肠癌;自然腔道

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Research Progress of Laparoscopic Colectomy with Natural Orifice Specimen Extraction*

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ABSTRACT: Laparoscopic colorectal surgery can reduce the incidence of postoperative complications, shorten the hospitalization time compared with open colorectal surgery. Reducing export trauma can further optimize the prognosis, promote the recovery of laparoscopic colorectal surgery. NOSE is one of the methods reducing the access trauma. NOSE can remove the specimen through natural orifice and anastomosis intestinal in vivo so as to reduce the export trauma of laparoscopic colorectal surgery. The advantages of NOSE's include less pain, quicker recovery, shorter hospitalization time, good cosmetic effect and low incidence of incisional hernia. NOSE may bring problems include abdominal infection, postoperative results, postoperative pain, recovery of function and oncologic outcomes. The aim of this review is to describe the research progress of NOSE's application in the colorectal cancer operation, with the purpose of providing the basis for clinical application of NOSE.

Key words: Laparoscopy; Natural orifice specimen extraction; Colorectal cancer

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前言

传统的腹腔镜结肠切除术、腹腔镜全直肠系膜切除术(total mesorectal excision, TME)需要在腹壁另取一个切口取出标本以及进行肠吻合术,在 NOSE 技术的帮助下,可以实现标本通过自然腔道取出、肠吻合术在体内完成,从而减少腹腔镜结肠癌外科手术腹壁创伤,术后疼痛可随之减少,病人恢复快,美容效果好,切口疝发生率降低。尽管存在以上优势,但 NOSE 对术后疗效的有利影响还缺乏大型临床研究的佐证。本文将从腹腔镜结肠癌手术中 NOSE 技术应用的各个方面讨论该技术的优缺点以及关于 NOSE 的研究进展,为 NOSE 技术更好的应用于临床提供依据。

1 经结肠 NOSE- 结肠切除术

随着经自然腔道内镜手术的兴起,将灵活的操作器械和镜头通过自然腔道插入体内完成手术的报道逐渐增多。因此,对于 NOSE 的研究可以作为观察经自然腔道内镜手术的桥梁。

1.1 可行性及优点

Saad 等人报道了一例腹腔镜横结肠切除术,术中结肠标本通过结肠镜深入肛门、乙状结肠、降结肠拖出,并且进行了双钉吻合器肠吻合,术后恢复良好^[1]。在 NOSE 可行性研究中,Es-huis 等人前瞻性地研究了 10 位需要进行回盲部切除术的身患克罗恩病的年轻患者(平均年龄 31 岁),术中结肠标本通过结肠镜经结肠取出,其中 2 例患者由于炎性肿块体积太大无法通过结肠取出标本^[2]。与常规腹腔镜回盲部切除术相比,可能是由于学习曲线未完成的关系,经结肠 NOSE- 结肠切除术手术时间明显延长,此外,手术部位相关并发症发生率更高^[2]。经结肠 NOSE- 结肠切除术的理论优点是标本可以通过结肠拖出从而

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减小腹壁创伤并且不受性别限制。

1.2 局限性及缺点

经结肠 NOSE- 结肠切除术的问题可能存在于需要机械肠道准备、操作过程中腹腔污染的可能、病变的大小和或质量的限制、提取部位的肠道保护方面。结肠镜检查需要清洗结肠机械性肠道准备,可能使手术时间延长。另一个问题是非无菌的结肠镜操作在肠道手术期的使用可能会导致肠内容物泄漏入腹腔,导致污染和随后形成脓肿。然而,相关研究没有显示结肠镜操作对炎症反应或感染率方面的任何影响^[34]。关于标本的大小及患者肥胖程度和经结肠 NOSE,尚不存在明确的界限值提示超出界限范围通过肠镜提取标本是禁忌的或双钉吻合器肠吻合术会操作困难。此外,还没有针对结直肠癌患者应用 NOSE 的研究,结肠镜标本提取在肿瘤患者中应用的肿瘤学数据仍需完善。回结肠的标本是通过无保护的结肠提取的,所以当体积较大 T3、T4 期的肿瘤需要提取时可能会出现拖出困难的现象。此外,即使通过最好的方法进行提取标本,是否会发生结肠癌的种植转移有待确定。此外,NOSE 需要普外科与内镜医生团队的共同努力来完成。结肠镜检查需要 CO₂,需配合腹腔镜气腹,费用和手术时间也是需要明确的问题。

2 经直肠 NOSE- 结肠切除术

2.1 可行性及优点

经直肠 NOSE- 结肠切除术的概念和技术是在上世纪 90 年代提出的, Franklin 等人首先对一组行传统乙状结肠切除术与经直肠标本提取的患者进行研究^[9]。有的研究认为经直肠 NOSE- 结肠切除术与传统腹腔镜切除术经腹壁标本取出术相比没有优势^[6],而有的研究认为该技术可显著降低镇痛药的用量^[37]。此外,与传统的腹腔镜结肠切除术相比,该技术可以显著缩短手术时间^[7]。由于它不受性别限制及其广泛的适应症(左侧结肠疾病:憩室炎、子宫内膜异位症、腺瘤、癌症),经直肠 NOSE- 结肠切除术似乎是一种标本提取和结直肠吻合的有效选择。此外,直肠的直线度以及相对容易进入腹膜腔进一步强化了该技术的可行性。此外,该技术很容易规范化和被训练。

2.2 局限性及缺点

针对经直肠 NOSE- 结肠切除术的研究报告大多描述了不同的手术途径直肠保护及肠吻合方法,所以其研究结果存在相当大的偏差性,此外,病人的选择也很重要,经直肠 NOSE- 结肠切除术的限制因素包括体重指数大于 30 kg/m²,体积大的结肠系膜,体积大的肿瘤,直肠狭窄和近端憩室病的存在^[8]。除了上述技术上困难和差异,继发于术中结肠直肠切开后可能发生的腹腔脓肿也是一个值得关注的问题。有的研究认为该技术不会导致腹腔脓肿并发症的发生^[34],但尚未在大型的前瞻性对照研究中被证实。

3 经肛门 NOSE- 结肠切除术

3.1 可行性及优点

TME 优化直肠癌患者的预后,大多数患者期望通过改变某种程序避免永久性结肠造口^[9]。与开腹 TME 相比,在短期效果及术后恢复方面,腹腔镜 TME 是安全可行的^[10]。然而,腹腔镜 TME 操作困难,学习曲线漫长。腹腔镜 TME 最困难的步骤

之一是暴露和横断直肠最远端。标本取出与结肠 "J" 型储袋吻合术需要腹壁切口,切口的长度适合于标本和肿瘤的大小。较短远端切缘的可行性^[11],新辅助放化疗与增加手术间隔(>7 周)和括约肌解剖手术技术都增加了低位直肠癌患者保肛手术率^[12]。如果括约肌解剖是必需的,游离直肠可通过肛管肌拖出,避免腹部切口。在这个经肛拖出阶段,可以创建新直肠(直肠成形术、端侧吻合、结肠 "J" 型储袋吻合术)或直肠结肠管吻合术,在这两种情况下,对结肠脾曲的充分游离往往十分必要。2007 年 Prete 等人研究结果发布以后,关于经肛门 NOSE- 结肠切除术研究的数量逐渐增加起来^[13]。经肛门微创手术切除直肠解决了直肠远端可视化的困难的问题,特别是针对拥有狭窄的骨盆肥胖男性患者。

腹腔镜微创手术的不断发展和进行机器人腹腔镜 TME 手术的诞生^[14,15]。机器人平台的使用影响了复杂盆腔疾病的治疗,机器人腹腔镜 TME 手术的学习曲线是 21-23 例^[16-18]。高分辨率的 3D 系统,符合外科医生的人体工程学的定位;高精度仪器和无震颤技术可使操作精度更高,解剖更精确,术后并发症可能更少。然而,机器人腹腔镜成本过高,难以普及。目前,仅见 1 篇关于使用机器人腹腔镜经肛门 NOSE- 结肠切除术的报道^[19],机器人辅助腹腔镜 TME 与经肛门标本提取使患者痛苦少、恢复快。腹腔镜 TME 经肛标本提取与经肛 TME 存在差异,虽然它们都属于经肛 NOSE 技术,但是后者以相反的方式进行。最近关于经肛门直肠切除术即反向全直肠系膜切除术的报道明确了这种新技术的安全性,报告显示 TME 标本取出完整、淋巴结清扫足够。

3.2 局限性及缺点

对于腹腔镜切除恶性肿瘤,几乎是 20 年前便提出穿刺部位肿瘤种植转移这个问题,并且曾被称为腹腔镜手术的禁忌症^[20]。因此,当含有肿瘤的标本通过无保护切口,小心操作很必要。经肛门 TME 与常规 TME 相比,这个新方法是否也有类似的肿瘤学预后(局部复发,无病生存率和肿瘤特异性生存率)仍需要前瞻性试验加以验证。目前关于经肛门 NOSE- 结肠切除术的研究,所采用的手术技术不同,戳孔数量及吻合方式也有所不同,因此,无法比较手术的具体细节,包括手术时间、术后恢复、并发症及住院时间等。

4 经阴道 NOSE- 结肠切除术

4.1 可行性及优点

通过阴道后穹窿切开的经阴道 NOSE 手术在妇科腹腔镜手术中应用广泛^[21]。虽然需要切开阴道进入腹膜腔,但是阴道切开术是安全的,不会增加术后并发症发生率,不会导致手术部位感染或性交痛^[22]。此外,一项随机试验表明,与经附件标本取出术相比,经阴道标本取出术后疼痛更小^[23]。1996 年, Redwine 等人首先描述了为子宫内膜异位症患者行部分结肠切除术经阴道标本提取并手工肠吻合^[24],一种腹腔镜联合经阴道标本提取应用于结直肠疾病治疗。经阴道 NOSE- 结肠切除术主要优点是可以取出较大的右侧或左侧结肠切除标本。Palanivelu 等人^[25]评价了 7 例施行恢复性结直肠切除及回肠贮袋吻合的家族性腺瘤性息肉病女性患者的结果,所有标本均装入标本袋从阴道拖出,回肠贮袋完全通过腹腔镜创建,标准的

双钉吻合器吻合。结果显示其中一个病人出现吻合口漏,需要引流和抗生素治疗;平均住院时间为 25.5 天。关于腹腔镜右半结肠切除术的难点在于体内吻合的构建^[26]。回肠和结肠都需要清扫肠系膜及网膜脂肪组织以确保足够和安全的吻合,这点有时在肥胖患者中是很困难的。此外,剩余的小肠结肠吻合术也应于腔内缝合关闭。然而,标本提取和体外吻合也可以构成肥胖患者的问题,肥胖患者出血和末端回肠扭转的风险更大^[27]。解决了这一顾虑,多个研究表明体内吻合在体重指数偏高患者中是可行的^[28-30]。

4.2 局限性及缺点

经阴道 NOSE- 结肠切除术的手术时间有所不同^[28,29,31],手术时间的长短可以反应学习曲线的完成情况^[31]。经阴道 NOSE- 结肠切除术的只适用于处女膜不完整且知情同意女性患者,它可以作为选择无瘢痕手术患者的选择。

5 小结与展望

手术切口相关发病率的减少是现代微创腹腔镜结直肠癌手术的目标之一,因此 NOSE 应运而生。根据自然腔道的不同,NOSE 可分为经结肠 NOSE、经直肠 NOSE、经肛门 NOSE 和经阴道 NOSE。经结肠 NOSE- 结肠切除术不受性别限制,但可能存在需要机械肠道准备、操作过程中腹腔污染的可能、病变的大小和或质量的限制、提取部位的肠道保护方面的问题;经直肠 NOSE- 结肠切除术不受性别限制、适应症广泛、具有解剖优势并且很容易规范化和被训练,该术式可以应用于乙状结肠或高位经腹骶直肠切除术患者,但其限制因素包括体重指数过大、结肠系膜体积过大、肿瘤体积过大,直肠狭窄以及术后继发腹腔脓肿的可能;经肛门 NOSE- 结肠切除术解决了直肠远端可视化的困难的问题,可以应用于 TME 患者,但可能存在穿刺部位肿瘤种植转移的问题;经阴道 NOSE- 结肠切除术适用于肥胖、体重指数偏高患者,但受性别限制且只适用于处女膜不完整且知情同意女性患者。NOSE 可能成为微创手术下一步,虽然在理论上改善腹腔镜结直肠手术结果的潜能,但是在日常实践中的贯彻以及具体的疗效还需要前瞻性对照试验加以验证。

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