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结直肠损伤救治的进展与陷阱

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Progress and pitfalls in treatment of colorectal injury

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Abstract

Based on the previous experience of war wound treatment, the treatment of colorectal injury has been changing constantly. Also, since the 1980s, the progress of severe trauma treatment such as CT examinations

and damage control strategies has had a profound impact on the treatment of colorectal injury. This article systematically reviews the clinical manifestations, imaging findings, and endoscopic examinations of colorectal injuries, and lists injury assessment pitfalls such as neglecting colorectal injury in blunt wounds, being misdirected by negative sign or supine X-rays, strict indications for laparotomy exploration, or intraoperative omission. The progress of emergency surgery such as staged surgery for colorectal injury, surgical way of colorectal injury during damage control strategy, and treatment of rectal injury in extraperitoneal section is also described in detail. In addition, the pitfalls for emergency treatment are described, including ignoring effects of massive crystal fluid resuscitation on colorectal anastomosis, attaching no importance on the technical points of the colonic injury operation, and performing improper suture for abdominal incisions.

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Key Words: Colon; Rectum; Injury; Treatment; Pitfall

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摘要

以历次战争战伤救治经验为基础, 结直肠损伤的救治不断变迁。另一方面, 自上世纪80年代以来CT检查、损害控制策略等严重创伤救治进展对结直肠损伤的救治产生了深刻影响。本文系统阐述了结直肠损伤的临床表现、影像学 and 内镜检查等进展, 列举了钝性伤者忽略结直肠损伤、被阴性体征或平卧位X线片误导、剖腹探查指征过严或术中遗漏等伤情

评估陷阱. 详细介绍了结直肠损伤是否分期手术、损害控制策略时结直肠损伤的手术方式和腹膜外段直肠损伤处理等紧急手术进展, 列举了忽略大量晶体复苏对结直肠吻合口的影响、未重视结肠损伤手术的技术细节和腹部切口的不当缝合等紧急救治时的陷阱.

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关键词: 结肠; 直肠; 损伤; 救治; 陷阱

核心提要: 计算机断层扫描(computed tomography, CT)检查、损害控制策略等进展深刻影响了结直肠损伤的救治. 本文介绍了结直肠损伤CT检查、临床密切观察病情变化的方法和常见的错误, 阐述了损害控制策略对手术方式的影响和常见错误.

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0 引言

在近一个世纪以来, 以历次战争战伤救治经验为基础, 结直肠损伤的救治发生了深刻的变化. 从一战时采用剖腹一期修补, 死亡率为75%; 到二战时普遍采用结肠造口(Ogilvie 所倡导)为主的分期手术策略, 加上输血、抗生素等进步, 使死亡率降低致22%-35%^[1]. 1979年Stone等^[2]在一项基于平民结肠穿透伤的随机研究中证实了一期手术优于分期手术. 另一方面, 自上世纪80年代以来, 严重创伤救治发生了显著的变化, 主要体现在以CT扫描为基础的精确评估和以损害控制策略为基础的紧急救治策略进步, 这些进展同样对结直肠损伤的救治产生了深刻影响^[3]. 本文阐述近年来结直肠损伤救治中的进展和陷阱, 不包括医源性损伤和直肠异物, 供同道在临床工作中借鉴.

1 结直肠损伤流行病学特点和分类分级

1.1 结直肠损伤流行病学特点 2013年基于美国创伤数据库的一项6817例结肠损伤分析^[4], 显示钝性伤和穿透伤分别占48%和52%. 结直肠是腹部穿透伤中仅次于小肠的第二常见受累器官. 枪伤需剖腹患者中, 结肠损伤占27%^[5]. 钝性结肠损伤多是非全层、挫伤或系膜损伤, 但常是多发伤的组成, 伤情更重, 住院时间更长, 死亡率更高^[4]. 损伤部位按横结肠、乙状结肠、右半结肠和降结肠顺序依次递减, 分别为24.3%、17.5%、13%和8.7%. 因骨盆保护直肠伤少见, 但严重骨盆骨折可伴发

会阴、肛管和直肠损伤.

1.2 结直肠损伤分类分级 结直肠损伤除了基于致伤机制分为穿透伤和钝性伤外, 多按照损伤程度分为毁损伤和非毁损伤^[6]. 另外, 1981年, Flint等^[7]将结肠损伤分为3级, Moore等^[8]介绍了穿透性腹部损伤指数(penetrating abdominal trauma index, PATI), 虽不专用于结肠损伤, 但也常用来评估是否需要粪转流^[9]. 美国创伤外科医师协会提出的结肠损伤评分(colon injury scale, CIS)和直肠损伤评分(rectal injury scale, RIS)^[10]等也常用于指导手术方式选择. 这些量化方法的主要依据是肠壁损伤(累及肠管周径、组织缺损、去血管否等)、粪便污染、手术延迟、合并损伤和休克等的程度, 级别低倾向于一期手术, 级别高则建议分期手术.

2 结直肠损伤伤情评估

接触患者后应首先遵循高级创伤生命支持(advanced trauma life support, ATLS)行初次评估和二次评估, 首先评估和维护气道、呼吸和循环功能. 临床上机动车撞击等高能量所致钝性伤, 致伤范围广, 常为多发伤, 且常见漏诊或延误诊断的情况^[6]. 在评估对生命威胁不大的结直肠损伤前应评估和处理对生命威胁更大的损伤.

2.1 结直肠损伤伤情评估要点

2.1.1 临床表现: 结直肠损伤临床表现差异极大, 轻者可仅有模糊腹痛, 重者休克濒临死亡. 腹膜后的结直肠损伤常表现隐匿, 明显表现可延迟24 h以上. 怀疑时应仔细、有针对性询问病史, 注意伤后腹痛、便血情况等. 查体时注意有无安全带征(seat belt signs)、腹膜刺激征、肝浊音界改变等, 直肠指诊了解肛门功能、指套有无血迹等. 出现安全带征(在安全腰带横跨腹部位置的线性勒痕或瘀斑)时, 约20%伴肠道和系膜损伤, 且常伴有腹壁肌肉组织破坏和腰椎或骨盆骨折^[11].

2.1.2 影像学检查: X线片可发现骨折、腹腔内的游离气体、腹膜后积气等. 创伤超声重点评估(focused assessment with sonography in trauma, FAST)通常作为初次和二次评估的组成, 用于血流动力学不稳定者, 可发现腹腔内游离液体等肠道或系膜损伤的间接征象. 由于组织中钡剂极难清除, 常致感染持续、窦道形成等, 怀疑结直肠损伤时禁忌行钡灌肠检查, 可以用水溶性造影剂灌肠. 直肠内灌注对比剂的CT检查可能不准确地评估直肠的高能量伤口, 建议慎用^[12]. 结直肠损伤常合并泌尿生殖系统损伤, 必要时行尿道造影等明确.

CT扫描是评价血流动力学稳定的腹部钝性伤患者首选的影像学方法, 也是结直肠损伤最重要的诊断方法. 稳定的钝性伤、行非手术治疗的腰背部刀刺伤

等建议行CT检查,已经确定手术探查的穿透伤则应直接手术.基于临床考虑,静脉注射、口服和直肠灌注对比剂的三造影方法可增加阳性率^[13,14].CT检查可发现结直肠损伤的直接征象包括肠壁连续性中断,甚至与刺伤或枪伤的伤道相连;静脉注射对比剂后系膜处造影剂外溢、口服对比剂外溢至腹膜后等,笔者曾遇尿管位于直肠粪便中,而漏诊直肠膀胱贯通伤8 d者.还可发现肠外积气、腹腔游离积液、系膜血肿、肠壁增厚等间接征象^[5].

2.1.3 内镜检查:直肠镜检查是腹膜外段直肠损伤诊断的金标准,可据伤情决定在检查室或手术室进行.首先需确认患者病情稳定且没有腹膜炎征象.通常认为不不过度充气状态下检查是安全有效的^[15].

如果上述检查阴性,但仍怀疑结直肠损伤,则应密切观察病情变化,包括血压、脉搏、体温、腹痛情况、腹膜刺激征变化,每6-12 h复查一次血常规、C反应蛋白和降钙素原等.动态FAST甚至CT检查,以期尽早确诊.当患者出现腹膜刺激征或感染征象加重时,宜行腹腔镜或剖腹手术探查腹腔.腹腔镜在结直肠损伤诊断和处理中的作用有限,无法诊断腹膜后肠道损伤.一项多中心研究显示,阴性腹腔镜探查后剖腹术的阴性发生率仅为25%,腹腔镜检查假阴性患者的非手术治疗可能导致更严重的并发症和可能的死亡率^[16].

2.2 结直肠损伤伤情评估常见陷阱

2.2.1 钝性伤者忽略结直肠损伤:结直肠损伤常由穿透伤所致,多数紧急手术探查,故延迟诊断少见.而钝性伤发生结直肠损伤者少见,仅占5%-13%^[5],故常被忽略,一旦延迟诊断则后果严重.除直接碾压骨盆或腹部等要怀疑结直肠损伤外^[12],系安全带者在机动车高速撞击后的减速性伤害也常并发结直肠损伤,此时腹部压缩产生的压力,以及因减速所造成的动能转变,常导致横结肠和乙状结肠系膜损伤;另外结直肠可被腹壁与脊柱、骨盆之间挤压受损.查体评估时一定要暴露会阴部,仔细检查会阴部及骶尾部,即使患者已经在院外因骨盆骨折上了外固定架,也要把患者翻过来检查骶尾部.

2.2.2 被阴性体征或平卧位X线片误导:结肠内容物对腹膜无剧烈化学刺激,且流动性小,扩散慢,故早期症状局限而隐蔽,腹膜后结肠损伤则临床表现更为隐匿.而且因腹部以外的损伤、药物镇静等因素影响,肠道损伤的腹膜刺激征准确性大大降低,有报道肠道穿孔者、非全层破裂和无肠道损伤者的腹膜刺激征阳性率分别仅为32.6%、17.3%和3.7%^[17].

另外常常误导临床医师的是X线片,膈下游离气体是诊断胃肠道穿孔的重要方法,但严重创伤患者常常不

能站立,无法拍摄立位胸片,而仅仅拍摄了平卧位胸片,常不能显示膈下游离气体,没有“游离气体”的胸部平片常误导临床医师,应特别注意判断拍片时的体位.

2.2.3 剖腹探查指征过严或术中遗漏:不但腹部钝性伤时临床医师经常在延迟诊断和阴性剖腹探查间徘徊,即使腹部穿透伤时临床医师也希望尽量“精准”避免不必要的剖腹,剖腹探查手术适应证的把握是临床上经常面临的困境.以前只要怀疑穿透腹膜,无论有无临床征象皆常规剖腹探查,却造成可能达50%的腹前壁刺伤患者的非必要手术.之后通过伤道探查等证实腹膜有穿透者剖腹探查,但30%的腹膜穿透的刺伤无明显腹腔内脏器损伤.现多数专家同意对于腹部穿透伤,如果腹部柔软、无腹膜刺激征则非手术治疗,而仅对有腹膜炎或严重出血证据患者行剖腹手术.

剖腹术后仍然遗漏肠道损伤并不罕见.由于结肠相当部分位于腹膜后,探查难度较大,如发现肝曲、脾曲和腹膜后结肠临近部位有血肿或积气,必要时游离肝曲或脾曲结肠,切开后腹膜探查^[18].如果腹腔内脏器水肿,显露不佳,必要时可取出小肠置于左侧或右侧,以改善右侧或左侧结肠显露.对于穿透伤,发现结肠壁脂肪内血肿应切开探查.如发现结肠前壁有伤口一定要探查后壁.特别是对于延迟数天剖腹者,由于腹腔内感染,大量纤维蛋白渗出、附着与肠壁,应仔细清除探查全结直肠,避免遗漏.

术中怀疑腹膜外段直肠损伤时,有建议根据致伤机制、便血等即推论直肠损伤而行近端结肠造口^[19].黏膜完整性是除外直肠损伤(尤其是穿透伤)的金标准.但此时是否切开盆底腹膜探查争议较大,故对于骨盆穿透伤等高度怀疑有直肠损伤者应取截石位,便于术中行直肠镜或乙状结肠镜检查.

3 结直肠损伤紧急救治进展

3.1 结直肠损伤紧急救治要点 结直肠损伤可导致出血和感染,紧急救治应针对此两方面展开.于术前给予广谱抗生素,并视术中所见调整或终止抗生素的使用.由于污染的存在,预防性抗生素应用可延长至24 h.

3.1.1 结直肠损伤是否分期手术:行一期手术还是分期手术是结直肠损伤处理的关键.一期手术包括直接修补(非毁损伤)、切除吻合(毁损伤),一期手术可能伴随较高的吻合口并发症风险,糖尿病和肝硬化等患者吻合口漏风险增加9倍;24 h内输红细胞超过6单位者吻合口漏的风险增加3.8倍;毁损伤、PATI \geq 25,严重粪便污染,伤后延迟6 h以上者,并发症风险更高^[20,21].分期手术包括损伤肠段外置或造口、损伤肠段切除近端造口(远端关闭或黏膜瘘)、损伤处修补或切除吻合后

近侧肠道去功能性造口等, 分期手术主要是伴随造口及其还纳所带来的并发症风险。2013年美国国家创伤数据库的研究也发现结肠损伤后分期手术患者, 在腹腔间隙综合征、急性肾功能衰竭、压疮、脓毒症、住院时间和死亡率等方面较一期手术更差^[4]。一组157例结肠损伤病例中, 分期手术伤口感染率为50%, 远高于一期手术的9.34%^[22]。也有研究发现毁损性结直肠损伤导致预后差的相关因素为严重粪便污染和最初24 h内输血超过4个单位^[23]。多数研究表明一期或分期手术死亡率、腹腔感染和伤口感染等发生率无区别^[24], 认为感染性并发症的发展与患者的损伤程度和血流动力学状态有关, 而不是手术的类型^[25]。故推荐一期手术, 特别是伤后手术无延迟、血流动力学稳定及输血少于4单位者, 而不用考虑损伤是右侧或左侧, 是穿透伤或钝性伤^[26]。

3.1.2 损害控制性剖腹术对手术方式的影响: 损害控制性剖腹术的目的是避免酸中毒、低体温、凝血障碍等构成的致命性三联征。在结直肠损伤时, 控制出血和污染是防治致命性三联征的基础。它的基本理念是在局部解剖结构的确定性治疗前, 应先稳定患者, 实际上彻底改变了创伤紧急手术, 但其给结直肠损伤的治疗带来了更多变化^[5]。在首次简明手术时, 对于非毁损性结直肠损伤直接用自动缝合器钉合破口, 毁损性结直肠损伤则切除损伤肠段、断端用自动缝合器钉合关闭, 即达到目的。不必重建肠道连续性或造口, 然后采用暂时性腹腔关闭技术保持腹腔开放, 目的是尽快结束手术, 使患者尽早到ICU复苏, 防治致命性三联征。24-48 h后患者生理机能稳定后行二次剖腹术, 重建结肠连续性(称为延迟吻合)或造口(称为延迟造口)^[1]。有报道称一期吻合修复(即在首次简明手术时即重建肠道连续性, 同时开放腹腔)与延迟吻合修复在肠道空气瘘、切口裂开和脓肿等严重并发症方面无差别^[27,28]。一组61例损害控制性剖腹术同时伴结肠损伤手术患者的观察, 发现一期手术或分期手术结局相似, 不建议分期手术^[3]。但由于二次剖腹术时结肠及其系膜常明显水肿, 可能增加吻合口泄漏率, 故常行造口术, 尤其是输血超过6单位和出现多种并发症者^[29]。也有分析多篇文献后发现损害控制性剖腹术时结肠吻合口漏的发生率0%-27%, 高危因素包括碱剩余升高, 左侧结肠损伤, 大量输血, 以及腹腔确定性关闭迟于伤后第5天^[3]。对于损害控制性剖腹术中结肠不连续状态可持续的时间尚无明确研究, 多数专家建议不超过3 d^[3]。

3.1.3 腹膜外段直肠损伤的处理: 腹膜内段直肠损伤处理与结肠损伤一致。腹膜外段处理包括转流性结肠造口、直肠伤口修补、骶前引流和远侧直肠灌洗等, 可

单用或合用上述几种方法。但多数主张转流性乙状结肠造口是腹膜外直肠损伤治疗的基础, 是最安全的策略, 即腹膜外段直肠损伤通常应行分期手术, 尤其是有粪便污染、伤后手术延迟, 或括约肌损伤的患者。

近来有研究建议对Ⅱ级、非毁损性直肠损伤采用单纯一期修补^[30,31]。远端直肠修补需要广泛游离盆底, 除考虑血流动力学状态等全身情况外, 局部情况是决策的关键, 推荐用于以下4种情况: (1)损伤处容易到达; (2)显露其他结构同时暴露损伤处; (3)无大块肠壁缺损; (4)伴生殖泌尿系损伤^[32]。对于合并膀胱、尿道和阴道损伤者, 由于直肠膀胱和直肠阴道瘘的高发生率(24%)^[33], 此时除转流性乙状结肠造口、修补直肠伤口外, 还需在直肠和泌尿生殖系统间置网膜瓣, 以减少瘘管的形成, 尤其是在合并膀胱后侧和直肠前方损伤的病例中^[34,35]。骶前引流常被质疑^[31], 限于已经进入骶前间隙、严重粪便污染、发生脓肿可能性大者。远端直肠灌洗争议较大^[36], 多数专家建议不需要。

3.2 结直肠损伤紧急救治常见陷阱

3.2.1 忽略大量晶体液复苏对结直肠吻合口的影响: 结肠损伤患者常因血流动力学不稳定而使用大量的晶体等来维持对重要器官的灌注。有研究表明在最初的72 h内输入晶体达10.5 L时, 结肠吻合口失败的风险增加5倍。认为可导致肠道壁/肠系膜水肿, 增加吻合泄漏风险, 应避免过度的晶体液复苏^[37]。对于合并失血性休克患者, 大量输注等渗晶体液可增加呼吸衰竭、肢体/腹腔间隙综合征及凝血病等风险, 应遵循最少量晶体液输注原则(6 h内<3 L), 而且高渗盐水、右旋糖酐和胶体液在早期院内治疗严重失血时均没有更多的益处^[38]。

3.2.2 未重视结肠损伤手术的技术细节: 在择期结肠切除手术中, 与手法缝合的吻合口相比, 自动缝合器效果相当。但在创伤人群中与手法缝合的吻合口相比, 虽然也有效果一样的研究^[39], 但多数研究显示自动缝合器的泄漏率更高^[40]。一项多中心的回顾性研究发现, 自动缝合器缝合较手法缝合吻合的整体并发症发生率升高(20%比7%)^[41]。连续的、单层缝合效果和双层缝合一样安全, 且手术时间缩短10 min^[41]。实际上, 对于非毁损伤一期修补的步骤包括探查确诊, 适当清创去除边缘失活组织, 单层缝合, 并用附近的肠脂垂或网膜覆盖支撑^[1]。

由于襻式造口容易还纳, 常成为分期手术时的首选, 但可能担心其转流不全, 无法达到预期的效果。实际上可以通过自动缝合器钉合或手法缝合关闭远侧肠襻, 形成“远端肠道关闭法襻式造口”。另外, 结直肠修补或吻合后近侧肠道保护性造口, 是选择结肠还是回肠也常令外科医师困惑, 今天这个问题的答案已经很明显: 选择回肠襻式造口, 无异味, 体积更小, 技术上

更简单, 使用器械更方便。

3.2.3 腹部切口的不当缝合: 在结直肠损伤时, 剖腹手术切口处的皮肤可以保持开放或关闭。回顾性分析223例火器伤导致结肠损伤的患者发现, 其手术部位感染发生率为13%, 其中皮肤关闭或开放感染率无差异^[42]。也有前瞻性随机试验发现如果切口保持开放, 与一期缝合相比, 伤口感染率下降一半(65%/36%)^[43]。结直肠损伤的腹壁切口属污染切口, 保持皮肤开放的延期缝合是值得推荐的方法。另外一个选择是彻底冲洗伤口后缝合切口, 在皮肤表面覆盖负压封闭引流, 也有助于降低切口感染, 这点在择期结直肠手术中已经有证据支持^[44]。

总之, 结直肠损伤常被归类为非毁损性或毁损性。通常情况下, 在稳定患者需行CT扫描, 而血流动力学不稳定者常应直接手术, 在犹豫时果断探查腹腔可能是更安全的策略, 早期探查并控制污染可显著降低并发症发生率和死亡率。所有的结直肠损伤都需要手术治疗, 是否行分期手术应综合考虑损伤的等级、伤后到手术的时间间隔、粪便污染情况、合并损伤及休克情况等, 损害控制策略时是否延迟吻合取决于患者的整体生理状况。

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