

直肠侧方膜解剖完整对盆丛神经保护的意义

池畔 王梹杰

福建医科大学附属协和医院结直肠外科,福州 350001

通信作者:池畔, Email: cp3169@163.com



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池畔

【摘要】 全直肠系膜切除术(TME)是治疗中下段直肠癌的标准术式,其要求在保证肿瘤根治前提下,尽可能保留肛门括约肌,性功能和排尿功能。与单纯交感神经成分损伤相比,盆丛和神经血管束(NVB)损伤对患者术后性功能障碍,特别是男性勃起功能的影响更为明显。由于腹膜反折以下直肠

两侧间隙狭窄致密,难以分离,手术层面偏外容易损伤盆丛及其分支,偏内则进入直肠系膜内,因此直肠侧壁的游离一直被认为是TME的难点。本文对腹膜反折下直肠两侧间隙的膜解剖研究进展进行复习,并基于本中心研究结果,对直肠骶骨筋膜的研究进展进行论述,以期术中盆丛神经的保护提供参考。直肠骶骨筋膜是直肠侧间隙分离时的刚性筋膜屏障,“腹下神经前筋膜-邓氏筋膜前叶移行区”与盆丛主体相互融合,需进行保留。因此,直肠侧间隙分离应首先分离直肠后方间隙,再分离直肠前方间隙,横断邓氏筋膜前叶后,即很容易找到直肠前侧方间隙,从上到下最后切断侧方的直肠骶骨筋膜,以此导向将整个侧方间隙完全分离至盆底。

【关键词】 全直肠系膜切除术; 盆丛; 器官功能保护; 直肠骶骨筋膜; 膜解剖

基金项目: 国家临床重点专科建设资助项目[卫办医政函(2012)649号]

DOI:10.3760/cma.j.cn.441530-20210121-00035

Significance of the intact of the fascia propria in protection of pelvic plexus during total mesorectal excision

Chi Pan, Wang Xiaojie

Department of Colorectal Surgery, Union Hospital, Fujian Medical University, Fuzhou 350001, China

Corresponding author: Chi Pan, Email: cp3169@163.com

【Abstract】 Total mesorectal excision (TME) is the gold standard of surgical treatment for mid and low rectal cancer. It

aims to improve the oncological outcomes as well as preserve anal sphincter, sexual and urinary function. Compared with sympathetic nerve injury alone, pelvic plexus and neurovascular bundle (NVB) injury has significant effect on postoperative sexual dysfunction, especially erectile function. Since the lateral surgical plane of TME is narrow and densely packed, dissecting outside the plane causes pelvic plexus injury, while dissecting inside it results in residual mesorectum. In this commentary, we review the research progress of lateral fascial anatomy of TME, and describe the anatomical characteristics of rectosacral fascia based on our previous research results. The prehypogastric fascia acts as a "fascia barrier" when dissecting the lateral space constantly from posterior to anterior. In addition, the pelvic plexus fuses with the prehypogastric fascia which is considered as the outer side layer of rectosacral fascia laterally. Thus, the rectosacral fascia should be dissected at the level of S4 vertebral body posterior to the rectum in an arc shape and then enter the superior-levator space. Before dissecting the lateral spaces, the anterior space of the rectum should be dissected first. After an "U" shape cutting of the Denonvilliers' fascia, the lateral space should be dissected from anterior to posterior. Finally, the lateral attachment of rectosacral fascia is transected to ensure the integrity of the mesorectum without damaging the pelvic plexus.

【Key words】 Total mesorectal excision; Pelvic plexus; Organ function protection; Rectosacral fascia; Fascial anatomy

Fund program: National Key Clinical Specialty Discipline Construction Program [(2012)649]

DOI:10.3760/cma.j.cn.441530-20210121-00035

全直肠系膜切除术(total mesorectal excision, TME)是治疗中下段直肠癌的标准术式,其要求在保证肿瘤根治前提下,尽可能保留肛门括约肌、性功能和排尿功能^[1]。Açar和Kuzu^[2]曾提出,TME术中自主神经损伤有4个常见部位:(1)肠系膜下动脉根部(肠系膜下丛);(2)骶前神经(腹下神经);(3)直肠两侧壁(盆丛);(4)直肠前壁靠近精囊腺

2. 直肠骶骨筋膜与盆丛的关系: 直肠骶骨筋膜参与了侧韧带的形成, 并由于前述的融合过程, 直肠骶骨筋膜向两侧移行, 在直肠侧方中部重新分成内侧叶和外侧叶。内侧叶为直肠固有筋膜, 向前移行为邓氏筋膜后叶, 术中应予以完整保留; 外侧叶为腹下神经前筋膜, 向前移行为邓氏筋膜前叶。而“腹下神经前筋膜-邓氏筋膜前叶移行区”在直肠两前侧方与盆丛主体呈致密融合, 见图 3 黄色虚线框。因此, 分离直肠后方间隙后, 如果沿着直肠骶骨筋膜外侧叶从下向上强行分离, 则易切入与“腹下神经前筋膜-邓氏筋膜前叶移行区”相融合的盆丛主体, 而导致损伤, 见图 4。另一方面, 如果从后贸然切开该筋膜屏障, 则容易同时切破直肠固有筋膜, 进入系膜内, 可能造成癌结节残留。

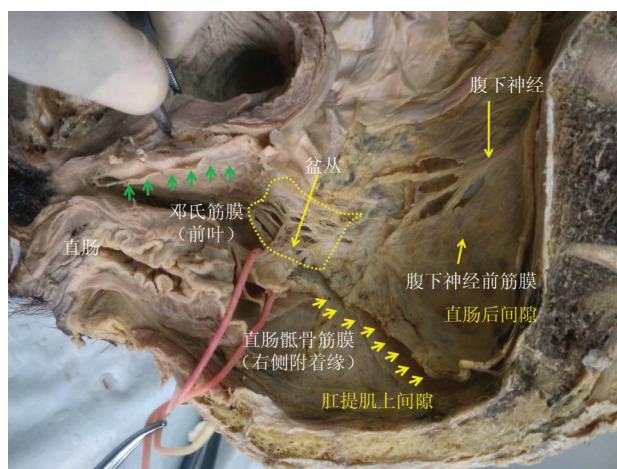


图3 直肠骶骨筋膜与盆丛的关系尸体解剖图^[12] 切开直肠骶骨筋膜的右侧附着缘, 盆丛在直肠前侧方发出多支细小直肠支, 呈束状穿过“腹下神经前筋膜-邓氏筋膜前叶移行区”, 支配直肠。盆丛主体与“腹下神经前筋膜-邓氏筋膜前叶移行区”相融合

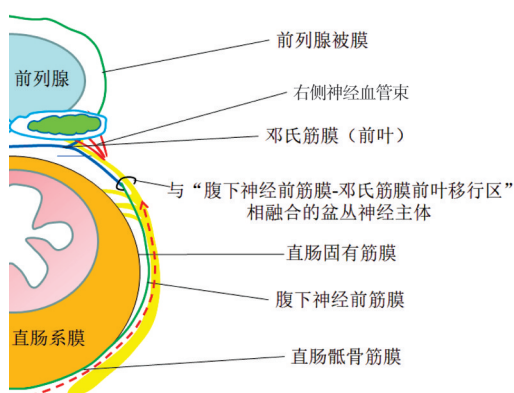


图4 直肠骶骨筋膜与盆丛的关系示意图(王泉杰绘制) 分离直肠后方间隙后, 沿着直肠骶骨筋膜外侧叶从下向上强行分离, 易损伤与“腹下神经前筋膜-邓氏筋膜前叶移行区”相融合的盆丛主体

三、直肠侧间隙分离策略

在腹膜反折下, 因直肠骶骨筋膜在直肠侧方中部重新分开为前内侧的邓氏筋膜后叶(直肠固有筋膜)与前外侧的邓氏筋膜前叶。侧方的前上方有间隙存在, 后下方是直肠骶骨筋膜的融合区, 故从上向下较从下向上更易找到直肠侧方间隙, 这就是为什么行TME时应首先分离直肠后方间隙, 再分离直肠前方间隙, 横断邓氏筋膜前叶后, 即很容易找到直肠前侧方间隙, 以此导向将整个侧方间隙完全分离至盆底。

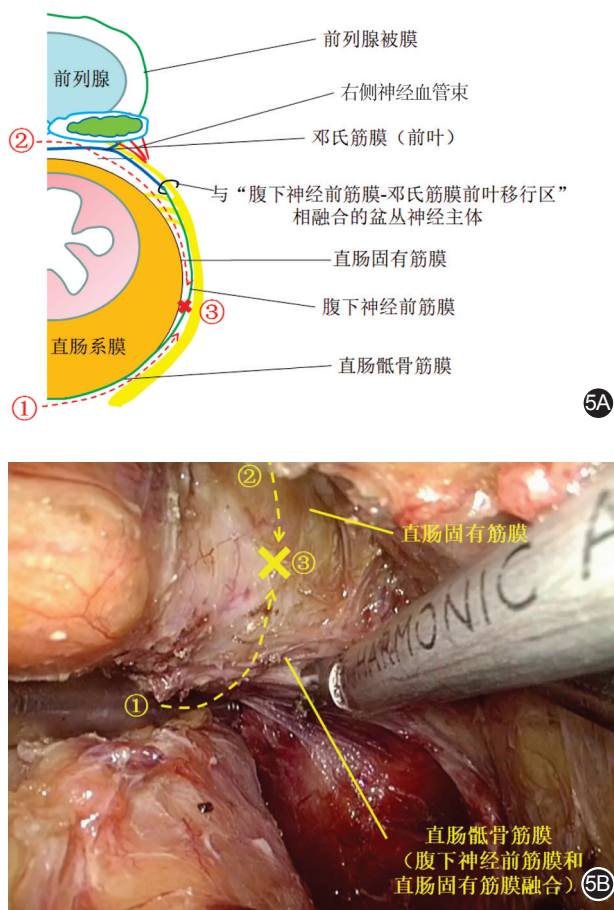
1. 分离直肠后方间隙: 应于S4椎体水平在直肠后方弧形切断直肠骶骨筋膜, 从直肠后方间隙进入肛提肌上间隙, 如不及时离断, 则会沿腹下神经前筋膜表面向上切开进入直肠系膜内, 可见骶前大片脂肪组织残留。

2. 分离直肠前方间隙: 先进入邓氏筋膜前间隙, 男性患者在距两侧精囊腺底部上0.5 cm, 女性距腹膜反折下约5 cm, 相当于两侧NVB内侧水平, 倒“U”型切断邓氏筋膜前叶, 从而保护邓氏筋膜前叶前外侧的NVB主干, 沿着邓氏筋膜后间隙从上向下分离直肠侧前方间隙, 从而保护与“腹下神经前筋膜-邓氏筋膜前叶移行区”相融合的盆丛神经主体, 并逐步切断盆丛发出的细小直肠支。

3. 直肠前后间隙均充分扩展后: 此时, 可见直肠侧间隙仅遗留少量未分离区, 即残留的直肠骶骨筋膜的两侧附着缘(“筋膜屏障”), 最后予以切断, 方可保证直肠侧方膜的完整, 并保护盆丛与NVB, 见图5。

遵循以上分离方式, 笔者团队对既往164例低位直肠癌(硬式直肠镜下肿瘤距肛缘 ≤ 7 cm)微创术后患者进行随访, 排除术前已有明显前列腺症状的17例患者后, 发现术后泌尿功能总体优良率[即国际前列腺症状评分(international prostate symptom score, IPSS) ≤ 7 分]可达98.0%。勃起功能方面, 纳入的92例患者术后勃起功能正常及轻度障碍率为92.6%。上述结果已发表于本期(见327页)。

综上, 直肠骶骨筋膜是直肠侧间隙分离时的刚性筋膜屏障, “腹下神经前筋膜-邓氏筋膜前叶移行区”与盆丛主体相互融合, 需进行保留。因此, 直肠侧间隙分离应首先分离直肠后方间隙, 再分离直肠前方间隙, 横断邓氏筋膜前叶后, 即很容易找到直肠前侧方间隙, 最后切断直肠骶骨筋膜, 以此为导向将整个侧方间隙完全分离至盆底。



注:①表示分离直肠后间隙时,②表示分离直肠前方间隙时,③至直肠前后间隙均充分扩展后,可见直肠侧间隙仅遗留少量未分离区,最后予以切断

图5 S4椎体水平以下直肠侧间隙分离策略 5A.示意图(王泉杰绘制);5B.笔者团队手术图

利益冲突 所有作者均声明不存在利益冲突

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(收稿日期: 2021-01-21)

(本文编辑: 朱雯洁)

本文引用格式

池畔, 王泉杰. 直肠侧方膜解剖完整对盆丛神经保护的意义[J]. 中华胃肠外科杂志, 2021, 24(4): 297-300. DOI: 10.3760/cma.j.cn.441530-20210121-00035.