

## 小儿继发性食管狭窄的诊治进展

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**【摘要】** 食管狭窄是目前临床常见的儿童食管疾病,而继发性食管狭窄占了绝大部分。根据病因的不同分为腐蚀性食管狭窄、手术后食管狭窄及消化性食管狭窄3类。本文对3类食管狭窄的形成原因、治疗现状及临床应用进行阐述。

**【关键词】** 食管狭窄/并发症;食管狭窄/诊断;食管狭窄/治疗;食管狭窄/外科学;儿童

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**Recent advances in the diagnosis and treatment of secondary esophageal stricture in children.** Lin Ru.

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**【Abstract】** Esophageal stricture (ES) is a common esophageal disease in children and secondary ES accounts for a large majority of clinical cases. According to different etiologies, it may be divided into three types of corrosive, postoperative and peptic. This article reviewed the latest studies on the causes, treatments and clinical managements of three type of ES in children.

**【Key words】** Esophageal Stenosis/CO; Esophageal Stenosis/DI; Esophageal Stenosis/TH; Esophageal Stenosis/SU; Child

小儿食管狭窄是指各种因素导致食管壁损伤后管壁增厚和纤维组织增生,引起吞咽困难、进食障碍和呛咳,进而引起患儿营养不良、生长发育落后。其诊断一般依靠临床表现以及食管造影。临床表现主要包括呕吐、吞咽困难、呛咳或食管异物及生长发育落后。食管造影提示造影剂通过食管缓慢,即说明局部狭窄,伴或不伴有狭窄段上方食管扩张。吞咽困难的评估目前有 Ogilvie & Atkinson 评分法,0级:无吞咽困难,可正常饮食;1级:偶尔发生,能够进食一些固体食物;2级:能进半流质食物;3级:仅能进流质食物;4级:完全的吞咽困难,一般3~4级认为存在食管狭窄。食管狭窄分为先天性和继发性,其中继发性食管狭窄占小儿食管狭窄的90%以上,主要包括食管腐蚀性狭窄、食管手术后狭窄及食管消化性狭窄。本文阐述小儿继发性食管狭窄相关因素及治疗进展。

### 一、食管腐蚀性狭窄

食管腐蚀性狭窄常由于患儿误食化学性物质引起,化学物的pH值、浓度、性状是影响食管损伤

程度的因素<sup>[1]</sup>。其中腐蚀物pH值不同对食管的损伤也有明显区别。酸性物主要造成浅表组织凝固性坏死,损伤范围广;碱性物主要导致液化性坏死,引起蛋白水解易发生食管穿孔。因此,碱性物质较酸性物质更易发生食管全层损伤,导致大量胶原结缔组织增生,形成瘢痕并挛缩狭窄。狭窄常发生于食管生理狭窄处,如会厌下、食管中段气管分叉处、贲门上端,狭窄长度不一,腐蚀严重者可导致全食管瘢痕性狭窄。

对于食管腐蚀性狭窄目前常采用食管扩张术,包括内镜下探条扩张术及球囊扩张术、透视下球囊扩张术<sup>[2-5]</sup>。内镜引导下食管扩张术有无创优势,与透视下食管扩张术相比,不需要接触X线,手术后可以在内镜直视下评估食管裂伤和出血程度,近年来得到了广泛开展。对于长段腐蚀性狭窄,由于球囊长度的限制,有些单位采用胃造口并预留引线经食管从胃造口牵出,再与探条固定并上下提拉探条通过狭窄区域达到扩张目的。徐伟立等<sup>[6]</sup>通过胃造口术联合Forley尿管球囊扩张术治疗9例腐蚀性食管狭窄。食管扩张术一般在瘢痕形成早期(3周左右)开始进行扩张,扩张间隔时间推荐为2~4周,但需注意早期食管黏膜较脆弱容易引起扩张后食管全程破裂。

食管重建术是既往治疗难治性腐蚀性食管狭窄的常用方法,如胃代食管术,空肠代食管术及结肠代食管术,而结肠是最常用的替代器官<sup>[7-9]</sup>。由于手术复杂,创伤大,术后并发症(如:吻合口漏、替代的食管或管状胃蠕动功能较弱或结肠曲折冗长导致胸腔内食物长时间滞留、贫血等)较多,且食管支架置入术的开展,目前应用有所减少。

腐蚀性狭窄扩张后食管壁受到反复刺激可引起瘢痕修复后狭窄,且反复发作需多次扩张。对于扩张效果不佳瘢痕挛缩明显或者狭窄段较长的患儿,有学者提出通过放置食管支架以改善狭窄症状。食管支架置入术常应用于成人恶性肿瘤导致食管狭窄的治疗,但在儿童中应用较少,目前均为个案报道<sup>[10-12]</sup>。Zhang等<sup>[13]</sup>对8例腐蚀性食管狭窄患儿使用镍钛合金自膨式支架,放置1~4周后再取出支架,并行长期随访发现患儿基本能正常进食。汪星等<sup>[11]</sup>报道应用镍钛合金全覆膜支架治疗7例化学腐蚀性食管狭窄患儿,除1例因不能忍受于术后36h取出支架外,其余患儿吞咽困难均明显缓解。这种不可降解的覆膜支架存在明显异物感,常常发生移位,还会刺激食管壁引发炎症造成食管再狭窄,且放置一段时间(一般3个月内)需再次手术取出。近年来,生物可降解高分子多聚物食管支架的研制凭借其良好的生物相容性及可降解吸收性,在儿童食管狭窄领域获得可观的前景<sup>[14]</sup>。此外,余辉等<sup>[15]</sup>还报道1例经消化道腔内磁压榨吻合术治疗短段型小儿腐蚀性食管狭窄。

## 二、食管手术后狭窄

小儿食管手术后狭窄最常见于先天性食管闭锁(congenital esophageal atresia, CEA)术后吻合口狭窄,狭窄的发生率各中心报道不一<sup>[16-20]</sup>。Baird等<sup>[18]</sup>报道常规开胸手术后吻合口狭窄的发生率为24%~79%,而胸腔镜手术后吻合口狭窄的发生率为9%~32%。杨敏等<sup>[19]</sup>对407例食管闭锁患儿进行Meta分析发现,胸腔镜手术后吻合口狭窄的发生率为17%。李樱子等<sup>[20]</sup>报道开放性手术和胸腔镜手术后吻合口狭窄的发生率分别为9.52%和36.16%,认为虽然胸腔镜手术减少了术后吻合口漏的发生,但对于食管狭窄的发生无明显改变,甚至略有增加。

吻合口狭窄主要与食管远近端距离、吻合口漏及术后胃食管反流等因素有关。食管远近端距离过长,术后出现吻合口漏及胃食管反流均可能增加吻合口狭窄的风险<sup>[16,20]</sup>。食管盲端距离越长,吻合

后张力越大,食管黏膜血供越差,从而阻碍了黏膜及肌肉组织的愈合,使得纤维瘢痕组织增生并挛缩。食管闭锁术后胃食管反流的发生率约为19%~71%,主要原因是吻合过程中将远端食管向近端牵拉致胃上提,使原有的正常His角发生改变。胃酸及反流物对食管黏膜的损伤导致反流性食管炎,促进了瘢痕组织的增生从而加重吻合口狭窄的程度。近年来,还有学者提出术后经口留置胃管的放置会增加术后吻合口狭窄的发生<sup>[21-23]</sup>。Dave等<sup>[24]</sup>曾对31个国家的170名小儿外科医生进行调查,发现83%外科医生在食管闭锁术后会放置胃管。另一项调查也报道类似的情况,90%外科医生会使用胃管<sup>[23]</sup>。但也有部分专家对此提出了质疑,Wang等<sup>[22]</sup>对已有的4组研究进行Meta分析,结果表明留置胃管可增加吻合口狭窄的几率,但对于吻合口漏、感染及气管软化等并发症的发生无明显影响。其作用机制目前尚不明确,胃管对食管下段括约肌的扩张可能导致反流性物质对吻合口的损伤,以及胃管本身对吻合口产生机械性剪切力可能是导致吻合狭窄的主要原因。同样,动物实验也发现经口留置胃管能减少吻合口处胶原组织的生成,从而增加食管狭窄的发生率<sup>[25]</sup>。

对于食管手术后狭窄目前多采用食管扩张术治疗。有研究认为初次扩张年龄小,扩张前狭窄轻及吞咽困难程度小者扩张效果好,且扩张效果的差别可能与狭窄段瘢痕厚度有关<sup>[26]</sup>。初次扩张后发生再次狭窄可能是因为扩张导致黏膜层撕裂,食管肌层炎性纤维增生后瘢痕收缩引起。由于吻合口狭窄一般出现在术后3~4周,因此目前多数学者主张食管闭锁患儿首次扩张时间在术后1~3个月较为合适。我们认为术后1个月常规行食管造影了解食管及吻合口情况,评估狭窄的风险并早期进行干预是预防和治疗术后食管狭窄的有效措施。Ko等<sup>[27]</sup>报道70.6%的术后6个月以内扩张的食管闭锁患儿仅需扩张1次即可治愈,只有11.6%患儿需要扩张2次以上。扩张方法包括探条扩张和球囊扩张两种<sup>[28,29]</sup>。由于内镜辅助下能直接观察扩张过程中黏膜撕裂的程度、有无穿孔及出血,因此目前多倾向于使用球囊进行扩张。球囊扩张术后最严重的并发症是食管穿孔,多发生于早期狭窄处,因为此时的食管仍处于炎性水肿阶段,如果过早进行扩张,或者选用的球囊直径过大可能会引发食管穿孔。

近年来,对于食管手术后难治性吻合口狭窄的病例又开始新的探索,包括食管支架置入、磁压榨

技术及内镜下食管狭窄放射性切开术等<sup>[30-32]</sup>。Takamizawa等<sup>[32]</sup>利用磁压吻合术治疗1例食管闭锁术后食管再狭窄患儿,术后34 d完成食管端-端吻合。内镜下食管狭窄放射性切开术是在胃镜直视下对明确的狭窄部位进行针对性、选择性切开<sup>[33]</sup>;对于顽固性瘢痕术后短期效果显著,但仍易出现再狭窄,目前常作为多种内镜联合诊疗体系中的一个方面。

### 三、食管消化性狭窄

胃食管反流儿童较常见,发生率达75%,其中2%~7%可出现病理性反流,长期胃食管反流可导致食管黏膜水肿、炎症细胞浸润,从而导致食管周围组织纤维化及瘢痕改变,可引起反复咳嗽,迁延不愈的肺炎及继发食管狭窄甚至恶变<sup>[34]</sup>。反流性食管炎继发消化性食管狭窄(peptic esophageal stricture, PES)的发生率约7%~23%,一般发生在食管下端,距贲门上方4 cm以内<sup>[35]</sup>。Pearson等<sup>[36]</sup>报道48例反流性食管炎引起的消化性食管狭窄均好发于下端食管。对于胃食管反流的诊断,目前24 h食管pH监测是金标准,其他检查方法包括胃食管核素显像、上消化道造影及胃镜检查。

对于消化性食管狭窄的治疗,如果仅通过扩张或手术纠正食管狭窄而忽略原发因素的处理往往不能获得满意疗效。目前认为治疗主要包括药物(如质子泵抑制剂)使用、内镜下扩张及抗反流手术3个方面,如上述治疗效果不佳可考虑加做狭窄食管段切除术<sup>[36,37]</sup>。Pearson<sup>[36]</sup>发现48例患儿除了有3例接受狭窄食管切除术,其余均通过抗反流手术及多次食管扩张术达到良好的预后。复旦大学附属儿科医院报道11例消化性食管狭窄患儿,食管扩张配合早期抗反流手术能获得较好的疗效,而食管切除术主要适用于食管扩张术后短期内(1周)再次出现吞咽困难或连续行食管扩张6次以上无效的患儿<sup>[37]</sup>。杨静等<sup>[2]</sup>报道8例反流性食管狭窄患儿单纯行内镜下扩张治疗均无效,在狭窄直径扩张至0.5~0.6 cm时行抗反流术,术后继续予以扩张治疗才能获得满意效果。

总之,小儿继发性食管狭窄根据狭窄的原因治疗方法不尽相同。腐蚀性食管狭窄根据狭窄的程度及长度采取多种手术方法,且预后较其他2类相对较差。食管手术后狭窄主要采取扩张的手术方法,早期治疗效果较好。食管消化性狭窄需注意同时解决胃食管反流的原发因素。各类食管狭窄如采用单一的治疗措施可能并不能达到理想效果,可

以相互借鉴互为补充,尽早达到理想的食管直径,以满足患儿正常生长发育需求。

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