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· 专题研究 ·

腔镜深筋膜下交通支静脉离断术联合激光闭合术治疗大隐静脉曲张的疗效

汪立¹, 张弘¹, 杜建青¹, 吴忠隐¹, 李荣华¹, 肖艳赏²

(1.承德医学院附属医院 血管外科, 河北 承德 067000; 2.同济大学医学院, 上海 200082)

摘要

背景与目的: 手术为治疗大隐静脉曲张(GSV)有效措施, 传统交通支静脉结扎术虽疗效肯定, 但创伤较大, 并发症多, 且术后复发率高, 增加二次治疗风险。腔镜深筋膜下交通支静脉离断术(SEPS)、激光闭合术(EVLT)为新型的治疗手术, 各具优势, 本研究探讨EVLT与SEPS联合治疗GSV的临床效果, 以期为临床治疗选择提供参考。

方法: 选取2018年6月—2019年10月承德医学院附属医院收治的78例GSV患者, 依据简单随机数字表法分为研究组与对照组, 各39例。研究组采取SEPS+EVLT, 对照组采取传统交通支静脉结扎术+EVLT。比较两组手术情况、创伤定量指标水平、生活质量、并发症发生率以及疾病复发率。

结果: 术前两组间一般资料、术前创伤定量指标与生活质量评分差异均无统计学意义(均 $P>0.05$)。研究组手术时间、住院时间短于对照组, 术中失血量、住院费用少于对照组, 下肢瘀斑面积、切口长度小于对照组(均 $P<0.05$); 研究组术后24、72 h血清丙二醛、一氧化氮、IL-6水平均低于对照组, 谷胱甘肽过氧化物酶水平高于对照组(均 $P<0.05$)。术后1周研究组精神心理、体能、社会活动、疼痛评分均优于对照组(均 $P<0.05$); 研究组并发症发生率低于对照组(2.56% vs. 20.51%, $P<0.05$); 研究组术后12个月疾病复发率低于对照组(5.56% vs. 26.47%, $P<0.05$)。

结论: SEPS联合EVLT治疗GSV, 具有创伤小、手术时间短、术后恢复快、并发症少、住院费用低、提高生活质量等优势, 推荐临床使用。

关键词

静脉曲张; 最小侵入性外科手术; 生活质量

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Efficacy of subfascial endoscopic perforator surgery combined with endovenous laser closure in the treatment of great saphenous vein varices

WANG Li¹, ZHANG Hong¹, DU Jianqing¹, WU Zhongyin¹, LI Ronghua¹, XIAO Yanshang²

(1. Department of Vascular Surgery, Affiliated Hospital of Chengde Medical College, Chengde, Hebei 067000, China; 2. Tongji University School of Medicine, Shanghai 200082, China)

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作者简介: 汪立, 承德医学院附属医院主治医师, 主要从事血管外科方面的研究。

通信作者: 张弘, Email: yueduliangxiaoshi@163.com

Abstract

Background and Aims: Surgery is an effective treatment for great saphenous varicose veins (GSV). However, although traditional perforating vein ligation has demonstrable efficacy, it has many disadvantages, such as relatively large trauma, frequent postoperative complications, and a high postoperative recurrence rate, which increase the risk of secondary treatment. Subfascial endoscopic perforator surgery (SEPS) and endovenous laser treatment (EVLT) are new therapeutic procedures, and each has its advantages. Therefore, this study was performed to investigate the clinical efficacy of EVLT combined with SEPS for the treatment of GSV to provide clinical treatment options.

Methods: Seventy-eight patients with GSV admitted to Department of Vascular Surgery, Affiliated Hospital of Chengde Medical College from June 2018 to October 2019 were selected and assigned to study group and control group, with 39 cases in each group, using random number table method. Patients in study group underwent SEPS plus EVLT, and those in control group were subjected to conventional perforating vein ligation plus EVLT. The surgical variables, oxidative stress markers, scores for quality of life, incidence of complications and disease recurrence rate were compared between the two groups.

Results: There were no significant differences in the general data, preoperative levels of oxidative stress markers, and scores for quality of life between the two groups (all $P>0.05$). The operative time and length of hospital stay were shorter, the intraoperative blood loss and hospitalization costs were less, and the area of petechiae and length of incision on the lower limbs were smaller in study group than those in control group (all $P<0.05$); the serum levels of malondialdehyde, NO and IL-6 were lower, while glutathione peroxidase was higher at 24 and 72 h after surgery in study group than those in control group (all $P<0.05$). The scores for psychophysiological state, physical performance, social activity, and pain in study group were superior to those in control group one week after surgery (all $P<0.05$). The incidence of complications in study group was lower than that in control group (2.56% vs. 20.51%, $P<0.05$), and the disease recurrence rate on 12 months after surgery in study group was lower than that in the control group (5.56% vs. 26.47%, $P<0.05$).

Conclusion: SEPS combined with EVLT for the treatment of GSV has the advantages of less trauma, shorter operative time, faster postoperative recovery, fewer complications, and lower hospitalization costs, as well as improving the patient's quality of life. So, it is recommended to be used in clinical practice.

Key words

Varicose Veins; Minimally Invasive Surgical Procedures; Quality of Life

CLC number: R543.6

大隐静脉曲张 (great saphenous vein varices, GSV) 是常见下肢血管病变, 其主要病因为深静脉瓣膜不能完全闭合, 或局部静脉管腔增宽, 引起下肢静脉血液倒流, 影响静脉瓣膜关闭功能^[1-3]。外科手术是 GSV 主要治疗手段, 传统交通支静脉结扎术简单易行, 疗效肯定, 但切口较多, 创伤较大, 并发症多, 且术后复发率高达 17%^[4]。激光闭合术 (endovenous laser treatment, EVLT) 是微创手术, 研究^[5-7]表明, EVLT 联合传统交通支静脉结

扎术在 GSV 的应用具有创伤小、安全性高、恢复快等优势。既往研究^[8-9]已证实深浅静脉间交通支在 GSV 发病及复发中起到关键作用。腔镜深筋膜下交通支静脉离断术 (subfascial endoscopic perforator surgery, SEPS) 处理交通支具有独特优势, 如易寻找交通支, 结扎彻底, 操作简便, 创伤小^[10-11]。本研究尝试分析 SEPS 术联合 EVLT 治疗 GSV 的疗效及对下肢瘀斑面积、创伤定量指标、生活质量的影响, 将结果报告如下。

1 资料与方法

1.1 一般资料

选取2018年6月—2019年10月承德医学院附属医院收治的78例GSV患者进行前瞻性对照研究,依据简单随机数字表法分为研究组与对照组,

各39例。两组年龄、性别、体质量指数(BMI)、下肢静脉曲张分级(clinical, etiology, anatomic, pathophysiologic classification system, CEAP)、侧别、静脉临床严重程度评分、病程均衡可比(均 $P>0.05$) (表1)。且本研究经承德医学院附属医院伦理委员会审批通过(审批号:2019-7-25)。

表1 两组患者一般资料比较 ($n=39$)

Table 1 Comparison of general data between the two groups of patients ($n=39$)

资料	研究组	对照组	t/χ^2	P
性别[n(%)]				
男	21(53.85)	22(56.41)	0.052	0.820
女	18(46.15)	17(43.59)		
年龄(岁, $\bar{x} \pm s$)	54.69 \pm 7.24	55.51 \pm 8.07	0.472	0.638
BMI(kg/m ² , $\bar{x} \pm s$)	22.84 \pm 1.87	23.10 \pm 2.15	0.626	0.533
CEAP分级[n(%)]				
C4	11(28.21)	10(25.64)	0.210	0.901
C5	20(51.28)	22(56.41)		
C6	8(20.51)	7(17.95)		
侧别[n(%)]				
左	20(51.28)	18(46.15)	0.205	0.651
右	19(48.72)	21(53.85)		
静脉临床严重程度评分($\bar{x} \pm s$)	14.09 \pm 1.93	14.35 \pm 2.06	0.575	0.567
病程(年, $\bar{x} \pm s$)	3.41 \pm 1.09	3.53 \pm 1.16	0.471	0.639

1.2 纳入与排除标准

纳入标准:(1)均符合《下肢静脉曲张的诊断与治疗》^[12]中相关诊断标准;(2)CEAP分级C4~C6级;(3)无GSV手术史;(4)患者及家属知情同意。排除标准:(1)深静脉血栓及血栓后遗症;(2)心、肝、肾等严重脏器功能不全;(3)凝血功能障碍;(4)严重创伤;(5)行走功能障碍或需长期卧床;(6)妊娠和哺乳期妇女;(7)精神障碍或语言沟通障碍;(8)髂静脉受压患者。

1.3 方法

1.3.1 对照组 采取传统交通支静脉结扎术+EVLT。术前行下肢静脉顺行造影,标记病变穿通静脉及曲张浅静脉。连续硬膜外麻醉,平卧位,常规消毒铺巾,传统交通支静脉结扎术采用改良Linton术式,由标记处直接切开深筋膜,暴露和结扎小腿交通支静脉;自腹股沟韧带中点下方2 cm处沿皮纹作横行切口(长约3 cm),切开皮肤及皮下组织,以卵圆窝为 midpoint,对浅筋膜行顺皮纹切开,分离并固定大隐静脉主干,逐一结扎、切断其主要属支,穿刺患肢内踝大隐静脉(16号套管针),退出针芯,置入超滑导丝,将5 F导管顺行插入

(至大隐静脉主干全程),拔出导丝,置入专用激光光纤(600 μ m),功率12 W,脉冲与间隔时间均为1 s,一边发射激光,一边将光纤持续缓慢后退(0.5~1.0 cm/s)。同时沿大隐静脉走向,在光纤尖端灯光闪烁指导下加压,使大隐静脉塌陷闭合;对于属支曲张静脉可多点穿刺,直接导入激光光纤进行烧灼。

1.3.2 研究组 采取SEPS+EVLT。术前行下肢静脉顺行造影,标记病变穿通静脉及曲张浅静脉。连续硬膜外麻醉,平卧位,常规消毒铺巾,取胫骨粗隆内侧旁开4 cm作一横行切口(1.5 cm),分离皮下组织至深筋膜。将内镜置于深筋膜和肌层之间,筋膜下CO₂充气,压力12 mmHg(1 mmHg=0.133 kPa)。于第一切口下方3 cm,内侧4 cm作第二切口。屏幕监视下,交刺鞘置入同一间隙,采用分离钳对深筋膜下疏松结缔组织作钝性分离。分离穿通静脉,粗大穿通静脉采用0号可吸收线结扎近远端后烧灼切断;细小穿通静脉电凝烧灼切断。退出内镜,间断缝合2个切口,浅表曲张静脉采用EVLT术。方法同对照组。

两组术后均抗生素治疗2~3 d,用弹力绷带加

压包扎1~2周,去除绷带后改穿弹力袜维持6个月。

1.4 观察指标

围术期情况,包括:手术时长、术中失血量、切口长度、下肢瘀斑面积、住院时间、住院费用等内容。术前与术后24、72 h检测对比两组创伤定量指标,包括:谷胱甘肽过氧化物酶(GSH-Px)、丙二醛(MDA)、超氧化物歧化酶(SOD)、一氧化氮(NO)、白介素6(IL-6)。术前及术后1周生活质量,采用慢性静脉功能不全问卷评价,包括精神心理、体能、社会活动、疼痛4个维度,共20个问题,1~5级评分,分数越高,生活质量越好。并发症发生率(并发症包括隐神经损伤、患肢疼痛、皮下血肿、切口愈合不良、下肢深静脉血栓、发热等)。采用电话形式于术后每月进行1次

电话随访,连续随访12个月,统计疾病复发率。

1.5 统计学处理

采用SPSS 22.0统计分析软件,计数资料以率表示,组间比较采用 χ^2 检验;符合正态分布的计量资料采用均数 \pm 标准差($\bar{x} \pm s$)表示,组间比较用独立样本 t 检验,组内对比采用配对 t 检验。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 围术期情况

研究组手术时间、住院时间短于对照组,术中失血量、住院费用少于对照组,下肢瘀斑面积、切口长度小于对照组(均 $P < 0.05$)(表2)。

表2 两组围术期指标比较($n=39, \bar{x} \pm s$)

Table 2 Comparison of perioperative variables between the two groups ($n=39, \bar{x} \pm s$)

指标	研究组	对照组	t	P
手术时间(min)	50.69 \pm 7.34	62.26 \pm 9.68	5.948	<0.001
术中失血量(mL)	9.33 \pm 2.38	16.03 \pm 4.09	8.842	<0.001
切口长度(cm)	5.37 \pm 1.21	9.39 \pm 2.64	8.645	<0.001
下肢瘀斑面积(cm ²)	5.13 \pm 1.10	8.69 \pm 1.63	11.306	<0.001
住院时间(d)	7.98 \pm 1.34	11.04 \pm 1.51	9.466	<0.001
住院费用(元)	9 136.45 \pm 1 718.02	11 135.03 \pm 2 014.37	4.714	<0.001

2.2 创伤定量指标

术前两组间血清GSH-Px、MDA、SOD、NO、IL-6水平差异均无统计学意义(均 $P > 0.05$),术后24、72 h两组血清MDA、NO、IL-6水平较术前增

高,GSH-Px、SOD水平较术前降低,但研究组血清MDA、NO、IL-6水平低于对照组,GSH-Px、SOD水平高于对照组(均 $P < 0.05$)(表3)。

表3 两组创伤定量指标比较($n=39, \bar{x} \pm s$)

Table 3 Comparison of oxidative stress indicators between the two groups ($n=39, \bar{x} \pm s$)

项目	术前				术后24 h				术后72 h			
	研究组	对照组	t	P	研究组	对照组	t	P	研究组	对照组	t	P
GSH-Px(U/mL)	4.56 \pm 0.89	4.62 \pm 0.93	0.291	0.772	1.91 \pm 0.18 ¹⁾	0.95 \pm 0.17 ¹⁾	24.214	<0.001	3.32 \pm 0.39 ¹⁾	2.06 \pm 0.31 ¹⁾	15.794	<0.001
MDA(U/mL)	2.18 \pm 0.44	2.22 \pm 0.46	0.392	0.696	4.22 \pm 0.78 ¹⁾	6.11 \pm 0.82 ¹⁾	10.429	<0.001	3.10 \pm 0.39 ¹⁾	4.26 \pm 0.56 ¹⁾	10.615	<0.001
SOD(U/mL)	147.89 \pm 15.53	150.68 \pm 14.02	0.833	0.408	128.64 \pm 11.33 ¹⁾	101.53 \pm 12.19 ¹⁾	10.173	<0.001	139.64 \pm 15.53 ¹⁾	121.70 \pm 13.23 ¹⁾	5.492	<0.001
IL-6(ng/L)	80.68 \pm 10.69	79.69 \pm 11.23	0.399	0.691	105.54 \pm 11.34 ¹⁾	122.67 \pm 10.97 ¹⁾	6.780	<0.001	85.97 \pm 9.11 ¹⁾	96.59 \pm 12.28 ¹⁾	4.338	<0.001
NO(umol/L)	69.61 \pm 9.33	70.64 \pm 10.22	0.465	0.643	82.34 \pm 10.77 ¹⁾	120.34 \pm 14.21 ¹⁾	13.309	<0.001	73.33 \pm 8.98 ¹⁾	92.66 \pm 10.31 ¹⁾	8.829	<0.001

注:1)与本组术前比较, $P < 0.05$

Notes: 1) $P < 0.05$ vs. the preoperative value of the same group

2.3 生活质量

术前两组间精神心理、体能、社会活动、疼痛评分差异均无统计学意义(均 $P > 0.05$),术后1周

两组精神心理、体能、社会活动、疼痛评分较术前增高,且研究组高于对照组(均 $P < 0.05$)(表4)。

表4 两组生活质量评分比较 ($n=39, \bar{x} \pm s$)Table 4 Comparison of scores for quality of life between the two groups ($n=39, \bar{x} \pm s$)

项目	术前				术后1周			
	研究组	对照组	<i>t</i>	<i>P</i>	研究组	对照组	<i>t</i>	<i>P</i>
精神心理	25.21±3.29	24.64±3.50	0.741	0.461	39.06±4.12 ¹⁾	32.69±3.77 ¹⁾	7.123	<0.001
体能	7.98±1.97	8.05±2.02	0.155	0.877	15.20±3.01 ¹⁾	12.64±2.96 ¹⁾	3.787	<0.001
社会活动	7.79±1.56	7.96±1.61	0.474	0.637	12.45±2.13 ¹⁾	10.03±1.98 ¹⁾	5.197	<0.001
疼痛	9.33±1.82	8.99±1.79	0.832	0.408	17.11±2.09 ¹⁾	14.36±2.11 ¹⁾	5.783	<0.001

注:1)与本组术前比较, $P<0.05$

Notes: 1) $P<0.05$ vs. the preoperative value of the same group

2.4 并发症发生率

研究组并发症发生率低于对照组 (2.56% vs. 20.51%), 差异有统计学意义 ($P<0.05$) (表5)。

表5 两组并发症发生率比较 [n (%)]Table 5 Comparison of the incidence of complications between the two groups [n (%)]

项目	研究组	对照组	χ^2	<i>P</i>
隐神经损伤	1(2.56)	1(2.56)	—	—
患肢疼痛	0(0.00)	1(2.56)	—	—
皮下血肿	0(0.00)	3(7.69)	—	—
切口愈合不良	0(0.00)	1(2.56)	—	—
下肢深静脉血栓	0(0.00)	1(2.56)	—	—
发热	0(0.00)	1(2.56)	—	—
总发生率	1(2.56)	8(20.51)	4.522	0.034

2.5 疾病复发率

两组术后均随访12个月, 观察组失访3例, 对照组失访5例。术后3、6、9个月两组间疾病复发率差异无统计学意义 (均 $P>0.05$), 术后12个月, 研究组疾病复发率低于对照组 (5.56% vs. 26.47%), 差异有统计学意义 ($P<0.05$) (表6)。

表6 两组疾病复发率比较 [n (%)]Table 6 Comparison of disease recurrence rates between the two groups [n (%)]

时间	研究组	对照组	χ^2	<i>P</i>
术后3个月	0(0.00)	1(2.94)	—	0.486
术后6个月	1(2.78)	3(8.82)	0.330	0.566
术后9个月	2(5.56)	6(17.65)	1.472	0.225
术后12个月	2(5.56)	9(26.47)	5.775	0.016

3 讨论

GSV是血管外科最常见疾病, 主要病理表现

为下肢血流回流障碍^[13-16]。随微创手术普及及人们对美学要求的提高, EVLT以其创伤小、美容效果好、恢复快等优势逐渐引起临床医师关注^[17-19]。EVLT利用腔内射频技术在静脉腔内输注红外线激光, 产生热作用, 使血管内膜蛋白质变性, 引起静脉壁结构破坏、纤维化, 形成永久性闭锁, 达到与手术切除相似的疗效, 且仅需在静脉处作微小切口将激光设备及特殊药物引入血管内, 避免血管广泛剥离损伤, 创伤较小, 减轻患者痛苦, 术后不留疤, 患者接受度高^[20-22], 但术后仍有较高复发率。

交通支静脉瓣膜功能不全是GSV发病及复发的关键因素^[23-24]。研究发现, CEAP分级在C4~C6级的GSV患者多存在交通支静脉瓣膜功能不全。故如何有效处理交通支静脉, 成为降低GSV复发率的关键所在。SEPS处理交通静脉具有独特优势。SEPS能通过阻断小腿内侧功能不全的交通静脉, 减少足靴区静脉反流, 控制静脉高压, 其在处理大隐静脉的同时阻断交通静脉反流, 可更好地控制静脉反流及高压所致组织微循环改变^[25-26]。本研究数据显示, 研究组术后12个月研究组疾病复发率低于对照组, 因此也说明SEPS联合EVLT治疗GSV可减少术后复发。

本研究也发现, SEPS联合EVLT治疗在改善手术情况、促进术后恢复、降低并发症发生率。提高生活质量方面也具有明显优势。与传统交通支静脉结扎术相比, SEPS微创优势在于: (1) 切口小, 减少切口并发症, 且远离病变皮肤, 改善下肢外观; (2) 深筋膜下间隙均采用钝性分离, 损伤小; (3) 手术操作在驱血状态下进行, 并精确定位筋膜下间隙内的交通支静脉, 缩短手术时间; (4) 小腿往往存在大量瓣膜功能不全的交通静脉, 导致足靴区明显的淤血症状; 此术式可彻底离断交通静

脉,降低下肢瘀斑面积,且利于溃疡迅速愈合^[27-28]。

创伤定量指标是有创性治疗方式的重要参考方面,可直观反映治疗过程中及治疗后机体应激程度与恢复效果^[29-31]。手术所致应激反应通过交感-肾上腺髓质系统使儿茶酚胺水平升高,通过单核-巨噬细胞系统的中性粒细胞、内皮细胞,引起MDA、GSH-Px、SOD、NO、IL-6等多种细胞因子水平改变。本研究数据显示,术后24、72 h研究组血清MDA、NO、IL-6水平低于对照组,GSH-Px、SOD水平高于对照组。提示SEPS联合EVLT治疗GSV患者,可减轻术后早期创伤应激反应,从血清学方面显示了其微创优势。

笔者认为,SEPS联合EVLT治疗GSV有其无可比拟的优势,另外,SEPS主要适用于严重慢性静脉功能不全,即CEAP分级4级及以上,包括C4(皮肤色素沉着)、C5(愈合后的溃疡)、C6(活动性溃疡)患者;而对皮肤病变较轻或无皮肤营养障碍性表现的病例则无需施行SEPS。

综上所述,SEPS联合EVLT治疗GSV患者,具有创伤小、手术时间短、术后恢复快、并发症少、住院费用低等优势,可降低创伤定量指标水平,减少下肢瘀斑面积,提高生活质量。本研究不足之处在于,病例选取及样本量有一定局限性,有待更多中心、大样本前瞻性随机对照试验进一步验证。

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