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经外环下精索静脉结扎术与腹股沟显微精索静脉结扎术 对精索静脉曲张患者的精液质量及性激素水平的影响*

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摘要 目的:对比分析经外环下精索静脉结扎术与腹股沟显微精索静脉结扎术对精索静脉曲张患者的精液质量及性激素水平的影响。**方法:**113 例研究对象,随机分为观察组($n=57$)和对照组($n=56$),对照组给予腹股沟显微精索静脉结扎术,观察组给予经外环下精索静脉结扎术,对比其精液质量、性激素水平以及并发症发生率。**结果:**术后半年,两组患者精子密度等相关指标均显著提高,且观察组均较对照组高($P<0.05$);两组患者术后血清促卵泡激素(follicle-stimulating hormone, FSH)、血清睾酮(testosterone, T)、黄体生成素(luteinizing hormone, LH)浓度水平比较,观察组显著较对照组低($P<0.05$),术后血清 T 水平显著升高,观察组显著高于对照组($P<0.05$);两组患者术后 2 周内并发症发生情况比较,观察组低于对照组($P<0.05$)。**结论:**相比于腹股沟显微精索静脉结扎术,经外环下精索静脉结扎术更有利于患者精子质量的提高,改善性激素水平,降低患者并发症发生率,值得推广应用。

关键词:外环下精索静脉结扎术;腹股沟显微精索静脉结扎术;精索静脉曲张;精液质量;性激素水平

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Effects of Ligation of the Spermatic Vein under the Outer Ring and Microscopic Spermatic Vein Ligation of the Inguinal on the Semen Quality and the Level of Sex Hormones in Patients with Varicocele*

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ABSTRACT Objective: To compare and analyze the effects of trans-circumferential spermatic vein ligation and inguinal micro-spermic vein ligation on the semen quality and sex hormone levels of patients with varicocele. **Methods:** Select from July 2017 to July 2020 A total of 113 patients with varicocele were treated each month as the research object. The patients were divided into observation group ($n=57$) and control group ($n=56$) by random number grouping method. The control group was treated with inguinal microspermic vein ligation In the observation group, the spermatic vein ligation was performed under the outer ring. The semen quality, sex hormone levels and complication rate of the two groups were compared. **Results:** At 6 months after surgery, the sperm density, viability, and percentage of a+b grade sperm in the two groups were significantly increased, and the observation group was not lower than that in the control group ($P<0.05$); The comparison of serum follicle-stimulating hormone (FSH), testosterone (T) and luteinizing hormone (LH) concentration levels were significantly reduced after surgery, and the observation group was not significantly higher than that in the control group ($P<0.05$). The serum T levels of the two groups were significantly increased after surgery, and the observation group was significantly higher. Comparing the complications of scrotal edema, hydrocele, and hydrocele within 2 weeks after operation in the control group ($P<0.05$), the observation group was not higher than that in the control group ($P<0.05$). **Conclusion:** Compared with inguinal microspermic vein ligation, subcircumferential spermatic vein ligation is more beneficial to improve the quality of sperm, improve the level of sex hormones, and reduce the incidence of complications in patients, which is worthy of promotion and application.

Key words: Ligation of the spermatic vein under the outer ring; Microscopic spermatic ligation of the inguinal; Varicocele; Semen quality; Sex hormone level

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前言

精索静脉曲张 (Varicocele, VC) 的临床症状包括血液反流、睾丸疼痛等。该病的临床发病率约为 15%, 男性患者常因精索静脉曲张导致不育。精子活力、精子形态学参数、睾丸生精功能均受精索静脉曲张影响, 其主要可能与性激素水平、氧化应激、睾丸组织病理学改变等因素有关^[1,2]。临床主要通过外科手术精索静脉曲张患者, 进而达到提高精子质量的目的。但目前, 对于该疾病的治疗方式仍旧存在多种争议, 手术方式的不同将会直接导致疗效的差别^[3,4]。近些年随着科技的不断发展, 微创技术也在不断进步, 研究发现, 腹股沟显微精索静脉结扎术用于治疗精索静脉曲张获得良好效果, 成为首选手术方案^[5,6]。本研究探究了对于 VC 患者给予经外环下精索静脉结扎术与腹股沟显微精索静脉结扎术后, 对患者的精液质量以及性激素水平的影响, 具体如下。

1 资料与方法

1.1 一般资料

以 2017 年 7 月到 2020 年 7 月西安交通大学第二附属医院泌尿外科共收治 113 例 VC 患者为研究对象, 将患者依据随机数字分组法分为观察组 (n=57) 和对照组 (n=56)。对照组年龄 21-36 岁, 平均 (26.64±5.25) 岁; 病程 1.6-8 年, 平均 (3.19±2.02) 年; 静脉曲张分度: II 度 36 例, III 度 21 例; 单侧 37 例, 双侧 20 例。观察组年龄 20-36 岁, 平均 (28.15±5.02) 岁; 病程 1-7 年, 平均 (3.16±2.15) 年; 静脉曲张分度^[7]: II 度 36 例, III 度 20 例; 单侧 38 例, 双侧 18 例。纳入标准: ①符合 VC 诊断标准^[8], 分度为 II~III 度; ②全程配合治疗, 依从性好; ③年龄 21-39 周岁; 排除标准: ①脏器疾病者; ②精神障碍者, 难以配合治疗者; ③临床资料不全者; ④既往阴囊、腹部手术者。

1.2 方法

对照组患者采用腹股沟显微精索静脉结扎术。将切口置于平行于腹股沟韧带的中点 3 cm 以及腹股沟韧带的内侧 1 cm 处, 打开腹外斜肌腱膜后将精索提起, 并结扎扩张的精索外静脉, 精索内筋膜、提睾肌分别打开, 输精管及其血管分离后隔离保护, 显微镜下分辨动脉, 精索内静脉全部结扎, 保护淋巴管, 止血后逐层缝合。双侧 VC 患者, 方法相同。

观察组患者采用经外环下精索静脉结扎术。耻骨结节为手术切口起点, 顺皮纹向外上方切口, 切口长度约 1.5-2 cm。切开组织并显露外环后, 将精索完整游离并提出切口外, 并且使用橡胶引流管进行支撑, 在显微镜下将提睾肌、精索外筋膜切开, 提睾肌-精索血管采用钝性分离, 将精索血管、输精管及其脉管系统分离后, 垫乳胶片与二者下方。并将乳胶片进行固定, 暴露精索血管束。按照精索走行的角度, 将精索内筋膜切开, 并滴加罂粟碱于精索血管束上, 于显微镜下查看动脉搏动。将动脉搏动处通过弯显微剪分离, 结扎动脉周围静脉, 显影线上做标记保护游离动脉, 保留全部淋巴管和睾丸动脉, 在全部结扎后进行检查, 避免出现遗漏。最后, 结扎精索外静脉, 保留动脉。术后仅留存神经、淋巴管、仅睾丸动脉、精索外动脉、提睾肌纤维、输精管及其动静脉。双侧 VC 患者, 采取相同方法。

1.3 观察指标

术前检查精液质量、性激素水平, 术后半年复查精液质量、性激素水平。使用全自动精子分析仪 (Minitube Sperm Vision, 北京布拉德科技发展有限公司) 于患者术前及术后半年, 检查精子活率、密度以及 a+b 级活力。于同一时间点, 分别采集患者早晨空腹的 3 mL 外周静脉血, 并通过放射免疫法检测 FSH、T、LH 浓度。记录术后 2 周后阴囊水肿等并发症的情况。

1.4 统计学方法

通过统计学软件 SPSS 20.0 进行数据分析, 不良事件发生情况以 (n/%) 表示, 进行 χ^2 检验; 住院时间、ICP、RASS 评分、CPOT 评分和 ESCA 评分用均数±标准差 ($\bar{x} \pm s$) 表示, 采用 t 检验; 以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 比较精液质量参数

术后半年, 两组患者精子密度、活率以及 a+b 级精子百分率均较术前显著提高, 且观察组均较对照组高 ($P < 0.05$), 如表 1 所示。

2.2 手术前后性激素水平比较

两组患者术后血清 FSH、LH 水平较术前明显降低, 观察组较对照组低 ($P < 0.05$), 术后血清 T 水平显著升高, 观察组显著高于对照组 ($P < 0.05$), 如表 2 所示。

表 1 比较精液质量参数 ($\bar{x} \pm s$)

Table 1 Comparison of semen quality parameters ($\bar{x} \pm s$)

Groups	n	Sperm density/($\times 10^6 \cdot \text{mL}^{-1}$)				Sperm viability/%				Percentage of grade a+b sperm/%			
		6 months				6 months				6 months			
		Preoperative	after surgery	t	P	Preoperative	after surgery	t	P	Preoperative	after surgery	t	P
Observation group	57	18.14±4.16	42.58±4.04	31.819	0.000	32.72±7.19	69.23±9.12	23.735	0.000	36.17±9.21	68.86±12.43	15.953	0.000
Control group	56	17.92±4.27	36.82±3.96	24.286	0.000	31.32±6.77	58.45±9.27	17.687	0.000	35.65±9.43	57.19±11.87	10.633	0.000
t	-	0.277	7.652			1.065	6.231			0.297	5.102		
P	-	0.782	0.000			0.289	0.000			0.767	0.000		

表 2 手术前后性激素水平比较($\bar{x} \pm s$)Table 2 Comparison of sex hormone levels before and after surgery($\bar{x} \pm s$)

Groups	n	FSH/(IU·L ⁻¹)				T/(nmol·L ⁻¹)				LH/(IU·L ⁻¹)			
		Preoper- ative	6 months after surgery	<i>t</i>	<i>P</i>	Preoper- ative	6 months after surgery	<i>t</i>	<i>P</i>	Preoper- ative	6 months after surgery	<i>t</i>	<i>P</i>
Observa- tion group	57	10.27± 2.19	5.64±1.27	13.808	0.000	10.20± 2.42	19.52±2.86	18.782	0.000	12.60± 3.63	5.22±1.97	13.491	0.000
Control group	56	10.54± 2.15	7.27±1.15	10.036	0.000	9.84± 2.33	15.31±3.15	10.447	0.000	12.58± 3.51	6.91±2.04	10.451	0.000
<i>t</i>	-	0.661	7.148			0.805	7.441			0.030	4.480		
<i>P</i>	-	0.510	0.000			0.422	0.000			0.976	0.000		

2.3 两组患者术后并发症发生情况比较

观察组低于对照组($P < 0.05$),如表 3 所示。

两组患者术后 2 周内阴囊水肿等并发症发生情况比较,观

表 3 术后并发症发生情况($n, \%$)Table 3 Comparison of postoperative complications($n, \%$)

Groups	n	Scrotal edema	Hydrocele	Hydroceles	Total incidence
Observation group	57	1(1.75%)	0(0.00%)	1(1.75%)	2(3.51%)
Control group	56	4(7.14%)	2(3.57%)	2(3.57%)	8(14.29%)
χ^2	-				4.07
<i>P</i>	-				0.044

3 讨论

精索静脉曲张的产生,将会导致男性发生不育,约占原发性不育症的 35%,儿童罹患精索静脉曲张若未及时治疗,可影响睾丸功能及容积^[9,10]。一旦发现精索静脉曲张应该尽早医治,采取手术治疗,避免损害身体健康,影响生精功能^[11,12]。手术治疗可以帮助患者改善睾丸内血气平衡状态,促进睾丸内血流动力学恢复,进而恢复附睾的功能,促使睾丸生精能力的提高,最终导致精子数量大幅度提升,增强精子活动能力^[13,14]。治疗 VC 的手术方法分为开放式、显微镜、腹腔镜三种。腹腔镜精索静脉结扎手术能够清晰看到手术区域,手术切口小,高位结扎,利于患者的术后身体恢复^[15,16]。腹腔镜手术无法充分游离外侧精索,因此具有较高的复发风险。开放式手术分经腹膜后入路以及经腹股沟入路,经腹膜后入路法,暴露范围相对较小,限制精索静脉游离程度^[17,18]。经腹股沟入路法,结扎部位距离阴囊比较近,易发生结扎不彻底,伤害淋巴管、动脉的几率比较大,导致睾丸血运障碍或者睾丸鞘膜积液等问题^[19-21]。显微镜下精索静脉结扎术能够放大组织区域,立体视觉利于医生清晰识别淋巴管和精索静脉,降低误扎、漏扎以及术后并发症发生率^[22,23]。显微镜下精索静脉结扎术包含经腹股沟管入路和经外环下入路两种,本文探讨这两种方式对精索静脉曲张患者的影响^[24,25]。

研究结果显示,两组患者精子密度等相关指标均较术前显著提高,且观察组均高于对照组($P < 0.05$)。两组患者术前和术后半年血清 FSH、T、LH 水平比较,两组患者血清 FSH、LH 水平均降低,观察组显著低于对照组($P < 0.05$),手术后,血清 T 水平较术前升高,观察组显著高于对照组($P < 0.05$)。说明腹股沟显微精索静脉结扎术治疗 VC 效果更好,对调节激素水平和提

高精子质量具有明显作用,与^[26,27]等研究结果相似,目前,外环下精索静脉结扎术和腹股沟显微精索静脉结扎术造成激素水平和精子质量产生差异的原因并未知其原因,结合 Lorian K^[28]和 Lin PH^[29]等相关研究猜测因腹股沟具有复杂的静动脉分支,因此手术过程中因为需要分离提睾肌,从而导致损伤输精管动脉等损伤,进而损伤生精小管,致使睾丸萎缩,并使得睾丸内分泌功能受到影响。相关研究^[30,31]显示:经外环下精索静脉结扎术清楚暴露精索,可防止淋巴管和睾丸动脉受损,降低睾丸萎缩几率,促使患者术后睾丸生精功能快速恢复。此外,本研究中,比较两组患者术后 2 周内阴囊水肿等并发症的情况,观察组低于对照组($P < 0.05$)。说明经外环下精索静脉结扎术能够减少并发症的发生几率,分析其原因在于由于腹股沟显微精索静脉结扎术结扎部位靠近精囊和睾丸,易损伤睾丸,而且手术过程必须进入腹腔,易引发并发症,而经外环下精索静脉结扎术可避免该环节所导致并发症的发生,与 Jing YX 等^[32]相关研究结果一致。另外,本研究仍存在不足之处,因研究对象于同一所医院治疗,且临床样本数量有限,难免存在干扰因素,未来研究应改进方案,大样本资料,搜集多家医院大样本资料,进一步证实外环下精索静脉结扎术的临床应用价值。

综上所述,外环下精索静脉结扎术比腹股沟显微精索静脉结扎术可有效提高患者精子质量,改善性激素水平,降低患者并发症发生率,值得推广应用。本研究为外环下精索静脉结扎术在精索静脉曲张患者的临床治疗中的优势分析提供了研究资料。

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