·临床研究·

基于倾向性评分匹配法评估切开挂线对口引流术与传统切开挂线术治疗老年高位复杂性肛瘘的效果

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【摘 要】 **目的** 基于倾向性评分匹配法评估切开挂线对口引流术(FSD)与传统切开挂线术(TSF)治疗老年高位复杂性肛瘘的效果。**方法** 回顾性分析2020年3月至2023年3月北京市肛肠医院肛肠外科收治的220例患者的临床资料,其中FSD组117例,TSF组103例,采用1∶1倾向性评分匹配法筛选出82对匹配队列,比较两组患者术后疗效、恢复、疼痛程度、肛肠动力学、肛管功能及复发情况。采用SPSS 22.0统计软件进行数据分析。根据数据类型,分别采用t检验或χ^2检验进行组间比较。采用logistic回归模型计算倾向性评分,近邻匹配法进行1∶1匹配。**结果** 匹配后FSD组术后24 h视觉模拟评分法(VAS)评分低于TSF组[(4.21±1.18)和(5.04±1.36)分],临床总有效率高于TSF组[96.34%(79/82)和87.80%(72/82)],创面愈合时间短于TSF组[(12.34±2.45)和(14.67±2.89)d],差异均有统计学意义($P<0.05$)。术后1个月,FSD组肛管功能长度、最大耐受量及初始感觉阈值均大于TSF组[(2.86±0.34)和(2.31±0.46)cm;(135.21±19.87)和(119.52±20.13)ml;(25.16±2.57)和(22.89±2.92)ml],差异均有统计学意义($P<0.05$)。术后1个月,FSD组Wexner评分低于TSF组[(0.92±0.27)和(1.17±0.35)分];复发率低于TSF组[3.66%(3/82)和12.20%(10/82)],差异有统计学意义($P<0.05$)。**结论** FSD治疗老年高位复杂性肛瘘疗效确切,术后创面愈合快、对肛管功能损伤小,且复发率低。

【关键词】 老年人;高位复杂性肛瘘;切开挂线对口引流术;倾向性评分匹配法
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Evaluation of effect of fistulotomy with seton drainage and traditional seton fistulotomy in treatment of high complex anal fistula in the elderly based on propensity score matching

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【**Abstract**】 **Objective** To evaluate the effect of fistulotomy with seton drainage (FSD) *versus* traditional seton fistulotomy (TSF) in the treatment of high complex anal fistula in the elderly based on propensity score matching. **Methods** The clinical data of 220 patients in the Department of Anorectal Surgery of Beijing Rectum Hospital from March 2020 to March 2023 were retrospectively analyzed, including 117 in the FSD group and 103 in the TSF group. Propensity score matching was used to select a matched cohort of 82 pair (1∶1). The postoperative efficacy, recovery, pain degree, anorectal dynamics, anal canal function and recurrence were compared between the two groups. SPSS 22.0 was used for data analysis. According to the data type, t test or *Chi*-square test were performed for intergroup comparison. Logistic regression model was used to calculate the propensity score, and the nearest neighbor matching method was used for 1∶1 matching. **Results** After matching at 24 h postoperatively, the visual analogue scale (VAS) score in the FSD group was lower than that in the TSF group [(4.21±1.18) *vs* (5.04±1.36) points], the total clinical effective rate in the FSD group was higher than that in the TSF group [96.34% (79/82) *vs* 87.80% (72/82)], and the wound healing time in the FSD group was shorter than that in the TSF group [(12.34±2.45) *vs* (14.67±2.89) d]; all the differences were statistically significant ($P<0.05$). At 1 month postoperatively, the FSD group had greater anal function length [(2.86±0.34) *vs* (2.31±0.46) cm], maximum tolerance dose [(135.21±19.87) *vs* (119.52±20.13) ml] and initial sensory threshold [(25.16±2.57) *vs* (22.89±2.92) ml] than the TSF group, and the differences were statistically significant ($P<0.05$). At 1 month postoperatively, the Wexner score was lower in the FSD group than that in the TSF group [(0.92±0.27) *vs* (1.17±0.35) pionts], and the recurrence rate in the FSD group was also lower [3.66% (3/82) *vs* 12.20% (10/82)]; and the difference was statistically significant ($P<0.05$). **Conclusion** FSD is effective in the treatment of high complex anal fistula in the elderly, with fast postoperative wound healing, little damage to anal canal function, and low recurrence rate.

【**Key words**】 aged; high complex anal fistula; fistulotomy with seton drainage; propensity score matching
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肛瘘是老年人中常见的肛肠疾病,高位复杂性肛瘘是其中一种较为棘手的类型,由于其瘘道深入、多分支及与肛门括约肌的密切关系,临床治疗有一定的挑战性。传统切开挂线术(traditional seton fistulotomy,TSF)是临床常用的治疗方法,但临床实践中发现其容易导致括约肌损伤,且术后复发率居高不下,故近年诸多研究开始探索其他更为安全有效的术式[1]。切开挂线对口引流术(fistulotomy with seton drainage,FSD)可有效清除瘘道内的感染和坏死组织,还可对肛门括约肌进行合理处理,减少括约肌损伤[2]。目前,FSD 在老年高位复杂性肛瘘中的应用效果及其对肛门括约肌功能、术后康复和复发的影响尚需进一步研究证实,本研究基于倾向性评分匹配法对比 TSF 与 FSD 在治疗老年高位复杂性肛瘘中的效果。

1 对象与方法

1.1 研究对象

回顾性分析 2020 年 3 月至 2023 年 3 月北京市肛肠医院肛肠外科收治的 220 例老年高位复杂性肛瘘患者的临床资料,根据手术类型将患者分为 FSD 组(117 例)和 TSF 组(103 例)。纳入标准:年龄≥60 岁;符合复杂性肛瘘诊断标准[3],超声证实为高位复杂性肛瘘;接受切开挂线对口引流术或传统切开挂线术治疗;资料完整。排除标准:存在其他肛肠疾病;存在恶性肿瘤、肝肾功能不全等。

1.2 手术方法

FSD 组:蛛网膜下腔麻醉下,取截石位或俯卧位,使用无菌探针探查瘘道走向和分支,标记内外口位置。沿外口线性切开,清除瘘道内坏死组织和分泌物,生理盐水冲洗。内口处做小切口,保护肛门括约肌,使用微吻合器确保引流通畅。橡胶带从内口引出,固定并调整紧张度。定期检查橡皮筋和瘘道愈合情况。

TSF 组:麻醉和体位同 FSD 组。内口周围切除黏膜,扩大内口,清除瘘道内坏死组织,放射状切开外口,局部扩创,使用球头探针切开低位创面,橡皮筋从内口引出并结扎固定。定期检查橡皮筋和瘘道愈合情况。

1.3 观察指标

(1)疼痛程度:术前、术后 24 h 及术后 1 周,采用视觉模拟评分法(visual analogue scale,VAS)[4]评估肛周疼痛。(2)临床疗效[5]:术后 1 个月评估,包括显效(创面完全愈合,无不适)、有效(创面基本愈合,主观不适减轻)及无效(未达上述标准)。总有效率=显效+有效/总例数×100%。(3)术后恢复情况:统计创面愈合时间及术后住院时间,创面愈合标准为新生上皮覆盖,无红肿或炎症[6]。(4)肛管功能指标:术前、术后 1 个月测量肛管功能长度、最大耐受量及初始感觉阈值。(5)术后随访:记录末次随访时 Wexner 评分,肛门溢液、稀便控制不佳及复发情况。

1.4 统计学处理

采用 SPSS 22.0 统计软件进行数据分析。计量资料以均数±标准差($\bar{x}\pm s$)表示,组间比较采用 t 检验。计数资料以例数(百分率)表示,组间比较采用 χ^2 检验。采用 logistic 回归模型计算倾向性评分,近邻匹配法进行 1∶1匹配。$P<0.05$ 为差异有统计学意义。

2 结 果

2.1 两组患者倾向性评分匹配前后基线资料比较

以性别、年龄、病程、糖尿病史、高血压病史、心脏病史及肛瘘 Parks 分型为匹配因素进行倾向性评分匹配,筛选出 82 对匹配队列,匹配后基线资料差异无统计学意义($P>0.05$;表 1)。

表 1 两组患者倾向性评分匹配前后基线资料比较

Table 1 Comparison of baseline data between two groups before and after propensity score matching

Item	Before propensity score matching				After propensity score matching			
	FSD group (n=117)	TSF group (n=103)	χ^2/t	P value	FSD group (n=82)	TSF group (n=82)	χ^2/t	P value
Gender[n(%)]			0.003	0.956			0.026	0.873
Male	70(59.83)	62(60.19)			49(59.76)	50(60.98)		
Female	47(40.17)	41(39.81)			33(40.24)	32(39.02)		
Age(years, $\bar{x}\pm s$)	68.45±6.32	67.89±6.57	0.644	0.520	68.12±6.28	68.35±6.41	0.232	0.817
Duration of disease(months, $\bar{x}\pm s$)	8.12±3.45	9.67±4.12	3.036	0.003	8.07±3.43	8.12±3.55	0.092	0.927
History of diabetes mellitus[n(%)]	10(8.55)	15(14.56)	1.968	0.161	8(9.76)	9(10.98)	0.066	0.798
History of hypertension[n(%)]	11(9.40)	20(19.42)	4.539	0.033	10(12.20)	14(17.07)	0.781	0.377
History of cardiac disease[n(%)]	5(4.27)	7(6.08)	0.676	0.411	4(4.88)	5(6.10)	0.118	0.732
Parks classification[n(%)]			0.831	0.842			0.136	0.987
Intersphincteric	28(23.93)	26(25.24)			22(26.83)	21(25.61)		
Transsphincteric	52(44.44)	48(46.60)			38(46.34)	37(45.12)		
Suprasphincteric	21(17.95)	19(18.45)			15(18.29)	16(19.51)		
Extrasphincteric	16(13.68)	10(9.71)			7(8.54)	8(9.76)		

2.2 两组患者手术前后 VAS 评分比较

两组患者术后 24 h VAS 评分均较术前降低,术后 7 d 进一步降低,且 FSD 组术后 24 h VAS 评分低于 TSF 组,差异有统计学意义($P<0.05$;表 2)。

表 2 两组患者手术前后 VAS 评分比较

Table 2 Comparison of VAS pre- and post-operation between two groups ($n=82$, points, $\bar{x}\pm s$)

Group	Pre-operation	24 h post-operation	7 d post-operation
FSD	6.83±1.24	4.21±1.18*	2.13±0.91*#
TSF	6.71±1.29	5.04±1.36*	2.27±1.03*#
t	0.607	4.174	0.922
P value	0.545	<0.001	0.358

Compared with pre-operation, *$P<0.05$; compared with 24 h post-operation, #$P<0.05$.

2.3 两组患者临床疗效比较

FSD 组术后 1 个月临床总有效率高于 TSF 组[96.34%(79/82)和 87.80%(72/82)],差异有统计学意义($P<0.05$;表 3)。

表 3 两组患者临床疗效比较

Table 3 Comparison of clinical efficacy between two groups [$n=82$, n(%)]

Group	Significantly effective	Effective	Ineffective
FSD	62(75.61)	17(20.73)	3(3.66)
TSF	53(64.63)	19(23.17)	10(12.20)

FSD: fistulotomy with seton drainage; TSF: traditional seton fistulotomy.

2.4 两组患者术后恢复情况

FSD 组、TSF 组患者术后住院时间分别为(15.33±2.27)和(16.08±2.69)d,差异无统计学意义($t=1.930$, $P=0.056$);FSD 组、TSF 组患者术后创面恢复时间分别为(12.34±2.45)和(14.67±2.89)d,FSD 组少于 TSF 组,差异有统计学意义($t=5.569$, $P<0.001$)。

2.5 两组患者手术前后肛管功能指标比较

两组患者术后 1 个月肛管功能长度、最大耐受量及初始感觉阈值均较术前减小,但 FSD 组均大于 TSF 组,差异有统计学意义($P<0.05$;表 4)。

2.6 两组患者末次随访 Wexner 评分、并发症及复发情况比较

末次随访时,两组患者 Wexner 评分均较入院时降低,且 FSD 组低于 TSF 组;复发率比较,FSD 组低于对照组,差异有统计学意义($P<0.05$)。两组患者并发症情况比较,差异无统计学意义($P>0.05$;表 5)。

3 讨 论

高位复杂性肛瘘的治疗难度较大,因其瘘道深入且可能涉及肛门括约肌,甚至与直肠相通。治疗时需清除瘘道内感染和坏死组织,同时保护肛门括约肌功能,以预防术后失禁等并发症[7,8]。

本研究通过倾向性评分匹配法平衡两组基线资料后,共纳入 82 对匹配队列,两组在主要临床特征和相关风险因素上具有可比性。两组术后 24 h VAS 评分均较术前降低,且 FSD 组低于 TSF 组,表明 FSD 术后早期疼痛程度较轻,可能是因为其对口引流策略可确保瘘道内容物自然流出,减少对周围健康组织的压迫和刺激,降低瘘道张力,术后疼痛更为轻微[9,10]。FSD 组术后创面愈合时间短于 TSF 组,可能是因为 FSD 在处理瘘道时对健康组织损伤较小,技术上更注重保护组织血供,且对口引流可有效减少瘘道张力,减轻对周围组织的机械性刺激,从而有利于创面的愈合[11]。

表 4 两组患者手术前后肛管功能比较

Table 4 Comparison of pre-operative and post-operative anorectal function between two groups ($n=82$, $\bar{x}\pm s$)

Group	Anorectal functional length(cm)		Maximum tolerance(ml)		Initial sensation threshold(ml)	
	Pre-operation	1 month post-operation	Pre-operation	1 month post-operation	Pre-operation	1 month post-operation
FSD	3.73±0.47	2.86±0.34*	160.32±20.14	135.21±19.87*	30.24±2.82	25.16±2.57*
TSF	3.66±0.49	2.31±0.46*	158.76±20.64	119.52±20.13*	29.03±3.04	22.89±2.92*
t	0.934	8.707	0.490	5.023	2.642	5.284
P value	0.352	<0.001	0.625	<0.001	0.009	<0.001

FSD: fistulotomy with seton drainage; TSF: traditional seton fistulotomy. Compared with pre-operation, *$P<0.05$.

表 5 两组患者末次随访 Wexner 评分、并发症及复发情况比较

Table 5 Comparison of Wexner score, complications and recurrence at the last follow-up between the two groups ($n=82$)

Group	Wexner score(points, $\bar{x}\pm s$)		Complication[n(%)]		Recurrence[n(%)]
	At admission	At final follow-up	Anal leakage	Poor control of loose stool	
FSD	2.43±0.62	0.92±0.27*	5(6.10)	3(3.66)	3(3.66)
TSF	2.45±0.70	1.17±0.35*	8(9.76)	6(7.32)	10(12.20)
t/χ^2	0.194	5.121	0.666	1.058	4.094
P value	0.847	<0.001	0.414	0.304	0.043

FSD: fistulotomy with seton drainage; TSF: traditional seton fistulotomy. Compared with at admission, *$P<0.05$.

肛管功能是评估肛瘘手术效果的重要指标，本研究中，两组患者术后 1 个月肛管功能长度、最大耐受量及初始感觉阈值均较术前减小，但 FSD 组均大于 TSF 组，提示 FSD 对肛管功能的损伤更小。肛管功能长度指肛管能够正常收缩和放松的长度，肛瘘手术可能会影响肛管的一部分结构和功能，从而缩短肛管功能长度。FSD 对瘘道的切开和处理较为精细，对口引流技术通过在瘘道内口处做小切口自然引流，不需大范围切开，对肛门括约肌的干扰减少[12]。最大耐受量是指肛管在不引起排便冲动的前提下能够容纳的最大液体或气体量，反映肛管容量和伸展性，FSD 对管组织结构损伤较小，可保持肛管的伸展性[13]。初始感觉阈值反映排便控制能力，肛管感觉功能主要依赖于黏膜和括约肌的完整性，FSD 对肛管黏膜和括约肌的干扰较小，有助于维持正常的初始感觉阈值[14,15]。Wexner 评分结果显示，FSD 组术后肛门功能恢复更佳，复发率也低于 TSF 组，表明 FSD 疗效更稳定，可能与对口引流设计确保瘘道内分泌物和坏死组织有效排出有关。

综上所述，FSD 治疗老年高位复杂性肛瘘疗效确切且复发率低，可减少术后疼痛、加快创面愈合及保护肛管功能。FSD 相对 TSF 虽有优势，但其更适用于对肛管功能保护要求较高的复杂肛瘘患者，而 TSF 在一些相对简单的病例中仍是有效选择，临床选择手术方法时应综合考虑患者的具体情况进行专业判断。

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