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脑血管介入术后穿刺血管局部血管闭合器的应用效果及安全性*

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摘要 目的:分析脑血管介入术后穿刺血管局部血管闭合器的应用效果及安全性。**方法:**回顾性分析 2016 年 5 月~2017 年 12 月我院收治的 80 例颅内动脉瘤患者资料,按不同止血方式分为 43 例对照组和 37 例研究组。对照组予以手动压迫止血,研究组予以血管闭合器止血。比较两组操作成功率,血管创口处理时间,止血时间,制动时间,住院时间,血管内径,血流速度,应激反应, Kolcaba 舒适量表评分,并发症发生情况。**结果:**对照组和研究组操作成功率分别为 97.30%(36/37)和 100.00%(43/43),两组比较无差异($P>0.05$)。研究组血管创口处理时间、止血时间、制动时间和住院时间均低于对照组,比较有统计学差异($P<0.05$)。术前,两组血管内径及血流速度比较无差异($P>0.05$);术后,对照组血管内径无明显改变($P>0.05$),研究组血管内径低于对照组($P<0.05$),两组血流速度均下降,研究组下降更明显,比较有统计学差异($P<0.05$)。术后,两组皮质醇、血糖均上升,组间比较无差异($P>0.05$)。研究组并发症发生率低于对照组($P<0.05$)。**结论:**脑血管介入术后穿刺血管局部血管闭合器能够达到和传统手术压迫相似的应用效果,且并发症更少,安全性更高,值得推广。

关键词:脑血管介入术;血管闭合器;应用效果;安全性

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Application Effect and Safety of Cerebral Vascular Intervention
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ABSTRACT Objective: To analyze the application effect and safety of cerebral vascular intervention after puncture vascular local vascular closed. **Methods:** A retrospective analysis 80 cases of intracranial aneurysm patients who received therapy from May 2016 to December 2017 in our hospital, according to different hemostatic methods, those patients were divided into 43 cases in the control group and 37 cases in research group. Control group was subjected to manual compression and hemostasis, research group to local vascular closed to stop bleeding. operation success rate, blood vessel wound processing time, the bleeding time, braking time, length of hospital stay, blood vessel diameter, blood velocity, stress reaction, Kolcaba comfortable rating scale, the complications occurrence between two group was compared. **Results:** The operation success rate in control group and research group was 97.30% (36/37) and 100.00% (43/43), there was a statistical difference ($P<0.05$). Treatment time, hemostasis time, braking time and hospitalization time in research group all lower than those in the control group ($P<0.05$). Before surgery, blood vessel diameter and blood flow rate between the two groups was no difference ($P>0.05$). After surgery, the blood vessel diameter in the control group was no significant changes ($P>0.05$), blood vessel diameter in research group was lower than the control group ($P<0.05$). After surgery, cortisol and blood glucose in two group was increased, and there was no difference between the groups ($P>0.05$). Complication rate in research group was lower than the control group ($P<0.05$). **Conclusion:** Local vascular closed can achieve the same effect as traditional surgical compression, with less complications, higher safety and worth promoting.

Key words: Cerebrovascular intervention; Vascular closure device; Application effect; Security

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前言

动脉瘤是因动脉壁病变或者受损,导致动脉壁出现弥漫性或者局限性现象,予以搏动性、膨胀性为主要表现,能够发生于

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任何动脉系统,以颅内动脉瘤较为常见,能够压迫周围神经,且可发生破裂,明显影响患者身心健康^[1]。手术为其主要诊治方式,常规开颅手术的创伤性较大,不利于术后恢复,有一定局限性。其中脑血管介入术的属微创手术,是经腹股沟动脉或者股动脉等穿刺后进入脑血管,并实施介入检查或者手术的方式,能够清晰的显示造影血管区血管异常、侧支代偿及血流状态,利于脑部动静脉畸形、动脉瘤等病变的诊断与治疗^[2,3]。腹股沟动脉及股动脉为穿刺动脉的常用方式,术中发生血管痉挛的可能性较小,但术中抗血小板药物及抗凝药物的应用能够引起穿刺血管部位发生凝血功能异常,增加穿刺部位的出血量,并延长出血时间^[4]。压迫出血为介入术的常规止血手段,止血效果并不理想,同时制动时间相对较长。近年来,随着血管外科腔内技术的不断完善,StarClose SE 血管闭合器已广泛开展于临床,其作为脑血管介入术的新型止血方式,明显体现了其微创治疗优势,明显提高了手术成功率,并减轻相关手术并发症,降低手术危险性。本研究旨在探讨脑血管介入术后穿刺血管局部血管闭合器的应用效果及安全性,以指导临床治疗。

1 资料与方法

1.1 一般资料

回顾性分析我院 2016 年 5 月~2017 年 12 月我院收治的 80 例颅内动脉瘤患者资料,入选标准^[5]:经临床表现、影像学检查、脑血管造影检查等确诊为颅内动脉瘤;肝肾功能及凝血功能无异常;穿刺部位无严重硬结或者斑块。排除标准:全身感染性病变;泌尿系统病变;碘过敏;神经系统病变;药物或者酒精依赖史;过敏体质。按不同止血方式分为 43 例对照组和 37 例研究组。对照组男 14 例,女 29 例;年龄 38~67 岁,平均(52.61±7.06)岁;动脉瘤位置:大脑中动脉瘤 22 例,后交通动脉瘤 18 例,大脑前交通动脉瘤 3 例。研究组男 12 例,女 25 例;年龄 39~66 岁,平均(54.03±6.87)岁;动脉瘤位置:大脑中动脉瘤 20 例,后交通动脉瘤 16 例,大脑前交通动脉瘤 1 例。两组一般资料比较无差异($P>0.05$)。

1.2 方法

对照组予以手动压迫止血,脑血管介入术后延长拔管常规留置动脉鞘管,4~6h 后检测活化凝血时间低于 180s 后将动脉鞘管拔除,手动压迫 20~40 分钟,取弹力绷带包扎压迫 8h,将患肢制动 8h。研究组予以 StarClose SE 血管闭合器止血,第一步:交换鞘沿穿刺点放置到病人体内,左手握住交换鞘底座,右手顺着鞘置入闭合装置,并保持 Starclose 标志面向上。将闭合装置锁住鞘底座。检查确认。听到第一声 "Click",轻轻拉一下鞘底座确认已经锁入闭合装置。第二步:将左手放在稳定器 (Stabilizer) 上,使装置稳定在组织通道的适当角度。用右手食指和中指握住装置近端的柱杆,让拇指压住柱塞 (Plunger),在

装置近端作握注射器状。同轴使用器械并回撤装置 3 到 4 cm,准备撕开鞘管。右手拇指推进柱塞,务必保持弯曲导鞘笔直。检查确认可听到第二声 "Click",数字 "2" 出现在指示窗口。交换鞘在皮肤表面上被撕开。第三步:左手拇指始终放在稳定器 (Stabilizer) 上,使装置稳定在组织通道的适当角度。将右手食指放在装置的远端柱杆上,让两个中指扣入稳定器的圆环内,拇指压在拇指推进器上,在装置远端作握注射器状。始终保持设备与组织同轴,用右手稍稍回撤设备直到感到轻微的阻力。用右手拇指指腹推进拇指推进器直到数字窗。检查确认,可听到第三声 "Click" 数字 "3" 出现在指示窗口。第四步:左手拇指始终放在稳定器 (Stabilizer),用左手支撑住闭合夹递送管,将装置机身抬起至 60 至 75 度的角度。轻轻地装置在动脉顶面上向下按压,将闭合夹递送管定位在穿刺点顶部。可能会感觉到动脉的跳动。维持住往下压的力用右手拇指按压置放按钮,继续维持向下压力 2 至 3 秒。检查确认可听见第四声 "Click"。左手在病人身体上施加反向牵引,用右手撤出装置。使用消毒纱布压迫穿刺点周围区域,以挤出组织通道中的血液。使病人的腿得到支撑,让病人将其膝盖朝向自己的胸部弯曲,并让病人将头移离手术台并咳嗽。穿测点不再出血。观察两组血管创口处理时间、止血时间、制动时间和住院时间。

1.3 观察指标

技术成功判定标准:无因穿刺部位并发症进一步处理,无渗血,或经短时间压迫止血后无渗血即成功。于术前及术后 24h 选用彩色多普勒超声测定血管内径及血流速度。同期采集患者外周静脉血 2 mL,常规处理后于低温冰箱中待检,按酶联免疫法测定皮质醇水平,按葡萄糖氧化酶法测定血糖浓度,以上操作均严格参照说明书进行。Kolcabss 舒适量表评分:于术后 6h 及 12h 进行,包含整体舒适度、环境、社会文化、心理精神、生理等方面,分数越高提示患者舒适度越高。

1.4 统计学分析

数据处理选用 SPSS18.0 进行,数据均符合正态分布,用($\bar{x} \pm s$)表示计量资料,比较选用 t 检验进行,用[(例)%]表示计数资料,比较用 χ^2 检验, $P<0.05$ 有统计学意义。

2 结果

2.1 两组操作成功率比较

对照组和研究组操作成功率分别为 97.30%(36/37)和 100.00%(43/43),两组比较无差异($P>0.05$)。

2.2 两组血管创口处理时间、止血时间、制动时间和住院时间比较

研究组血管创口处理时间、止血时间、制动时间和住院时间均低于对照组,比较有统计学差异($P<0.05$),见表 1。

表 1 两组血管创口处理时间、止血时间、制动时间和住院时间比较($\bar{x} \pm s$)

Table 1 Comparison of the treatment time, hemostasis time, braking time and hospitalization time between the two groups($\bar{x} \pm s$)

Group	Treatment time(min)	Hemostasis time(min)	Braking time(h)	Hospitalization time(d)
Control group(n=43)	10.86± 1.54	29.61± 4.70	22.90± 3.21	4.60± 0.85
Research group(37)	3.75± 0.64 ^a	3.65± 0.53 ^a	4.86± 0.75 ^a	3.18± 0.42 ^a

Note: Compared with control group, ^a $P<0.05$.

2.3 两组手术前后血管内径及血流速度比较

术前,两组血管内径及血流速度比较无差异($P>0.05$);术后,对照组血管内径无明显改变($P>0.05$),研究组血管内径低

于对照组($P<0.05$),两组血流速度均下降,研究组下降更明显,比较有统计学差异($P<0.05$),见表2。

表2 两组手术前后血管内径及血流速度比较($\bar{x}\pm s$)

Table 2 Comparison of blood vessel diameter and blood flow velocity between the two groups before and after surgery ($\bar{x}\pm s$)

Group	Time	Blood vessel diameter(mm)	blood flow velocity(cm/s)
Control group(n=43)	Before surgery	7.42± 0.93	35.70± 4.21
	After surgery	7.67± 0.91	31.36± 3.02 ^b
Research group(37)	Before surgery	7.53± 0.89	36.21± 4.80
	After surgery	6.60± 0.54 ^{ab}	28.60± 2.71 ^{ab}

Note: Compared with control group,^a $P<0.05$; Compared with before surgery,^b $P<0.05$.

2.4 两组手术前后应激反应比较

术前,两组应激反应比较无差异($P>0.05$);术后,两组皮质

醇、血糖均上升,两组比较无差异($P>0.05$),见表3。

表3 两组手术前后应激反应比较($\bar{x}\pm s$)

Table 3 Comparison of stress response between the two groups before and after surgery ($\bar{x}\pm s$)

Groups	Time	Cortisol(ng/L)	Blood glucose(mmol/L)
Control group(n=43)	Before surgery	25.12± 3.42	4.80± 0.69
	After surgery	33.79± 5.40 ^b	7.14± 0.85 ^b
Research group(37)	Before surgery	24.87± 2.90	4.69± 0.75
	After surgery	32.01± 4.22 ^b	6.90± 0.96 ^b

Note: Compared with before surgery, ^b $P<0.05$.

2.5 两组术后 Kolcaba 舒适量表评分比较

对照组和研究组术后 6hKolcaba 舒适量表评分分别为(73.07± 9.52)和(79.41± 12.42)分,术后 12hKolcaba 舒适量表评分分别为(85.30± 15.29)和(91.86± 18.40)分,研究组术后 6h、12hKolcaba 舒适量表评分均高于对照组,比较有统计学差

异($P<0.05$)。

2.6 两组并发症比较

两组均有局部渗血、水肿、迷走反射及假性动脉瘤发生,研究组并发症发生率低于对照组,比较有统计学差异($P<0.05$),见表4。

表4 两组并发症比较[(例)%]

Table 4 Comparison of complications between the two groups[(cases)%]

Groups	Local oozing	Hematoma	Lost reflection	False aneurysm	Complication rate
Control group(n=43)	3(6.98)	9(20.94)	2(4.65)	3(6.98)	17(39.53)
Research group(37)	2(5.41)	2(5.41)	1(2.70)	1(2.70)	6(16.22) ^a

Note: Compared with control group,^a $P<0.05$.

3 讨论

颅内动脉瘤是一种于颅内动脉管壁产生的异常膨出,为脑血管的主要意外事件,多于中老年女性中发病,是导致蛛网膜下腔出血的首要因素^[9]。其发病机制尚未明确,多个研究表明其和颅内动脉壁局部腔内压力上升及先天性缺陷有关,同时和动脉硬化、感染等后天性因素也有一定联系^[9,10]。颅内动脉瘤发生后容易进展发展,且有破裂可能性,出血后因血管痉挛收缩及凝血块凝固可发挥止血目的,加上脑脊液作用,可进一步加快止血,但出血后 1~2 周纤溶现象较为明显,能够导致破裂处血液块液化及纤维网脆弱,导致再出血^[11]。其多好发于脑底动脉环分叉处和主要分支,其早期症状不明显,多为破裂时发生自

发性蛛网膜下腔出血表现,且可并发颅神经、视觉、偏头疼、颅内压增高等局部定位症状,其发病急,病死率高,及时治疗有着重要价值^[12,13]。

颅内动脉瘤以保守及手术治疗,其中部分患者经脑脊液引流、降低颅内压、防止再出血等保守治疗的效果欠佳^[14]。开颅手术的危险性高,且适应症较为狭窄。近年来,随着血管内介入术的不断完善,现已作为颅内动脉瘤的主要治疗手段,旨柔软在利用股动脉穿刺,于动脉瘤颈部或者囊内放置纤细微导管,并经微导管在动脉瘤囊内充满柔软钛合金弹簧圈,导致动脉瘤囊内血流消失,去除再次破裂出血的可能性^[15]。其可准确定位血管梗阻的位置及情况,促进闭塞及狭窄血管的再通,扩张管道,从而利于临床症状的缓解,其适用症较为广泛,且适用于身体

机能较差难以耐受相对较大程度创伤者^[16]。近期一个随机对照试验^[17],颅内动脉瘤患者应用脑血管介入术的手术出血量及住院时间明显优于传统开颅术,充分显示其微创优势。

但脑血管介入术中需加以小量抗凝及抗血小板药物以确保血糖通畅,且术后容易导致穿刺部位出血或者血肿,引起患者精神紧张、腰背疼痛及排尿困难等不适,进一步影响患者生活质量^[18]。加之颅内动脉瘤患者多为老年人群,其身体机能相对较差,运动功能及肢体感觉多伴程度不一的障碍,凝血功能也可发生异常,因此术后穿刺部位出血率高^[19]。既往多予以手动压迫或者动脉止血器压迫动脉,以预防术后出血,尽管手动压迫的止血效果成功率高,但其制动时间相对较差长,容易发生血肿及皮下血栓,且股静脉及股动脉距离较近,可一定程度的压迫股静脉,影响局部血流速度^[20]。动脉压迫器主要通过压迫血管穿刺点,并加以胶带固定,但长时间压迫股动脉能够产生静脉血栓、下肢动脉缺血等并发症,舒适度较差^[21]。StarClose SE 血管闭合器作为一种新型的止血技术,现已广泛开展于脑血管病介入术中,旨在通过金属钛夹闭合血管,其操作简便,且止血速度快,对患者运动能力的影响较小^[22,23]。本结果显示,手动压迫组操作成功率为 100%,StarClose SE 血管闭合器成功率略低于手动压迫,但组间比较无差异,说明血管闭合器能够达到和传统手动压迫相似的效果,证实其可行性。相关研究报道^[24],脑血管介入术后选择 StarClose SE 血管闭合器均低于手动压迫的制动时间及止血时间,利于患者预后改善。本结果显示,StarClose SE 血管闭合器组血管创口处理时间、止血时间、制动时间和住院时间均低于手动压迫组,证实血管闭合器能够快速止血,且术后对肢体的限制时间更少,更有利于患者接受。

Cacho-Díaz B 等^[25]研究报道,股动脉血流速度及血管内径能够客观反映其远端供血状态,通过测定其变化幅度能够提示下肢动脉闭塞情况。本结果显示,两组术前血管内径及血流速度无差异,术后手动压迫组上述指标无明显改变,血管闭合器组血管内径及血流速度均下降,考虑与其穿刺口周围伴组织性水肿,导致血管发生暂时性局部向心性狭窄,降低血流速度,术后炎症水肿消失后其血管狭窄得到解除,从而恢复管径。脑血管介入术作为一种微创手术仍存在一定的应激损伤,皮质醇作为一种糖皮质激素,主要由垂体及小丘脑调节,可维持机体正常的生理机能,任何不良刺激均可诱导其分泌,其浓度和应激刺激程度、持续时间有良好的相关性。应激源刺激下可使机体产生多种神经内分泌反应,增加血糖浓度。本结果显示,两组术后皮质醇及血糖浓度均较术前上升,但结果无差异,说明其局部创伤性相似。同时本研究发现,两组均有局部渗血、血肿、迷走反射及假性动脉瘤发生,但血管闭合器组并发症发生率更低,可能与其对股动脉的压迫时间较短,因此术后血肿可能性更低,与相关文献的结论一致。

综上所述,脑血管介入术后穿刺血管局部血管闭合器能够达到和传统手术压迫相似的应用效果,且并发症更少,安全性更高,值得推广。但本研究由于观察时间较短,且样本量偏小,有待于更多前瞻、随机大样本试验加以证实。

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