

DOI: 10.13241/j.cnki.pmb.2014.01.028

冠状动脉支架植入术后行冠脉旁路移植术

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摘要 目的:总结 15 例冠状动脉支架植入术后行冠状动脉旁路移植术的临床经验。**方法:**回顾分析行冠状动脉支架植入术后行冠状动脉旁路移植术 15 例患者的资料,男 10 例,女 5 例,平均年龄(61±5)岁。行冠状动脉支架植入术后再行冠状动脉旁路移植术时间间隔(24±4)月,冠状动脉内置入支架 3-6 枚,左室射血分数为 43%-64%,其中<50%为 3 例。全组行体外循环下冠状动脉旁路移植术 3 例,行非体外循环心脏跳动下冠状动脉旁路移植术 12 例。**结果:**全组共行动脉桥吻合 13 支,静脉桥 33 支;围术期并发低心排综合征 3 例,肺部感染 4 例,胸腔内出血行胸腔闭式引流术 2 例,本组患者无死亡病例。术后平均住院日(13±4)天。**结论:**对冠状动脉内支架植入术后再狭窄或(和)冠状动脉再血管化不足的病例进行冠状动脉旁路移植治疗,可使冠状动脉达到充分再血管化,提高冠心病患者生活质量及预后。

关键词:冠状动脉支架植入;冠状动脉旁路移植;非体外循环;体外循环

中图分类号:R541 **文献标识码:**A **文章编号:**1673-6273(2014)01-121-02

Coronary Artery Bypass Grafting Following Percutaneous Coronary Stenting

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ABSTRACT Objective: To review the clinical experience in 15 patients undergone coronary artery bypass grafting (CABG) after percutaneous coronary intervention (PCI). **Methods:** 15 patients underwent CABG were reviewed. Of 10 males and 5 females with a mean age of (61±5). The mean periods between CABG and PCI were (24±4) months. Left ventricle ejection fraction (EF) was 43%-64%, and there was 3 cases with EF<50%. Among them, 3 cases performed with CABG under cardiopulmonary bypass (CPB), and 12 cases with off pump coronary artery bypass grafting (OPCAB). **Results:** The numbers of arterial grafts and venous grafts were 13 and 33 respectively. There were 3 cases with low output syndrome, 4 cases with pulmonary infection and 2 cases with Pleural effusion undergoing closed thoracic drainage. There were no deaths after CABG, and the average postoperative length of stay was 13±4 days. **Conclusion:** CABG surgery is safe and effective in patients with coronary artery diseases who underwent PCI to improve myocardial blood flow.

Key words: Percutaneous coronary intervention; Coronary artery bypass; Off-pump; Extracorporeal circulation

Chinese Library Classification: R541 **Document code:** A

Article ID: 1673-6273(2014)01-121-02

前言

冠心病的主要病理变化是冠状动脉粥样硬化狭窄或堵塞所致的心肌缺血坏死。经皮冠状动脉内支架植入术(PCI)能够解除冠状动脉狭窄,恢复心肌灌注,已被广泛地应用于临床,是治疗冠心病心肌缺血十分有效的手段之一。但随着时间的推移和支架植入术病例的不断增多,由于血管内皮细胞的损伤与增生,以及血管平滑肌细胞过度增殖与迁移等多种病理机制的发生,其远期的不利结果 - 支架内再狭窄也日益增多,即使是应用药物洗脱支架,支架内再狭窄率仍然能够达到 10%。对于冠状动脉多根多处病变,尤其是合并左主干病变时,由于血管细小或广泛钙化、慢性完全闭塞、侧枝循环不够丰富等原因,支架植入术亦存在着冠状动脉不能完全血运重建的缺点。文献报

道,非完全血运重建患者远期生存率不高^[1-4]。我科自 2006 年 1 月 -2011 年 12 月对冠状动脉内支架植入术后再狭窄或(和)冠状动脉再血管化不足的 15 例病例进行冠状动脉旁路移植治疗,能够达到良好靶血管血运重建,解除患者心绞痛症状,提高患者生活质量,效果良好,现总结报告如下。

1 资料与方法

1.1 一般资料

15 例患者中男性 10 例,女性 5 例;平均年龄(61±5)岁,体重(70.3±11.3)kg。术前均表现为活动后胸痛伴气短不适,心功能 II 级(NYHA 分级)12 例,心功能 III 级 3 例,其中合并陈旧性心梗 8 例。术前同时合并其他疾病 12 例,包括高血压病、2 型糖尿病、混合性高脂血症。行冠状动脉支架植入术后再行冠状动脉旁路移植术时间间隔(24±4)月,冠状动脉内置入支架 3-6 枚,置入部位包括前降支近 - 中段(15 例),回旋支近 - 中段(12 例),右冠状动脉近 - 中段(10 例)。术前查心脏彩超左室射血分数(EF)43%-64%,其中 EF 值<50% 3 例。本组病例术前冠

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(收稿日期:2013-04-23 接受日期:2013-05-18)

状动脉造影均诊断冠状动脉 3 支病变(前降支 + 回旋支 + 右冠状动脉), 病变处狭窄程度 >80 %, 其中合并左主干病变 4 例, 病变处狭窄程度 >70 %。

1.2 手术方法

本组病例均首选非体外循环心脏跳动下的冠状动脉旁路移植术(OPCAB), 其中 3 例因术中血压、心率不稳定, 中转为非体外循环心脏停跳下行冠状动脉旁路移植术(CABG)。显露靶血管技术参见参考文献^[5-6], 结合 Trendelenburg 体位, 充分显露靶血管以便完全再血管化。首先将左侧胸廓内动脉(LIMA)与左前降支(LAD)吻合, 再将大隐静脉(SV)与其余靶血管吻合, 吻合口在 2 个以上时采用序贯式吻合。对行 CABG 的患者, 常规插管建立体外循环, 手术于心脏停跳下行冠状动脉搭桥远端血管吻合, 吻合完成, 开放升主动脉, 心脏复跳后, 升主动脉上侧壁钳, 作桥静脉血管与升主动脉近端吻合。

2 结果

本组病例共行动脉桥吻合 13 支, 静脉桥 33 支。左前降支桥血管采用左侧胸廓内动脉者 13 例, 其余均采用大隐静脉作为桥血管, 作序贯式吻合静脉桥 2 支。本组病例术中行升主动脉(AO)-前降支旁路移植 15 例, 升主动脉-回旋支(LCX)旁路移植 9 例, 升主动脉-第 1 对角支(D1)旁路移植 6 例, 升主动脉-左室后支(PLV)旁路移植 7 例, 升主动脉-右冠后降支(PDA)旁路移植 8 例。CABG 组主动脉阻断时间(73-110) min, 体外循环(CPB)转机时间(110-152) min (Table 1)。术后拔除气管插管时间(24±8)小时, 心外科 ICU 住院时间(3±1)天, 围手术期并发低心排综合征 3 例, 肺部感染 4 例, 左侧胸腔内积液 2 例, 行左侧胸腔闭式引流术后引流出暗红色血性液体约 600 mL。围手术期本组患者无死亡病例, 术后平均住院日(13±4)天 (Table 2)。本组患者术后随访 6 月-12 月, 无心绞痛、心肌梗死表现。

Table 1 Information during the bypassing procedure

Information	NO.	Unitsn
LIMA-LAD bypassing	13	Cases
AO-LAD bypassing	15	Cases
AO-LCX bypassing	9	Cases
AO-D1 bypassing	6	Cases
AO-PLV bypassing	7	Cases
AO-PDA bypassing	8	Cases
CPB time	110-152	min
Aortic clamping time	73-101	min

Table 2 Information after the bypassing procedure

Information	NO.	Unitsn
Endotracheal extubation time	24±8	Hours
ICU length of stay	3±1	Days
Postoperative hospital stay	13±4	Days
Postoperative low cardiac output syndrome	3	Cases
Postoperative pulmonary infection	4	Cases
Postoperative left pleural effusion	2	Cases

3 讨论

冠状动脉支架植入术是恢复冠状动脉血流的有效手段, 其手术创伤小, 患者术后恢复快, 可显著降低冠心病患者的死亡率, 提高生存质量, 因此是目前冠状动脉再血管化首选的治疗方式。但随着时间的推移和支架植入术病例的不断增加, 其远期的不利结果 - 支架内再狭窄, 也日益增多。同时对于多根多处的冠脉病变, 冠状动脉支架植入术亦存在着冠状动脉再血管化不全的弱点。目前公认对严重冠脉疾病可以积极采取外科手术治疗, 包括严重左主干病变、冠脉三支病变、内科药物治疗不理想或冠脉支架植入术后再狭窄者^[7-9]。本组病例患者冠脉前降支内均有支架置入(1-2 枚), 但因血管病变广泛, 行冠状动脉旁路移植术前造影见前降支内仍供血不足, 患者临床症状明显。本组病例手术过程中尽量选择主要血管进行血运重建, 保持血管桥通畅。相对于冠脉支架植入术, 冠脉旁路移植术能更好地缓解冠脉三支病变及左主干病变患者的心绞痛症状, 提高术后生活质量^[10,11]。而且, 此类病人进行冠脉旁路移植手术有一定特点和困难, 血管旁路移植部位较远, 对血管吻合技术要求高, 易发生术中、术后吻合口狭窄导致心肌缺血加重。

本组病例围手术期处理更注重强调维持心肌氧的供需平衡, 均给予患者低分子肝素皮下注射(100 IU/kg, 1 次/12 小时)抗凝治疗至术前 24 小时, 口服阿司匹林抗血小板患者停药时间 3-5 天, 口服氯吡格雷抗血小板患者停药时间 7 天。术前 24 小时内均给予患者硝酸甘油静脉持续泵入(0.1-0.3 μg/kg·min)改善冠脉供血, 预防冠脉痉挛^[12]。本组体外循环各例均采用冷氧合血灌注保护心肌, 氧合器均采用进口膜肺, 有效减少体外循环对肺的损伤, 保证了心肌氧供^[13]。

对冠状动脉支架植入术后再狭窄或(和)冠状动脉不完全血运重建的病例进行冠脉旁路移植治疗, 本组病例无围手术期死亡, 与初次 CABG 患者相比, 拔除气管插管时间、术后 ICU 住院时间及术后平均住院日均无明显差别。术后随访 6 月-12 月, 无再发心绞痛及心肌梗死。患者近期生活质量得到明显改善。既往 PCI 术需要 CABG 患者, 往往有前降支近端、后降支等的狭窄, 病变血管数量较多, 病情较重, 增加 CABG 术后危险^[14]。对于 PCI 后支架内再狭窄患者, 被迫在支架远端冠状动脉进行血管吻合, 血管管腔较细, 影响搭桥术后再血管化程度。因此, 对术者的吻合技术要求较高, 对于早期的操作有一定的难度, 存在 " 学习曲线 ", 因此可能会影响吻合口的质量, 造成中远期桥血管通畅率下降^[15], 应在具备较为熟练的吻合技术后, 再逐步开展为宜。另外, 本研究仍存在病例数较少, 缺乏长期桥血管通畅质量随访等不足。相对于冠状动脉支架植入术后再狭窄和(或)冠状动脉不完全血运重建的病例给予单纯内科药物治疗, 再次行冠状动脉旁路移植术可有效减少近期心绞痛、心肌梗死发作, 改善临床症状, 提高患者中、远期生活质量。

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