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# 全弓置换术与右半弓置换术治疗急性 DeBakey I 型主动脉夹层患者围术期效果和远期预后的研究进展

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**【摘要】** 急性DeBakey I型主动脉夹层是一种极为凶险的疾病,其发病后24 h内死亡率约为33%,发病后48 h内死亡率约为50%,发病后1周内死亡率约为80%,发病后1个月内死亡率高达95%。近年随着主动脉外科治疗理念和治疗方法不断完善,许多急性DeBakey I型主动脉夹层患者被及时救治。对于破口位于弓部、夹层假腔影响弓部三分支或破口位于降主动脉逆撕形成DeBakey I型主动脉夹层的患者,行全主动脉弓置换术基本已成为共识;但对于破口仅限于升主动脉且未影响弓部三分支的DeBakey I型主动脉夹层患者,其弓部处理方式(是否更换弓部及其三分支)尚有争议,即行全弓置换术与右半弓置换术尚有争议。本文主要综述了全弓置换术与右半弓置换术的手术方式及其治疗急性DeBakey I型主动脉夹层患者围术期效果、远期预后的研究进展,以期急性DeBakey I型主动脉夹层患者治疗方式选择提供参考依据。

**【关键词】** 动脉瘤, 夹层; 全弓置换术; 右半弓置换术; 治疗结果; 综述

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## Advances on Perioperative Effects and Long-Term Prognosis of Total Arch Replacement and Hemiarch Replacement in the Treatment of Patients with Acute DeBakey Type I Aortic Dissection

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**【Abstract】** Acute DeBakey type I aortic dissection is an extremely dangerous disease. The mortality rate is about 33% within 24 hours, 50% within 48 hours, 80% within 1 week and 95% within 1 month since the onset. With the progress of the concept and technic of aortic surgery, many patients with acute DeBakey type I aortic dissection have been treated in time. For patients with intimal rupture in aortic arch, branch vessels involved by false lumen and retrograde DeBakey type I aortic dissection, total arch replacement has become a common procedure. However, for patients with limited intimal rupture in ascending aorta and branch vessels were not involved, the treatment of aortic arch (whether to replace the branch vessels), that is, total arch replacement or hemiarach replacement is still controversial. This article mainly reviews the surgical methods of total arch replacement and right hemiarach replacement and their perioperative effects and long-term prognosis in patients with acute DeBakey type I aortic dissection, in order to provide reference of treatment for this lethal disease.

**【Key words】** Aneurysm, dissecting; Total arch replacement; Hemiarch replacement; Treatment outcome; Review

主动脉夹层是各种原因导致主动脉内膜破裂,血液进入中膜使主动脉血管壁分层而形成真假腔<sup>[1-2]</sup>。1965年,DeBakey教授根据主动脉夹层累及范围将其分为DeBakey I、II、III型,其中DeBakey I型主动脉夹层指原发破口位于升主动脉或主动脉弓部,夹层累及升主动脉、主动脉弓部、胸主动脉、腹主动脉大部分或全部,其病死率极高<sup>[3-4]</sup>。据报道,未经治疗的急性DeBakey I型主动脉夹层患者发病后24 h内死亡率约为33%,发病后48 h内死亡率约为50%,发病后1周内死亡率约为80%,发病后1个月内死亡率高达95%<sup>[5-7]</sup>。

目前,急性DeBakey I型主动脉夹层患者的主要治疗方法是外科手术,但由于破口位置及夹层累及范围不同,手术方式亦不同。对于破口位于弓部、夹层假腔影响弓部三分支或破口位于降主动脉逆撕形成DeBakey I型主动脉夹层的患者,行全弓置换术基本已成为共识;但对于破口仅限于升主动脉且未影响弓部三分支的DeBakey I型主动脉夹层患者,其弓部处理方式(是否更换弓部及其三分支)尚有争议<sup>[8]</sup>,即行全弓置换术与右半弓置换术尚有争议。本文主要综述了全弓置换术与右半弓置换术的手术方式及其治疗急性DeBakey I型主动脉夹层患者围术期效果、远期预后的研究进展,以期急性DeBakey I型主动脉夹层患者治疗方式选择提供参考依据。

### 1 全弓置换术与右半弓置换术的手术方式

1957年,DeBakey教授开创了升主动脉和主动脉弓置换术<sup>[9]</sup>;1975年,GRIEPP等<sup>[10]</sup>运用深低温停循环技术简化了

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升主动脉和主动脉弓置换术的手术操作,为现代手术方式奠定了基础。目前,全弓置换术指在深低温停循环脑保护的条件下行升主动脉、主动脉弓及其三分支的置换及象鼻支架植入术<sup>[11-12]</sup>,即首先置换升主动脉,在肛温降至15~20℃后开始深停,剪开弓部瘤体,于降主动脉植入象鼻支架后将人工四分叉血管远端与支架吻合,再吻合弓部三分支。右半弓置换术同样是在深低温停循环脑保护的条件下进行,但其仅置换升主动脉和部分主动脉弓<sup>[12-13]</sup>,即首先置换升主动脉,在肛温降至15~20℃后开始深停,保留主动脉弓部大弯侧,将弓部小弯侧剪开,再将人工血管与之吻合。

全弓置换术与右半弓置换术的主要差异是对弓部的处理,全弓置换术是将主动脉弓及其三分支全部置换为人工血管,并在弓部远端植入象鼻支架至降主动脉;而右半弓置换术仅对主动脉弓部小弯侧进行人工血管置换,保留了弓部大弯侧及其三分支,且未植入象鼻支架。全弓置换术较右半弓置换术复杂,手术时间长,创伤大,但其处理了弓部所有血管且植入了象鼻支架,对病变部位处理得更彻底<sup>[12-14]</sup>。

## 2 全弓置换术与右半弓置换术治疗急性DeBakey I型主动脉夹层患者的围术期效果

研究表明,与右半弓置换术相比,全弓置换术的手术操作流程多、时间较长、吻合口多、出血风险高<sup>[15]</sup>,故对于年龄较大或身体状况较差的患者,临床医生倾向于选择右半弓置换术,但这仍缺乏理论依据。既往研究表明,接受全弓置换术与右半弓置换术治疗的急性DeBakey I型主动脉夹层患者的机械通气时间、ICU滞留时间、二次插管或转入ICU发生率比较无统计学差异<sup>[16-17]</sup>,但与接受右半弓置换术治疗的患者相比,接受全弓置换术治疗的患者体外循环时间、阻断时间和心脏缺血时间较长<sup>[12, 18-21]</sup>,继而导致其围术期死亡率、肾功能不全发生率升高<sup>[12, 15, 22-23]</sup>。但也有研究表明,接受全弓置换术与右半弓置换术治疗的急性DeBakey I型主动脉夹层患者围术期死亡率比较无统计学差异<sup>[16, 21, 24-28]</sup>;而进一步分析发现,高龄、有心脏手术史、无脉、昏迷、低血压、体外循环时间延长、阻断时间延长是急性DeBakey I型主动脉夹层患者围术期死亡的高危因素<sup>[15, 29]</sup>。此外,急性DeBakey I型主动脉夹层患者围术期精神状态和脑部并发症发生情况是临床医生的关注重点。虽然全弓置换术的手术时间明显长于右半弓置换术,但近年来随着深低温停循环和脑灌注技术的发展,接受全弓置换术的患者围术期精神状态和脑部并发症发生率与接受右半弓置换术的患者相比无统计学差异<sup>[8, 14, 18, 20, 30-34]</sup>。

综上,全弓置换术手术过程中及围术期的风险均高于右半弓置换术,但两种手术的围术期死亡率无统计学差异,故大部分外科医生会倾向于行右半弓置换术以尽快帮助患者脱离生命危险。

## 3 接受全弓置换术与右半弓置换术治疗的急性DeBakey I型主动脉夹层患者的远期预后

目前,急性DeBakey I型主动脉夹层患者远期预后的主要观察指标为远期生存率、远端假腔闭合率、远端假腔血栓化发生率及再次手术发生率,其5年生存率为60%<sup>[35-37]</sup>。

研究表明,接受全弓置换术与右半弓置换术治疗的急性DeBakey I型主动脉夹层患者远期生存率比较无统计学差异<sup>[29, 38]</sup>;但COLLI等<sup>[22]</sup>研究表明,接受全弓置换术治疗的急性DeBakey I型主动脉夹层患者的远期生存率高于接受右半弓置换术治疗的患者;LIO等<sup>[12]</sup>研究表明,接受全弓置换术治疗的急性DeBakey I型主动脉夹层患者远期生存率低于接受右半弓置换术治疗的患者。分析上述研究结果不同的原因可能与研究对象、医疗水平及外科医生手术熟练程度存在差异有关。由于全弓置换术包括象鼻支架植入,故其远端假腔闭合率高于右半弓置换术<sup>[8, 14, 18]</sup>。但也有部分研究表明,接受全弓置换术与右半弓置换术治疗的急性DeBakey I型主动脉夹层患者远端假腔闭合率、假腔血栓化发生率比较无统计学差异,但接受全弓置换术治疗的急性DeBakey I型主动脉夹层患者的再次手术发生率低于接受右半弓置换术治疗的患者<sup>[30-32]</sup>。

综上,全弓置换术中处理的弓部血管问题和象鼻支架的植入降低了患者远期再次因胸腹主动脉假腔的扩张而行二次手术的风险,可提高患者远期生活质量。

## 4 小结与展望

目前,全弓置换术主要包括升主动脉置换、全主动脉弓置换和象鼻支架植入,右半弓置换术主要包括升主动脉置换和右半主动脉弓置换。其中右半弓置换术因手术时间短、创伤小等优势,在围术期死亡率及并发症发生率方面优于全弓置换术<sup>[15, 29]</sup>。但全弓置换术因有象鼻支架植入,其远期再次手术风险低于右半弓置换术<sup>[20, 29]</sup>。VALLABHAJOSYULA等<sup>[33]</sup>应用右半弓置换术联合顺行胸主动脉腔内隔绝术(thoracic endovascular aneurysm repair, TEVAR)治疗急性DeBakey I型主动脉夹层患者,结果显示,与单纯右半弓置换术相比,右半弓置换术联合TEVAR虽然未提高患者5年存活率,但其远端假腔闭合率升高(85%比43%, $P<0.05$ )。可见结合传统全弓置换术和右半弓置换术优点的手术方式可能是治疗急性DeBakey I型主动脉夹层的新方法。此外,对于慢性或暂时无生命危险的DeBakey I型主动脉夹层患者是否可以进行介入治疗尚在探索中。目前,关于全弓置换术与右半弓置换术治疗急性DeBakey I型主动脉夹层患者效果的对比研究多局限于单中心研究,且样本量较小,故两种手术方式的治疗效果差异仍有待多中心、大样本量研究进一步证实。

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本文无利益冲突。

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## · 指南 · 标准 · 共识 ·

# 《乌司他丁用于临床常见急危重症的专家共识》主要内容简介

序号	推荐意见	推荐剂量
1	针对急性胰腺炎尤其是重症急性胰腺炎患者, 建议在标准治疗的基础上早期 (患病1周以内) 应用乌司他丁 (推荐强度评分: 4.5分)	10万~20万U/次, 1~3次/d, 静脉滴注/静脉推注; 可根据病情严重程度适当调整剂量
2	针对休克患者, 建议早期应用乌司他丁 (推荐强度评分: 4.1分)	10万U/次, 1~3次/d, 静脉滴注/静脉推注; 可根据年龄、症状适当增减剂量
3	针对脓毒症患者, 建议在常规治疗的基础上应用乌司他丁 (推荐强度评分: 4.3分)	10万~30万U/次, 3次/d, 静脉滴注/静脉推注
4	针对重症肺炎患者, 建议在常规治疗的基础上应用乌司他丁 (推荐强度评分: 3.8分)	20万U/次, 2~3次/d, 静脉滴注/静脉推注
5	针对急性呼吸窘迫综合征患者, 在常规治疗的基础上, 可考虑应用乌司他丁 (推荐强度评分: 3.8分)	20万U/次, 3次/d, 静脉滴注/静脉推注; 可根据年龄、症状适当增减剂量
6	针对急性百草枯中毒患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.6分)	20万~30万U/次, 2次/d, 静脉滴注/静脉推注
7	针对重度急性有机磷中毒患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.6分)	10万~40万U/次, 3次/d, 静脉滴注/静脉推注
8	针对重度急性一氧化碳中毒患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.4分)	10万~30万U/次, 3次/d, 静脉滴注/静脉推注
9	针对重症中暑患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.8分)	10万~20万U/次, 2~3次/d, 静脉滴注/静脉推注
10	针对重度烧伤患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.8分)	10万~60万U/次, 2~4次/d, 静脉滴注/静脉推注; 可根据年龄、症状适当调整剂量
11	针对严重创伤患者, 在常规治疗的基础上, 可考虑尽早联合应用乌司他丁 (推荐强度评分: 3.6分)	10万~30万U/次, 2~3次/d, 静脉滴注/静脉推注
12	针对心搏骤停患者, 建议在自主循环恢复后, 在常规治疗基础上尽早应用乌司他丁 (推荐强度评分: 3.5分)	20万U/次, 2次/d, 静脉推注; 可根据年龄、症状适当调整剂量

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