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## 代谢手术改善糖尿病患者血管舒张功能及相关机制 [分享到](#)

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Title: Effects of metabolic surgery on vasodilatation in obese with type 2 diabetes and underlying mechanisms

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摘要: 目的 探讨代谢手术(metabolic surgery)对肥胖合并2型糖尿病患者血管舒张功能(vascular dilation)的影响及发生机制。方法 105例健康成人作为正常组,将31例肥胖合并2型糖尿病患者中11例未手术患者作为非手术组,20例代谢手术后患者作为代谢手术组。用高频超声检测所有观察对象安静状态下肱动脉内径(D1)、血流阻断后肱动脉内径(D2)及含服硝酸甘油后肱动脉内径(D3),计算出血流介导的血管舒张反应(flow-mediated dilation, FMD)及硝酸甘油介导的血管舒张反应(nitroglycerin-mediated dilation, NMD);测量20例代谢手术前后患者体质量、体质指数(BMI)、血压、血脂、空腹血糖、糖化血红蛋白、血清胰高血糖素样肽-1(glucagon-like peptide-1, GLP-1)及二肽基肽酶-4(dipeptidyl peptidase-4, DPP-4)。结果 代谢手术组与非手术组相比,血管舒张功能(FMD、NMD)具有显著差异( $P<0.01$ ),与正常组血管舒张功能(FMD、NMD)相比,差异无统计学意义( $P>0.05$ );而非手术组与正常组相比,血管舒张功能(FMD、NMD)具有显著差异( $P<0.01$ );与代谢手术组术前相比,术后GLP-1明显升高( $P<0.05$ ),DPP-4明显降低( $P<0.05$ )。结论 肥胖合并2型糖尿病患者血管舒张功能明显低于正常人,肥胖合并2型糖尿病患者通过代谢手术治疗,体质量、BMI、血脂、血压、GLP-1、DPP-4较术前明显改善,而使血管舒张功能得到改善。

Abstract: Objective To determine the effect of metabolic surgery on vasodilatation

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and investigate the underlying mechanisms in obese with type 2 diabetes.

**Methods** A retrospective study was carried out among 105 health individuals (normal control) and 31 obese with type 2 diabetes who were followed up in our department from May 2010 to June 2012. The 31 obese with type 2 diabetes were divided into 2 groups according to the patients' will, that is, metabolic surgery group ( $n=20$ ) and non-surgical group ( $n=11$ ). High frequency ultrasonography was used to measure the dilation of brachial artery (D1), dilation of postocclusion brachial artery (D2), and nitroglycerin mediated dilation (D3) of all patients at rest, in order to calculate flow-mediated dilation (FMD) and nitroglycerin mediated dilation (NMD) [ $FMD=(D2-D1)/D1 \times 100\%$ ,  $NMD=(D3-D1)/D1 \times 100\%$ ]. Body weight, body mass index (BMI), blood pressure, blood lipids, fasting glucose, glycosylated hemoglobin, serum glucagon-like peptide-1 (GLP-1) and dipeptidase-4 (DPP-4) were measured in the 20 patients before and after metabolic surgery.

**Results** Metabolic surgery group had an extremely improvement in vasodilatation (FMD and NMD) compared to non-surgical group ( $P<0.01$ ), and even had no significant difference with that of normal group ( $P>0.05$ ). Compared to normal group, there was an obviously decline in vasodilatation in non-surgical group ( $P<0.01$ ). Metabolic surgery resulted in obviously increased GLP-1 and decreased DPP-4 compared with preoperative data ( $P<0.05$ ).

**Conclusion** Obese with type 2 diabetes has worse vasodilatation compared to normal people. Metabolic surgery exerts great effect on the body weight, BMI, blood lipids, blood pressure, GLP-1, and DPP-4 in obese with type 2 diabetes, and significantly improves vasodilatation in obesity with type 2 diabetes.

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