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ADVENTITIAL DISSECTION OF THE RADIAL ARTERY GRAFT IN CABG: A NEW SURGICAL APPROACH TO REDUCE GRAFT SPASM

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Purpose

The radial artery (RA) has become a routinely used conduit for coronary bypass surgery. One potential disadvantage of the RA is its higher susceptibility to vasospasm compared to other arterial conduits. We studied the effects of adventitial dissection as a new surgical method for reducing vasospasm.

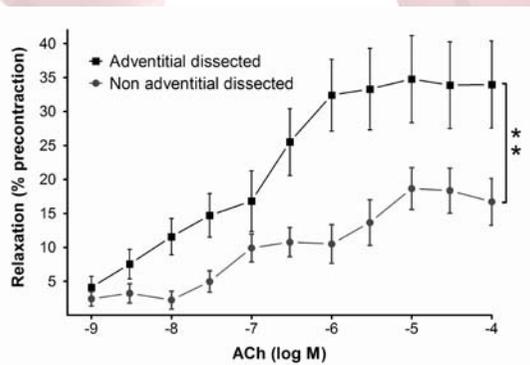
Methods

RA of patients undergoing CABG (n=15) were harvested and irrigated with 1% papaverine solution. Total adventitia and bundles of circumferential collagen fibers were dissected longitudinally on the ventral side of the RA using coronary scissors. Of each RA, surplus distal segments with and without adventitial dissection were obtained for histological and morphological evaluation, and pairwise assessment of vasoreactivity during organ bath experiments.

Results

Histology and morphology of RA segments confirmed that the adventitial dissection procedure removed the outermost layer of the adventitia of the ventral side of the RA, including large and middle-sized bundles of polymerized collagen yet without further damage to the media and intima. Furthermore, adventitial dissected RA ring segments subjected to 10 nM U-46619, a thromboxane A₂/prostaglandin H₂ receptor agonist, showed a significantly smaller contraction-response, and larger vasodilation to increasing concentrations of acetylcholine, as compared to RA segments with intact adventitia (maximal vasodilation was 35% and 15%, respectively, p<0.01).

Figure 1: Effect of adventitial dissection on endothelium-dependent relaxation to ACh in ring preparations of RA segments obtained from patients undergoing CABG. Relaxation is expressed as percentage of maximum precontraction to 10 nM U-46619. Data are presented as mean \pm S.E.M. (n=15) for the whole CR-curve. ** indicates p<0.01; ACh = acetylcholine



Abstracts

Conclusion

When the aim is to reduce RA graft spasm, adventitial dissection with interruption of collagen bundles of the RA graft may provide a new surgical approach requiring minimal tissue handling.

