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**1:** [Circulation](#). 1990 Nov;82(5 Suppl):IV9-18.

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### The reversibility of canine vein-graft arterialization.

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We assessed the reversibility of functional and morphological changes of arterialized vein segments by returning them to the venous circulation. Thirteen dogs underwent right carotid and femoral veno-arterial grafting. After 12 weeks, veno-arterial grafts were removed for contractility (norepinephrine [NE] and 5-hydroxytryptamine [5-HT]), luminal prostacyclin (PGI<sub>2</sub>), and morphometric analyses; the remaining segments were used as left jugular and femoral veno-venous grafts. After another 12 weeks, the veno-venous grafts were harvested. To NE, veno-arterial grafts (ED<sub>50</sub>, 5.4 +/- 0.1 [-log M]) were less sensitive than control veins (ED<sub>50</sub>, 6.0 +/- 0.2) or veno-venous grafts (ED<sub>50</sub>, 6.4 +/- 0.2) but were more sensitive than control arteries (ED<sub>50</sub>, 4.0 +/- 0.1); the maximum tension of veno-arterial grafts (6.2 +/- 0.6 g) was greater than that of veins, less than that of arteries (9.8 +/- 1.0 g), and comparable with that of veno-venous grafts (5.1 +/- 1.1 g). To 5-HT, veno-arterial (ED<sub>50</sub>, 7.5 +/- 0.1) and veno-venous (ED<sub>50</sub>, 7.3 +/- 0.2) grafts were more sensitive than arteries (ED<sub>50</sub>, 6.0 +/- 0.3), while the vein was unresponsive; the maximum tension of veno-arterial grafts (5.0 +/- 0.7 g) was less than that of arteries (6.9 +/- 0.9 g) and greater than that of veno-venous grafts (1.4 +/- 0.3 g). PGI<sub>2</sub> production in veins (3.6 +/- 0.8 ng/ml), veno-arterial grafts (3.9 +/- 0.8 ng/ml), and veno-venous grafts (3.3 +/- 0.9 ng/ml) was comparable and less than that of arteries (6.4 +/- 0.9 ng/ml). Veno-arterial graft intimal thickness (127 +/- 8 microns) and intimal area (15.6 +/- 1.8 x 10<sup>(3)</sup> microns<sup>2</sup>) tended to be greater than that in the veno-venous graft (113 +/- 9 microns and 12.4 +/- 1.8 x 10<sup>(3)</sup> microns<sup>2</sup>); also, the veno-arterial graft medial area (103.0 +/- 7.3 x 10<sup>(3)</sup> microns<sup>2</sup>) was greater than that of the veno-venous graft (80.3 +/- 6.9 x 10<sup>(3)</sup> microns<sup>2</sup>), thereby resulting in a similar relative intimal area (13 +/- 1%). Therefore, some changes associated with arterialization, for example, adrenergic sensitivity, maximum tension to 5-HT, medial thickening, and perhaps intimal hyperplasia, reverted toward venous values when replaced in the venous environment, possibly due to variations in pressure, flow, shear stress, and/or graft preparation techniques. Luminal PGI<sub>2</sub> was unchanged in the grafts, implying that graft contractility was not modulated by luminal PGI<sub>2</sub>.

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