



A brief comment on the true origin of myocardial revascularization procedures

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Comment on: Altarabsheh SE, Sheikh AM, Ilyas S, *et al.* Conduits in coronary artery bypass grafting. *AME Med J* 2021;6:16.

Received: 20 July 2021; Accepted: 12 August 2021; Published: 25 September 2021.

doi: 10.21037/amj-21-36

View this article at: <https://dx.doi.org/10.21037/amj-21-36>

We have read with great interest the review article by Altarabsheh *et al.* (1) regarding conduits used in coronary artery bypass grafting (CABG). We wish to congratulate them on the quality of their article, but we would also like to make a brief comment regarding the history of surgical procedures devised to create new sources of irrigation to the ischemic myocardium.

It is not entirely correct to claim that internal thoracic artery (ITA) was the first used as a conduit in CABG by Vineberg in 1946. At that time, the Canadian surgeon's work was completely experimental (2,3). Experimental research in animals generally does not mark important milestones in the history of modern medicine, and in the case of cardiac surgery it should be no different. Attempts have been made in the past to associate CABG with Vineberg's name, and compelling reasons have been put forward to avoid such a relationship (4).

What Vineberg really did for the first time on April 28, 1950 was the direct implantation of the ITA into the left ventricle wall for the relief of myocardial ischemia (5). Unfortunately, the patient, a 53-year-old tailor, died two days later from acute thrombotic occlusion of the left anterior descending artery, but the implanted ITA was patent throughout (6). That finding motivated Vineberg to trust the eventual effectiveness of his technique and 5 months later he managed to perform it with favorable results.

Conceptually, the operation proposed by Vineberg should not be considered a CABG, since it is not based on

performing grafts on diseased coronary arteries. Although he knew that the narrowing of the coronary arteries first segments was the main cause of myocardial ischemia (7), the real objective of his procedure was not to bypass this stenosis but to create a new source of myocardial irrigation from extracardiac origin, through implantation of a chest wall artery into the heart muscle. By that date, Sones had not yet introduced coronary angiography, so it was difficult to know with certainty whether the vessels responsible for irrigating the “implanted” territory were critically obstructed.

Therefore, it is incorrect to place the birth of CABG in 1946 or even 1950. Usually, cardiac surgeons take the year 1967 to mark that historic moment, coinciding with the first cases operated by Favaloro at the Cleveland Clinic in Ohio. However, that probably shouldn't be considered the appropriate date either.

As is known, in 1990 the American surgeon William Polk Longmire Jr. confessed to Harry B. Shumacker that in early 1958 he had performed the first anastomosis of the right ITA with the right coronary artery (RCA). While practicing his novel open endarterectomy technique, the completely calcified RCA of two of his patients was destroyed in his hands. Faced with the imminent procedure failure and the probable patients' death, he decided to anastomose the ITA to the RCA remnant and take advantage of its flow to irrigate the myocardium, a possibility whose feasibility had already been demonstrated by Vineberg, but using a

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different method (8,9).

Three decades later, Longmire said the operations were successful, but being too experimental and daring procedure for its time, ethical issues probably prevented him from claiming authorship for a surgery that would eventually change the history of modern medicine. His patients probably never knew the nature of the surgery they had undergone, and the surgeon waited 32 years to report the actual life-saving technique. For these reasons, the exact date of the first CABG has never been known. We have recently theorized that it probably occurred on March 17, 1958 (5). That day Longmire operated on the fourth of his small series of patients undergoing direct-vision coronary endarterectomy. Interestingly, contrary to the other cases, this was the only one in which he did not describe any procedure on the RCA, he did not even explore it or state his opinion in relation to the severity of his possible stenosis.

Longmire's "carelessness" in reporting the exact procedure performed that morning may cast doubt on his actual role in this heart surgery milestone. However, there should be no reason to question Longmire's integrity and honesty, and his knowledge and ability to perform the first CABG in history should not be doubted. By that time, he could already be considered one of the most renowned American surgeons, and long before he had been unconsciously preparing to perform this surgery: in the 1940s he had revolutionized esophageal cancer surgery by using the flow of the ITA to irrigate the jejunum in the thoracic cavity and furthermore, he had been Alfred Blalock's first assistant during many cardiac surgeries, including the first Blue Baby Operation on November 29, 1944 (8,10).

On the other hand, it must be remembered that cardiac surgeons, deeply committed to their surgical practice, frequently and curiously delay the publication of some of their most important surgeries. It is an issue that does not seem to worry them too much since they are generally historical moments surrounded by many witnesses. Therefore, it is probably also not correct to state that the great saphenous vein was used first by Favaloro in 1968 (1). David Sabiston had already used it in 1962, something that he did not consider important to report immediately and he waited 12 years to do so (4).

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was a standard submission to the journal. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <https://amj.amegroups.com/article/view/10.21037/amj-21-36/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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doi: 10.21037/amj-21-36

Cite this article as: López de la Cruz Y, Pérez-Machado LB. A brief comment on the true origin of myocardial revascularization procedures. *AME Med J* 2021;6:33.