

Techniques Useful in Complex Microvascular Anastomosis

Laurent Ganry, MD*

Department of Head and Neck Surgery, Gustave Roussy Cancer Center, Villejuif Cedex, France



INTRODUCTION

A microvascular anastomosis is demonstrated in this video as an approach for reconstructive surgery of the head and neck. This series of sutures has the potential to offer many advantages in situations such as those where there is limited available working space, weak vessels (for example, vessels that have been irradiated or that have atherosclerotic plaques) or suturing in tension or with small vessels (less than 0.8 cm in diameter). A link to the video relating to this article can be found at: <https://doi.org/10.24983/scitemed.imj.2021.00151>

ARTERIAL ANASTOMOSIS

During the video, arterial anastomosis was initiated using back-wall suturing without the use of vascular double-clamps (Figure 1A-B). There has been only one vascular single clamp used to control arterial blood flow far from the work area. It allows intimal compression to be performed in relatively healthy regions of poor-quality or under-tension vessels, thus minimising endothelial damage as well as avoiding vessel turnover and stretching of the endothelium. Following that, the stitches were performed in a regular fashion on the lateral walls (Figure 1C-D). A running suture was placed in the

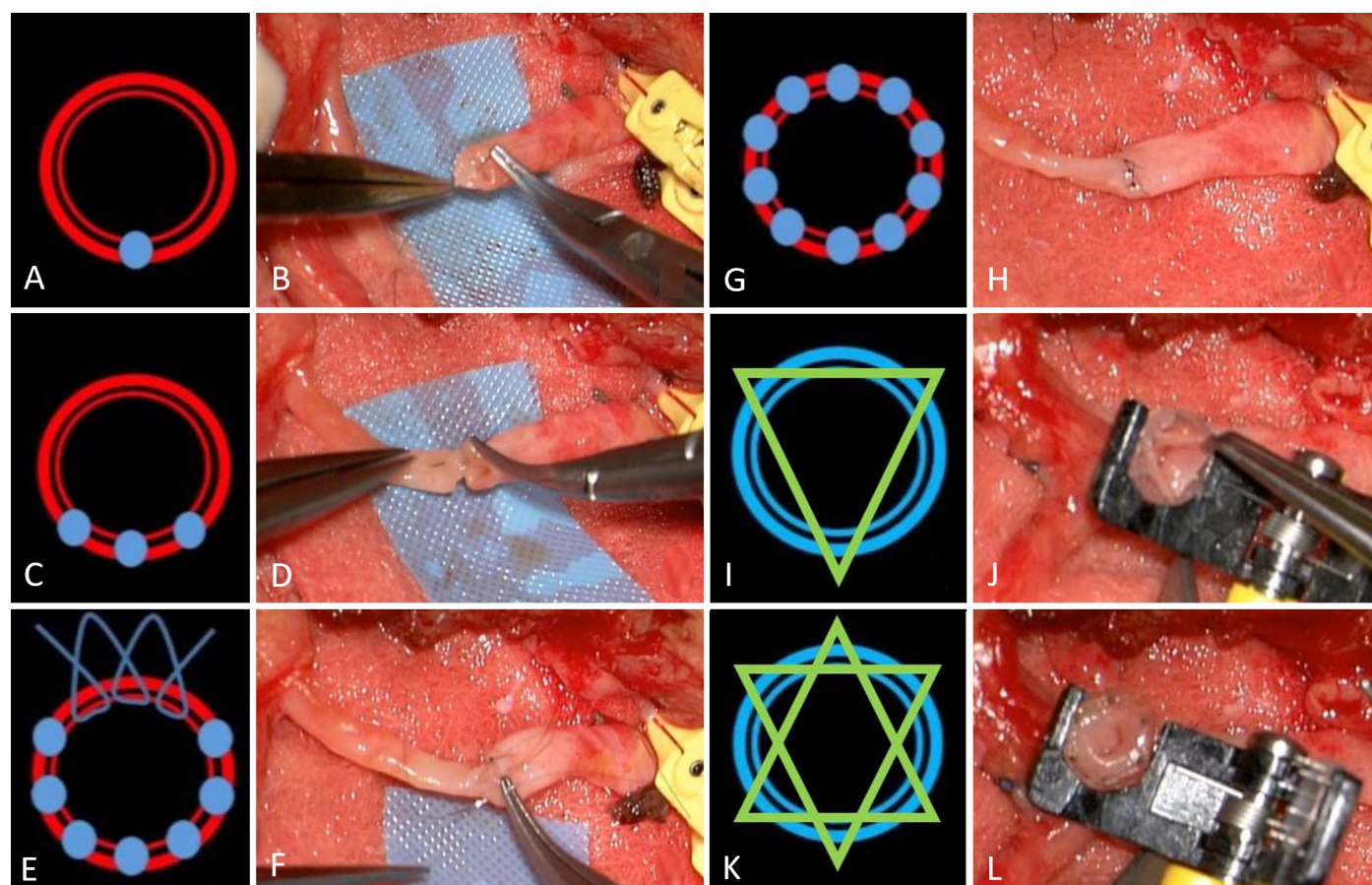


Figure 1. (A, B) Arterial microvascular anastomosis using a back wall technique. (C, D) Arterial microvascular anastomosis with regular single stitches situated on the lateral wall. (E, F) The arterial microvascular anastomosis is performed with three to four loops of the running anterior wall technique. (G, H) A microvascular anastomosis of the arteries has been achieved. (I, J) A three-pin venous microvascular anastomosis using a triangular technique. (K, L) A venous microvascular anastomosis, which has been implanted with six pins on one side.

anterior portion of the lumen in order to provide adequate visual control (Figure 1E-F). As of this point (Figure 1G-H), the arterial single vascular clamp remained in place.

VENOUS ANASTOMOSIS

Anastomosis among the vessels was then performed based on a triangulation technique, with a coupler device utilized for vessels with a diameter ranging between 0.8 and 4.0 mm (Figure 1I-J). This particular technique allows for a higher level of venous stabilization when compared to a manual suturing method without vascular double-clamps. It was of the utmost importance that we attached the vessel endothelium onto the device (and not just the media). There should be no valves located near the venous anastomosis. It was at this point that the single arterial clamp was released (Figure 1K-L) to enable the veins to be sutured together. The dark venous blood flow from the flap and its quality can be observed in this manner prior to the device being closed on itself and reinforced with a mosquito forceps. Consequently, there was no need to conduct a venous milking patency test. Vein anastomoses should be placed on top of arterial anastomoses to prevent vascular compression.

CONSIDERATIONS

From the author's perspective, a back-wall suture technique with the use of a single clamp may lead to a satisfactory outcome for vessels under 0.8 mm in diameter or in lymphaticovenular anastomosis. A caution should be taken to avoid using a double vascular clamp during arterial suture: in the case of right-handed surgeons, the right arterial vessel can prove difficult to control, so the single clamp should be left in place as a temporary ballast.

ARTICLE INFORMATION

***Correspondence:** Laurent Ganry, MD, Department of Head and Neck Surgery, Gustave Roussy Cancer Center, 94805 Villejuif Cedex, France. Email: laurentganry@hotmail.fr

Received: Aug. 20, 2019; **Accepted:** Oct. 16, 2019; **Published:** Dec. 16, 2021

DOI: [10.24983/scitemed.imj.2021.00151](https://doi.org/10.24983/scitemed.imj.2021.00151)

Video Link: <https://doi.org/10.24983/scitemed.imj.2021.00151>

Disclosure: The video won the award for Microsurgical Videos from the International Microsurgery Club on Facebook.

Ethics Approval and Consent to Participate: The study is in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Funding: The study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest: The author reports no financial or other conflict of interest relevant to this article, which is the intellectual property of the author.

Copyright © 2021 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY). In accordance with accepted academic practice, anyone may use, distribute, or reproduce this material, so long as the original author(s), the copyright holder(s), and the original publication of this journal are credited, and this publication is cited as the original. To the extent permitted by these terms and conditions of license, this material may not be compiled, distributed, or reproduced in any manner that is inconsistent with those terms and conditions.

Publisher Disclaimer: It is pertinent to note that all opinions and statements made by the author(s) throughout this article are solely those of the author(s). They may not be representative of those of their affiliated organizations, the publishing house, editors, or other reviewers since they are the opinions and statements of the author(s) alone. The publisher does not guarantee or endorse any statements made by the manufacturer of any product mentioned in this article or the author's evaluation.