

A New Method of Microvascular Anastomosis for Atherosclerotic Vessel

Tzong-Shiun Li, Pai-Tsung Chiang, Hsing-Guang Lai, Yi-Ten Liu, Hung-Chi Chen

Objective: A new technique to deal with difficult end-to-end anastomosis and for anastomosis of atherosclerotic arteries in head and neck surgery by using a self-designed loop holder.

Methods: A C-wire is twisted to form a loop at the tip and a needle holder is used to grasp the twisted wire. The wire is then used to guide the needle through the vessel wall during anastomosis. Minimal contact of the intima with the wire occurs. This technique is specifically used to deal with difficult end-to-end anastomosis for atherosclerotic arteries in head and neck surgery.

Results: The mean follow up period was 14 days after surgery. All cases with no anastomotic complications such as arterial or venous insufficiency, artery occlusion or venous thrombosis. The diagnosis is according to the appearance and capillary refilling time of the flap. One case had re-exploration because of persistent oozing from the penrose drain for 8 hours. There were no anastomotic complications found during operation.

Conclusions: The new method provides better handling of the vessel and a satisfactory completion of the anastomosis in a difficult condition.

Key words: diabetes mellitus, hyperlipidemia, atherosclerosis, microvascular anastomosis

Atherosclerosis is common in patients who have diabetes mellitus and hyperlipidemia, and also in smokers. Atherosclerotic vessels pose a challenge to microvascular surgeons. Many free flap failures are due to technical problems in performing the anastomosis, such as hand tremor, fragile vessels and the dislodgement of atherosclerotic plaque to become a thrombus within the vessel as the micro-needle holder tries to pass the needle through the arterial wall. In order to cope with the issue of plaque fracture, we try to use a twisted C-wire, grasped with a needle holder, to provide a tenting effect, which can help us complete the anastomosis in such trying condition. Although there is a learning curve to become proficient in the use of this technique, it provides better

handling of the vessel and a satisfactory completion of the anastomosis.

Methods

A C-wire is twisted to form a loop at the tip and a needle holder is used to grasp the twisted wire as shown in Fig 1A. Fig 1B shows how to twist a C-wire to form a loop in the front end step by step. In our experience, 0.55mm of C-wire is most commonly used in head and neck reconstruction.

When both ends of the arteries are prepared, the loop holder can now be placed into the lumen of the vessel and

From the Department of Plastic Surgery, E-Da Hospital, I-Shou University

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Address reprint request and correspondence to: Dr. Tzong-Shiun Li, Department of Plastic Surgery, E-Da Hospital, 1, E-Da Rd, Jiau-shu Tsuen, Yan-chau Shiang, Kaohsiung County, Taiwan, Tel: 886-7-6150011ext 2977, Fax: 886-7-6155581,

E-mail: li.tsa2@msa.hinet.net