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Abstract

Superficial temporal artery-middle cerebral artery(STA-MCA) bypass is a well documented procedure used to treat Moya Moya disease. Here we present a case of a complications, female with Moya Moya disease who presented a few months prior to our evaluation with right hemiparesis and slurred speech. Brain MRI/MRA showed DWI restriction in left MCA territory and severe stenosis in left M1.She was referred to neurosurgery for evaluation for bypass surgery. A left frontotemporal craniotomy was performed. A double barrel bypass was performed with the frontal branch of STA to cortical M4 branches. There was no viable donor STA parietal branch. After multiple attempts at anastomosis, the tip of a 22 gauge plastic needle was inserted inside the lumen. This gave the artery its natural form and proved to be a more efficient and faster way of anastomosing the arteries. Indocyanine green angiography(ICG) and a post op computed tomography angiogram showed patent bypass. There were no complications and the patient had no neurologic deficits post op.

Introduction

Superficial temporal artery-Middle cerebral artery (STA-MCA) bypass is a proven procedure to treat Moya Moya disease. The first successful bypass was performed in 1967 by Yasargil. Double barrel(DB) bypass technique utilizes the frontal and parietal branches of STA and creates an anastomosis with M4 segment of MCA. DB bypass has proven to be effective at restoring flow to ischemic region and is associated with low mortality. Performing bypass surgery presents a unique challenge to vascular surgeons who aim to master this procedure with a steep learning curve. Here we present a new technique at performing bypass surgery.

Case Presentation

49 year old female with history of diabetes mellitus and hypertension with a remote history of left MCA stroke. She was placed on dual antiplatelet therapy. She now presents with slurred speech and worsening right hemiparesis. Head CTA demonstrated severe stenosis at M1 and Brain MRI showed infarction at MCA territory. Almost complete occlusion of M1 and lenticulostriate collaterals confirmed early stages of Moya Moya disease. Patient was referred for bypass surgery.

Patient was place supine with bump on ipsilateral shoulder. A standard frontotemporal craniotomy was performed. STA and its branches were dissected. There was no viable STA parietal branch and thus two branches of frontal branch were used for double barrel bypass with a frontal and temporal M4. Fish mouth arteriotomies were done on both STA branches in preparation for end to side anastomosis. Heel and toe stitches were placed. After this, donor and recipient arteries kept collapsing making it challenging to continue to place interrupted stitches on sides. We then placed the tip of a 22 gauge needle on recipient(M4 vessel) which it then re created the anatomical shape and contour of the vessel. This enable faster and more efficient completion of anastomosis which was removed before last stitches were thrown. 9-0 nylon were used in interrupted fashion. Clips were then removed and it showed patent anastomosis confirmed with ICG angiography. Closure was done in standard fashion. Patient woke up without deficits.

Conclusions

STA-MCA bypass is a complex surgery with a steep learning curve. We describe the technique of using the tip of a plastic 22 G needle as a stent to help create the contour of the vessel and thus facilitating the anastomosis.

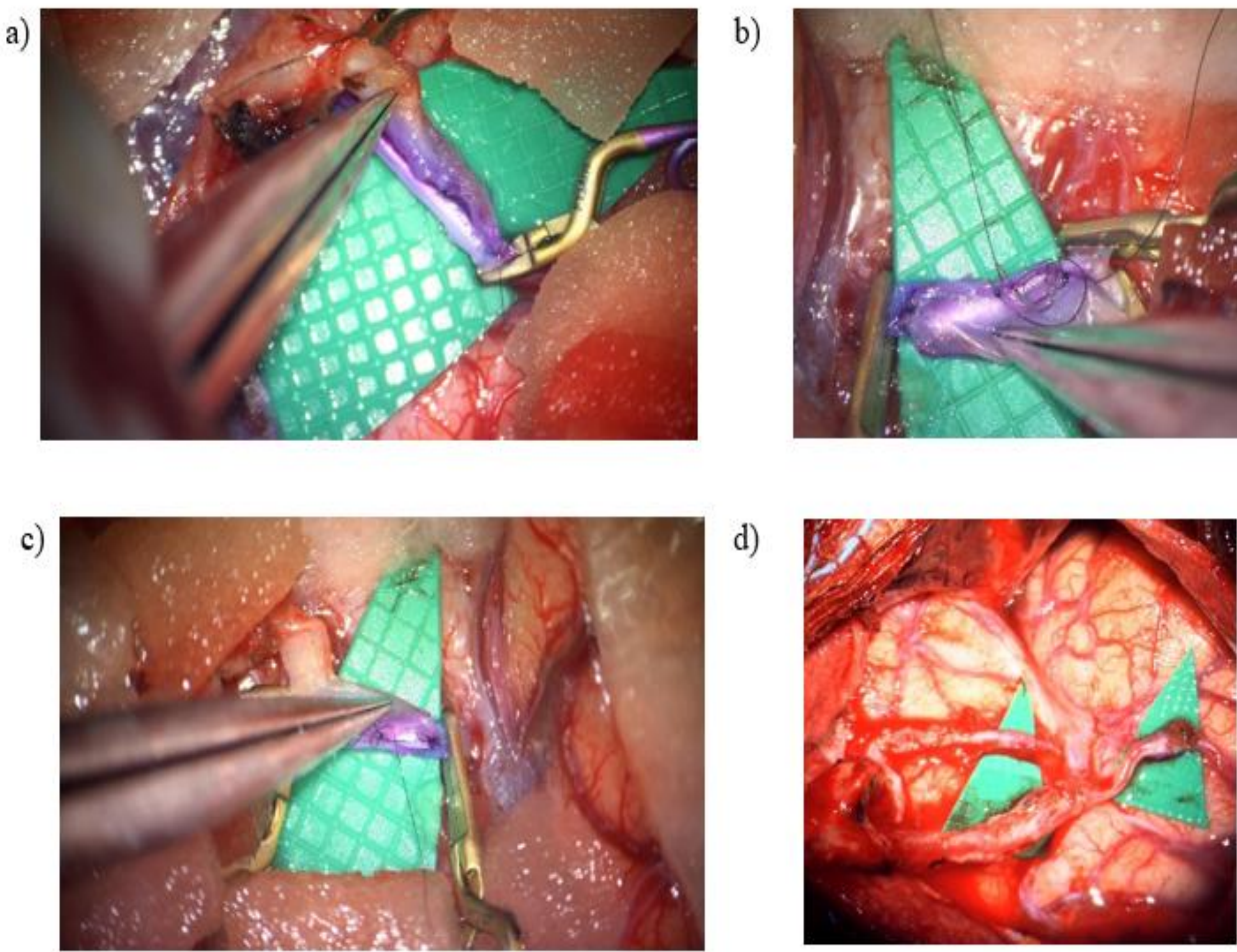


Figure 1. Intra operative images of stent assisted STA-MCA bypass.

- a) Stent inside M4 vessel b) Side sutures c) Final suture before removing stent
d) Patent bypass

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