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Case report

SUCCESSIVELY OFF-PUMP CORONARY ARTERY BYPASS GRAFTING AND CAROTID STENTING IN A PATIENT WITH AN ASYMPTOMATIC CAROTID LESION.

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SUMMARY

The case we are presenting is 70 years male with triple vessel coronary artery disease in combination with a unilateral asymptomatic carotid lesion of A. Carotis communis dextra. He underwent off-pump coronary artery bypass grafting (OPCAB) subsequently right carotid stenting with an excellent outcome.

Keywords: OPCAB, carotid lesion, Carotid stenting, Stroke prevention,

BACKGROUND

Coronary artery bypass surgery (CABG) is a treatment of choice for patients with multivessel coronary artery disease However, CABG could involve a higher risk of cerebro-vascular accidents (CVAs) compared with percutaneous coronary intervention (PCI).

Carotid artery disease is also considered an important risk factor for stroke (CVA) after CABG [1, 2]. Hemodynamically significant carotid artery stenoses are responsible for up to 30% of the stroke arising after CABG [1, 2]. This makes such patients a very high-risk group for operative treatment.

Symptomatic patients with significant carotid stenosis and with acceptable surgical risk should undergo carotid endarterectomy (CEA),(class I recommendation, level of evidence A). [3, 4] CAS is recommended as an alternative to CEA in symptomatic patients with significant carotid stenosis who are at low risk for endovascular intervention (class I recommendation, level of evidence A). [4, 5] The definition of significant carotid stenosis is 70% if documented by noninvasive imaging or 50% if documented by invasive carotid angiography. [6, 7]

In patients undergoing CABG, the prevalence of the major carotid disease is known to range from 2.8 to 22%. On the other hand, among patients undergoing endarterectomy, the prevalence of coronary artery disease is between 28% and 40%. [8]

Another 10-year study of Simultaneous Carotid Artery Stenting and Heart Surgery showed that the same-day hybrid approach appeared safe in terms of early and long-term results not only for CAS and isolated CABG but also for CAS and isolated noncoronary procedures. In complex cases, the rate of stroke and myocardial infarction seemed low. [9]

However, another big meta-analysis study did not find evidence that outcomes after same-day CAS + CABG were better than after staged interventions. [10]

In recent years off-pump coronary artery bypass surgery (OPCAB) has been largely applied as a less invasive method of myocardial revascularization. One of its advantages is that it could decrease the systemic inflammatory effects caused by cardiopulmonary bypass (CPB) and have a reduced risk of postoperative stroke by up to 30% when compared with conventional on-pump surgery. OPCAB performs better across criteria such as low mortality, low morbidity, and lower costs, especially in high-risk patients [3].

CASE PRESENTATION

A 70- year- old male, admitted to our emergency room after he was examined by his primary care physician for evaluation of recently aggravaiting symptoms,like chest pain with irradiation to the left hand and dyspnea, lasting for 15 minutes. He has been suffering from chest pain during ordinary physical exertion for the last 6 months, with a past medical history of hypertension, diabetes mellitus type 2 and dyslipidemia.

Physical examination: Intact psychiatric and neurological status. No pathological finding over the respiratory or gastrointestinal system. No signs of low cardiac output syndrome.

ECG: normal sinus rhythm 80 b/min, no signs of active ischemia.

The echocardiographic evaluation revealed moderate diastolic dysfunction. Low to moderate LV hypertrophy and low to moderate aortic valve insufficiency. Hypokinetic inferior wall. Ejection fraction 60%

Coronary angiogram showed: Intact left main coronary artery, left anterior descending artery (LAD) with distal segment occlusion, diagonal artery (D1) 90% stenosis, left circumflex artery (LCx) 70% stenosis, obtuse marginal (OM1) and (OM2) are with critical stenosis 90%, right coronary artery (RCA) 80% stenosis in the distal segment. Fig. 1, Fig. 3.

Fig. 1. Preoperative coronary catheterization

Carotid angiography showed significant stenosis of A. Carotis communis dextra just before the bifurcation. Fig. 2, Fig. 4.

Fig. 2. Preoperative Angiography of the right Carotid artery

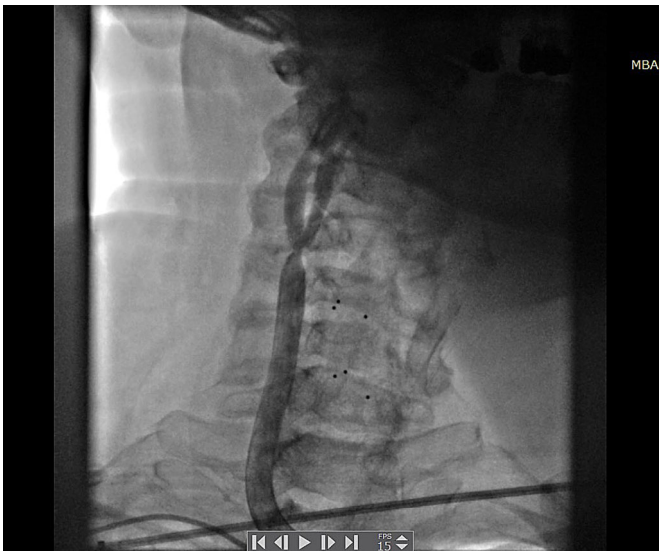
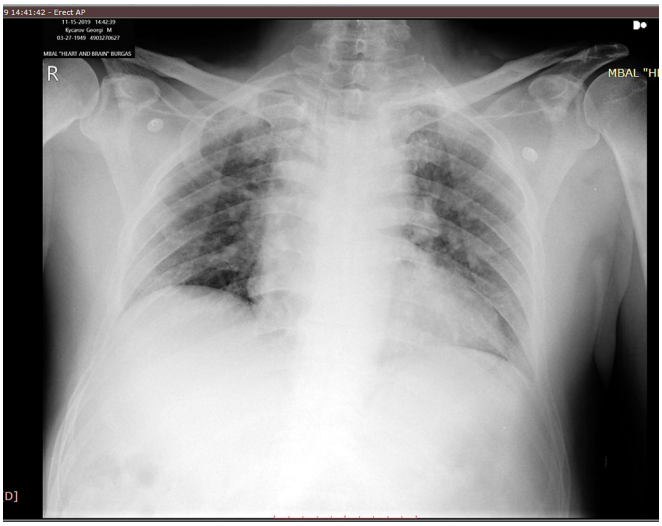


Fig. 3. Preoperative Chest X-Ray



For our patient, taking under consideration his high risk profile, after a discussion between cardiology and cardio surgery teams, a hybrid revascularisation approach was considered most appropriate. First dealing with his severe symptomatic coronary disease and because of extensive extracranial cerebrovascular disease, on-pump CABG was considered too high risk for cerebrovascular accidents (CVAs), so OPCAB technique was preferred for him. The patient successfully underwent complete off-pump revascularization ,then on a second stage, we were dealing with his carotid disease by performing CAS. This order for the procedures was preferred for him. Doing the CAS in the first place and the need for anticoagulation for a period of 30 days will increase the risk of postop-

erative bleeding. Something more in addition to our case, we couldn't wait with the coronary revascularization.

Surgery:

After a midline sternotomy, simultaneous harvesting of SVG and LIMA as bypass conduits was performed. Then the OPCAB to LAD with LIMA and RCA-PDA / OM1, OM2 and D1 with SVG as conduit graft was performed without hemodynamic instability through the procedure.

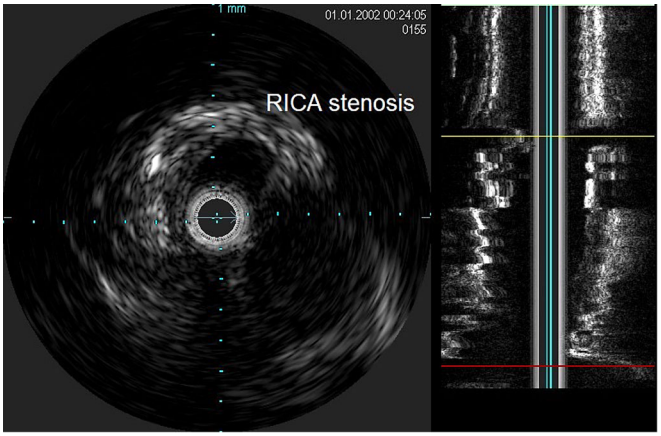
Postoperative recovery was smooth and unremarkable—no signs of neurological deficits. The patient went through active physiotherapy in the ward and was discharged 7th postoperative day.

A week later, he has hospitalized for a second stage interventional carotid stenting.

Via right femoral artery access, a very precise assessment using IVUS of A. Carotis internna dextra was made, and 80% stenosis was confirmed.

A Carotid WALLSENT 7/40 mm was implanted successfully with great result,

Fig. 4. Preintervention: IVUS and angiography showed tight stenosis on the right carotid artery.



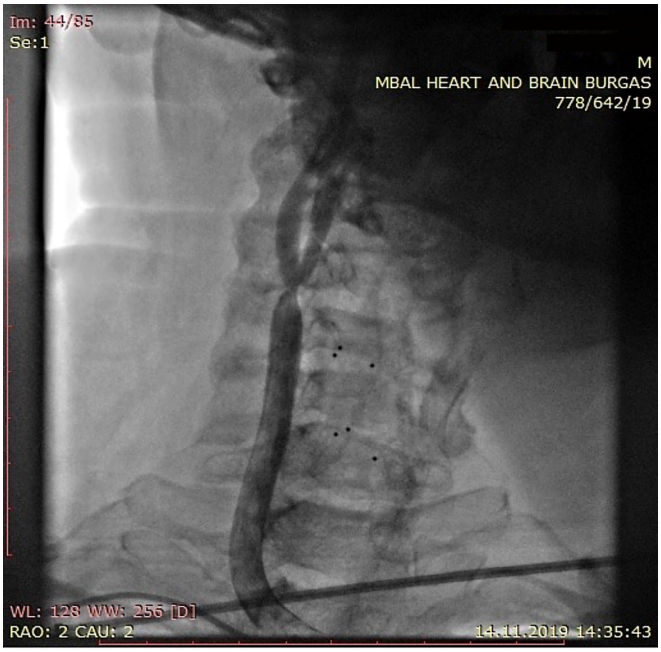
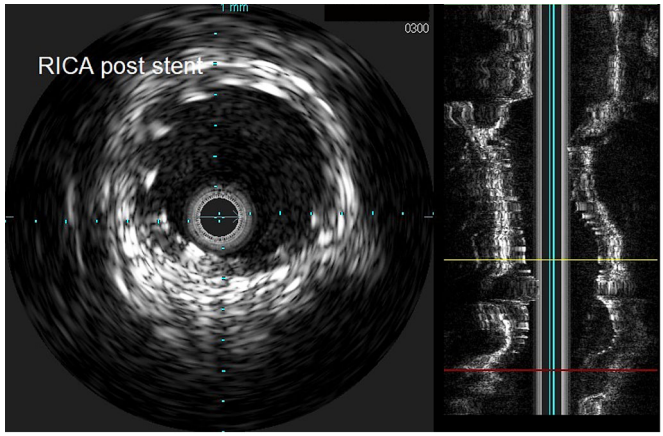


Fig. 5. Postintervention: IVUS and angiography showed great results after intervention on the right carotid artery.



Final: IVUS and angio after stenting of the right carotid artery.

At a routine follow-up in the 1st and 3rd postoperative months, the patient was found in satisfactory condition. He was hemodynamically stable and without any chest pain or neurological symptoms. Fig. 5.

DISCUSSION:

The management of patients undergoing coronary artery bypass grafting (CABG) in the presence of concomitant carotid stenosis remains controversial. On one side, coronary artery bypass surgery (CABG) is a treatment of choice for patients with multivessel coronary artery disease with its better outcomes, on another side, it could involve a higher risk of cerebrovascular accidents (CVAs) when compared with percutaneous coronary intervention (PCI). On the background of additional cerebrovascular disease, like in our case, the decision-making is not very straightforward, and every option should be

taken under concern. However, the decision-making should be done by the Heart Team, based on taking under consideration the specifics of every single case.

CONCLUSION:

Off-pump coronary artery bypass, followed by carotid stenting of a significant asymptomatic carotid lesion at a second stage, is a good strategy of treatment of this combined vascular pathology and produce an excellent outcome. The off-pump procedure preceding the treatment of the carotid lesion is a strategy, preventing stroke during CABG surgery in patients with severe coronary pathology, unstable angina and concomitant significant carotid stenosis.

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