Endovascular Treatment of the Occlusive Disease of the Great Vessels of the Aortic Arch

AHMED G. KARMOTA, M.Sc.; HUSSEIN O. ELWAN, M.D.; AHMED A. TAHA, M.D.; HUSSEIN M. KHAIRY, M.D. and HUSSEIN K. HUSSEIN, M.D.
The Department of Vascular Surgery, Faculty of Medicine, Cairo University

Abstract

Objective: Endovascular interventions have revolutionized the contemporary treatment of peripheral vascular occlusive disease. Traditional management of Supra-Aortic TrunkS (SATs) occlusive disease has employed surgical bypass via median sternotomy or thoracotomy or extra-anatomic bypass via a cervical approach endoluminal therapy may be a less morbid alternative.

Methods: From March 2011 and February 2013, six consecutive patients with great vessel occlusive disease were treated endoluminally with primary stenting. Treated vessels were subclavian (n=4), common carotid (n=1), and axillary (n=1) and. The target lesion was accessed antegrade via the femoral artery (n=4), combined antegrade and retrograde through femoral and brachial artery (n=1) and triple access via both femoral and brachial access (n=1) using flossing technique and contralateral femoral access for angiography.

Results: Mean age was 51 years with 5 male and 1 female and all patient were sympotomatic with exercise pain (n. 3), rest pain (n.1), color changes (n.1) or Transient Ischemic Attack (TIA) (n.1). Technical success was achieved in 6/6 cases 100%. At 30-day follow-up, there were no deaths, myocardial infarctions, or strokes. TIA occurred in 1 patent with carotid intervention in the 1st 24 hours after intervention. Follow-up was up to 1 year in all patients with 1ry patency rate was 91.6% and 2ry patency was 100%.

Conclusion: It was found that endo-luminal stenting of the aortic arch vessels is a viable alternative for open surgical bypass and should be the first line of treatment; it has an excellent functional outcome, safety, and midterm results. It has excellent results in cases of focal stenotic and good results in cases of total occlusion and long segment stenosis. Primary stenting may be considered as method for decreasing post-operative angioplasty complications.

Key Words: Endovascular – Primary stenting – Subclavian.

Introduction

GREAT vessel of the aortic arch is less affected by arteriosclerosis than arterial branches of the lower limbs. The most common causes of cerebrovascular insufficiency in descending order are occlusion of the carotid bifurcation (50%-60%), the three big branches of aortic arch (25%) and vertebral arteries (10%-20%). Multiple stenoses occur in 50%-75% of these patients. Arteriosclerosis is the most common cause of occlusion processes in patients older than 50 years. Detection of complex stenosis of supraaortic branches through duplex is rare. The increasingly used Magnetic Resonance Tomography (MRT) and computer tomography (CT)-Angiography enhances the diagnosis of stenosis of complex supraaortic branches [1].

The reduced morbidity and mortality with favorable initial success and patency were in endovascular interventions, as well as faster convalescence following percutaneous therapy when compared to traditional operations encourage more and more development in angioplasty techniques which sometimes nowadays considered the standard management of SATs occlusive diseases [1]. Vascular stenting has reduced acute closure, diminished distal embolization, improved medium term patency and provided the ability to recalize chronic total occlusions. As a result, enthusiasm has developed for the use of vascular stents as primary treatment for atherosclerotic obstructive disease of branches of the aorta [2].

Patients and Methods

This is a retrorespective study discussing minimal invasive endovascular techniques in patients with proximal great vessel occlusive diseases of the aortic arch. It was conducted at Kasr Al-Ainy Teaching Hospital during the period from March 2011 and February 2013.
Patient gender, demographics, presence of co-morbidities, history of smoking, indication for intervention and the use of anticoagulation therapy were recorded. The procedure, possible complications, benefits, risks and other alternative interventions were all explained to the patients and an informed consent was obtained.

I- Clinical assessment:
• History was taken from all patients including: Epidemiological features (age, gender), risk factors (smoking, diabetes, hypertension, cardiac disease, renal impairment), symptomatology (exercise pain, rest pain, tissue loss, TIAs and stroke) and history of trauma.
• Clinical examination was done for all patients including: Bilateral upper limb pressure measurements, assessment of both upper limbs and carotid pulsations, neurological assessment, color changes, temperature, tissue loss (ulcer or gangrene) assessment of motor power,

II- Pre-procedural investigations:
• Routine laboratory tests: Complete blood picture, kidney and liver function tests, coagulation profile and blood glucose level.
• Duplex scanning and CT angiography with The following information were gathered: Different aortic arch configuration and anomalies, Lesions as regard to site, type and pathology, extension and relation to vital branches, Tortuosity of the vessels and suitability of the iliac and femoral and brachial arteries for vascular access site.
• In all cardiac patients ECG was done, pre-operative echocardiography, and cardiologist was consulted to evaluate their cardiac condition and risk for surgical intervention.

III- Selection criteria for our study:
Inclusion criteria:
• Symptomatic occlusive diseases of the supra aortic great vessels. (Innominate, common carotids, subclavian and axillary arteries) with symptoms like exercise pain, ischemic rest pain, minor tissue loss, non-healing ulcer, focal gangrene, vertebral steal, transient ischemic attacks or stroke.

Exclusion criteria:
• Unstable patient, long lesions need open surgery, internal carotid artery lesions, patient with acute embolism, trauma with active bleeding, known intolerance to study medications or contrast agents as severe renal impairment or allergy and non-consented patients.

All endovascular procedures were done in our angiosuite under local anesthesia.

IV- Procedural data:
1- Preprocedure preparations:
The patients were admitted one day before or on the day of the procedure, a loading dose of clopidogrel 300mg was given the night of the procedure and well hydrated. Cerebral activity was monitored by verbal and motor response.

2- Size of sheath: In all cases 6 French (6F) sheath was used for diagnostic angiography. 6 Flong sheath were used in 4 cases 10F long sheath in 2 cases for intervention.

3- Access:
• Single access through right femoral artery was used in 6 cases.
• Double access through right femoral and left brachial artery was used in 1 case.
• Triple access through both femoral and brachial artery was used in 1 case.

4- Wire used: 0.035” hydrophilic wire (Terumo) was used in 6 patient and stiff 0.035” wire in 2 patient.

5- Catheter used: Selective catheters were used; vertebral (n.4), Bernstein (n.2) and Simmons II (n.1).

6- Balloon angioplasty:
• Pre-stent dilatation was done in in 5 cases with atherosclerotic occlusive disease while post stent dilatation were done in all cases. The balloon diameter ranged between 6 and 10mm, balloon length ranged between 40mm and 80 mm, inflation pressure ranged between 8 and 12 ATM and Inflation time ranged between 30 and 120 seconds.

7- Stenting:
• Primary stenting was done in all patients.
• Bare metal stent was used in 4 atherosclerotic occlusive lesions (2 balloon mounted and 2 self expandible stent).
• Ballon mounted covered stent was used in one patient with occlusive disease near axillary joint and another patient with traumatic contusion of subclavian artery.

V- Procedural outcome:
• Clinical success: In the form of regaining of pulse, revascularization warmthness, edema, disappearance of rest pain, good capillary circulation, and good healing of ulcer or minor amputation.
  • Angiographic success was defined as less than 30% residual stenosis measured at the narrowest point of arterial lumen, no dissection or
extravasation of the contrast. No pressure measurements were done.

- 1\textsuperscript{st} patency is patency without intervention from 1\textsuperscript{st} procedure till occlusion or other procedure is needed and 2\textsuperscript{nd} patency is patency after 2\textsuperscript{nd} intervention that was done to maintain patency.

VI- Procedural complications:

Complications were divided into major and minor. Major complications included death, need for emergency surgery, major bleeding or acute thrombotic occlusion. TIAs or stroke. Minor complications included hematoma, treated dissection, or peripheral emboli.

VII- Post-procedural management:

The arterial sheath was routinely removed 2-4 hours after the procedure and mobilization was delayed for 6-12 hours. Digital compression was held proximal to the skin puncture site for 15-20 minutes. Most patients were discharged on the 2\textsuperscript{nd} or 3\textsuperscript{rd} day following the procedure after receiving instructions on risk factors control and treatment including Aspirin 150mg/day for life, Clopidogrel 75mg/day for at least 3 months and Atrovastatin according to the presence or absence of dyslipidemia with proper control of blood sugar and blood pressure and smoking cessation.

VIII- Follow up:

All patients were managed in hospital for 2 to 3 days before discharge and follow-up in all patients clinically and/or duplex ultrasonography at 1 week, 3, 6 and 12 month.

Results

The age of the patients ranged from 43 to 60 years with a mean age of 51.5 year, they included 5 male (83.4%) and 1 female (16.6%), 4 cases (66.7%) were diabetic, 3 cases (50%) were hypertension and 2 cases (33.3%) were smoker. Atherosclerosis disease was present in 5/6 (83.4%) patient while traumatic contusion was present in 1/6 (16.6%) patients. All patients were symptomatic with exercise pain in 3/6 (50%), rest pain in 1/6 (16.6%), color changes in 1/6 (16.6%), and TIA in 1/6 (16.6%), there were different aortic arch configuration and anomalies. Bovine arch was present in 1 patient (n=1) atherosclerotic occlusive disease was more common in left subclavian artery with the following distribution; left Subclavian lesions 4/6 (66.6%) Fig. (1) left carotid lesions 1/6 (16.6%) Fig. (2), right axillary lesion 1/6 (16.6%), according to Morphological description of the lesions; we had 3 cases (50%) of total occlusion and 3 cases (50%) of stenosis.
Fig. (4): Angiography showing difficulty in crossing the lesion.

Fig. (5): Angiography after exclusion of pseudoaneurysm with PTA and stenting of axillary lesion.

Triple access using both femoral and brachial access were used in 1 case with subclavian contusion as angiography from femoral access fail to show origin of subclavian artery; brachial access was done with angiography showed bovin trunk with occlusion of 2nd part of subclavian artery; wire pass from brachial access to femoral access (flossing technique and other femoral sheath is used for angiography Fig. (6) covered stent were inserted with balloon dilatation of distal part with completion arteriography was done showing patency of arterial tree Fig. (7).

Fig. (6): Angiography showing occlusion of 2nd part of subclavian.

Pre-stent dilatation was done in 5 cases with atherosclerotic occlusive disease Fig. (8) while post stent dilatation was done in all cases Fig. (9). The balloon diameter ranged between 6 and 10mm, balloon length ranged between 40mm and 8mm, inflation pressure ranged between 8 and 12 ATM and inflation time ranged between 30 and 120 seconds.

Fig. (8): Angiography showing balloon predilatation of the lesion.

Primary stenting was done in all patients with bare metal stent was used in 4 atherosclerotic occlusive lesions (2 balloon mounted and 2 self expandible stent) Fig. (10) and balloon mounted covered stent was used in one patient with occlusive disease.
disease near axillary joint and another patient with traumatic contusion of subclavia. Stent size range between 6-12mm and length between 40-80mm.

Hospital stay was 2 to 3 day. Follow-up was up to 1 year in all patients with 1ry patency rate was 91.6% and 2ry patency was 100%. With One case of recurrent stenosis and worsening of the color changes in ring and little finger occured after 6 month and angiography show 50% in stent stenosis Fig. (11) with occlusion of digital arteries of ring and little finger Fig. (12) dilatation of subclavian stenosis was done Figs. (13,14) and conservative management with antiplatelet and anticoagulation and show marked improvement. We had no related mortalities.

**Discussion**

This study was designed to assess the role and outcome of endovascular management of great vessel occlusive diseases. This study was done on 6 patients, all were managed by primary stenting.

The advantages of minimally invasive technique are obvious with lower initial morbidity and mortality, no need for general anesthesia, shorter hospital stay, and less trauma. It has an excellent functional outcome, safety, and midterm results. Increasingly, outpatient angioplasty is now feasible [3].
Conventional open surgical approaches have included extra thoracic bypass procedures as well transthoracic reconstructions with use of the ascending aorta as a source of inflow [4]. Although long-term durability for these procedures is excellent, open surgical reconstruction is associated with significant cardiac, pulmonary, infectious, and neurologic operative morbidity [3]. The remote access avoids major operative dissection in this anatomic area and avoid sternotomy or thoracotomy [5]. High-risk patients such with significant co morbidities, previous cervical operations, or prior cervical irradiation are likely to benefit from an endovascular approach to aortic arch vessel disease [3].

The present study included 5 male and 1 female patients with male to female ratio 5/1 showing the predominance of male in SATs occlusive diseases. This differs from Brian et al., 2006 who presented 18 case of occlusive diseases with male to female 1/3 [6].

The patient's age ranged from 43-60 with mean age of 51.5ys. This comparable to Sixt et al., in which mean age of 66 years for occlusive disease [7]. In our study; treated vessels were subclavian (n=4) all on left side, common carotid (n=1) and axillary (n=1) this is not the same distribution in Brian et al., in which treated vessels were innominate (n=8), common carotid (n=9), and subclavian (n=3) [7]. This is because most of occlusive disease in our study are due to atherosclerosis 5/6 and only one occlusion due to trauma with suspected arterial injury and the majority of the supra-aortic atherosclerotic occlusive lesions involves the left subclavian artery which represent about three times more than atherosclerotic lesion affecting Rt subclavian artery which may be related to turbulence-related atherosclerosis in the proximally more acutely angled left subclavian artery [8].

In our study all cases with occlusive disease were symptomatic with upper limb exercise pain in 3 cases (50%), rest pain in 1 case (16.6%), color changes 1 case (16.6%) and TIA in 1 case (16.6%). This is different from Brian et al., in which Sixteen (80%) of the 20 procedures were performed for symptomatic disease. With the remaining 4 procedures (20%) were performed in patients with asymptomatic disease but angiographic evidence of at least 90% stenosis [6]. There were no deaths, myocardial infarctions, or strokes with only one case of TIA within 24 hour (16.6%). This is less than Wang et al., with stroke in 5 patient and TIA in 7 patient [9].

There were no other major perioperative procedure-related or access site complication which is less than Wang et al., in which Major complications range from 0% to 8.5%. These include access site hematomas, distal embolization, and arterial thrombosis especially of the brachial artery and at 30-day follow-up [9].

Endovascular treatment is expected to reduce operative morbidity and mortality rates. In our study 30 days 1 year mortality 0% this is compares to Elias et al., who have 30-day and 1 year mortality rate of 0% [10].

These figures are better than those obtained by surgery as Transthoracic Bypass surgery have a stroke and death rate of 16%. Extra-anatomic bypass procedures have equivalent graft patency rates but a reduced mortality of between 0% and 3% and a complication rate of 13% [11], Rhodes et al., had perioperative stroke rate ranges from 0% to 8% giving a combined stroke and death rate of almost 16% [12]. This justify the primary use of the endovascular techniques.

In our study we use femoral access in 6 cases (100%), combined access (right femoral and left brachial was used in 1 patient (16.6%) triple access using both femoral and brachial were used in one patient (16.6%) using flossing technique with 3rd sheath in contralateral femoral artery for angiography.

This is comparative to Hilfiker et al., who use the femoral approach in two-thirds of his patients (n=6/9); in 3/9 cases use femoral and brachial access [13]. Stenting was subsequently introduced to theoretically reduce the risk of atheroembolization and complications. Some advocate primary stenting for all lesions as it is considered safe and effective to reduce risk of dissection and embolization especially in complex lesions [14]. While others advocate stenting for failed PTA, for residual stenosis or intimal dissecting flap offers salvage following unsuccessful balloon angioplasty [15].

The use of CS to treat occlusive disease of first-order aortic branches has been proposed as a method to reduce intimal hyperplasia and improve patency rates since they exclude plaque and prevent luminal encroachment through open struts, however, the role of CS in occlusive disease has been limited due to size of the delivery system, bulk of the graft material, and lack of precision due to foreshortening from the self-expanding design [16]. Additional limitations to the use of CS involve the risk of excluding adjacent side-branches, specifically the vertebral and internal mammary arteries.
and right common carotid artery with subclavian CS [16]. Jon et al., had three cases of subclavian artery stenosis that were successfully treated via a percutaneous approach with CS with good technical success. Recent advances in CS design with development of a small delivery system may allow wide use of this covered stent in SATs occlusive disease. However, the long-term results of patency and late luminal loss remain to be evaluated in future randomized studies [17].

In our study covered stent was used in one patient with axillary artery occlusion near the axillary joint with good technical success and 100% patency rate at 1 year. Major limitations of our study are the lack of randomization between balloon angioplasty and stenting. However, we would assume a more favorable outcome of stenting compared to PTA in case of randomization.

Sixt et al., found an insignificant improved 1-year primary patency rate after stent-supported angioplasty over PTA alone (89% versus 79%), regardless which type of stent was used. Superiority of stenting however was more clear after Target Lesion Revascularization (TLR) within 1 year (secondary patency rates of 99% versus 86%) [7].

PTA can be performed as first line technique in stenotic lesions if the acute procedural result is satisfying with a residual stenosis less than 30% [18]. Otherwise it should be stented. This is not in our study as all cases have 1ry stenting. A ten year secondary patency rate 84.5% was reported by Henry et al.; better patency was achieved using stents than with PTA alone: 67.5% versus 89.7% for primary patency, and 75.5% versus 96.9% for secondary patency [19]. Schillinger et al., have identified the presence of long lesions, residual stenosis after PTA, and stenting as independent predictors for restenosis after successful intervention (p=0.02) [20]. Bates et al., found no clear predictors: [21]. Nowadays primary stenting is applied in the majority of patients.

Some authors have compared surgical results with PTA and demonstrated equal effectiveness, but fewer complications with endovascular therapy [22].

Endovascular treatment provides patency rates approaching those of surgery: Sullivan et al., reported an 84% primary patency rate versus 92% for surgery at an average of 35 months [23]. In our study all patient with occlusive atherosclerotic lesions have 1ry stenting with predilatation.

Lesions at or near the origin should preferably be treated with balloon expandable stents for precise placement and this lesions were more likely to be highly calcified with higher radial force of balloon expandable stents [24]. In our study; we use balloon mounted stent in 2 cases with lesions at the origin and self-expandable stent in 2 cases in lesion away from the origin; 2 balloon mounted covered stent was used in one occlusive atherosclerosis near joint and in another case with traumatic contusion thrombosis with suspected injury.

In our study 1ry technical success was achieved in all occlusive lesion 6/6 (100%) 3 of which are stenotic while 3 lesions are total occlusion. This results agree with the literature who show average technical success ranging between 46-100%. With the study showing lower technical success are due to total occlusion (Table 1).

Table (1): Shows different technical success in literature.

<table>
<thead>
<tr>
<th>Study</th>
<th>Technical success</th>
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<tbody>
<tr>
<td>Motarjeme et al., [25]</td>
<td>Total occlusion 46%</td>
</tr>
<tr>
<td>Westerband et al., [26]</td>
<td>100% for stenosis</td>
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<tr>
<td>Amor et al., [27]</td>
<td>Stenotic lesions 100%, total occlusions 54% to 72%</td>
</tr>
<tr>
<td>Brountzos et al., [15]</td>
<td>96% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>De Vries et al., [14]</td>
<td>Total occlusions 46%-65%</td>
</tr>
<tr>
<td>Patel et al., [28]</td>
<td>90% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>Sixt et al., [7]</td>
<td>87% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>Elias et al., [10]</td>
<td>89% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>Paukovits et al., [29]</td>
<td>93.5% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>Wang et al., [9]</td>
<td>99% (stenosis and total occlusion)</td>
</tr>
<tr>
<td>Babic et al., [30]</td>
<td>Stenosis 100%, total occlusions 80-90%</td>
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In our study 1ry patency rate for occlusive disease at 1 year was 83.3% and 1 year secondary patency was 100% regardless which type of stent was used.

These results agree with the literature who show average 1ry patency at 1 year ranging between 81-98% and 2ry patency between 91-100% with higher 1ry and 2ry patency rate at 10 year follow-up with 93% and 98% respectively (Table 2).

Table (2): Shows different patency rate in literature.

<table>
<thead>
<tr>
<th>Study</th>
<th>1ry patency</th>
<th>2ry patency</th>
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<tbody>
<tr>
<td>Martinez et al., [31]</td>
<td>81% at 18 months</td>
<td></td>
</tr>
<tr>
<td>Sullivan et al., [23]</td>
<td>84% at 35 months</td>
<td></td>
</tr>
<tr>
<td>Hüttl et al., [32]</td>
<td>93% at 10 years</td>
<td>98% at 10 years,</td>
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<tr>
<td>Westerband et al., [26]</td>
<td>85% at 12 months</td>
<td>100% at 12 months</td>
</tr>
<tr>
<td>Brountzos et al., [15]</td>
<td>91.7% and 77% at 12 and 24 months</td>
<td>96.5% and 91.7% at 12 and 24 months</td>
</tr>
<tr>
<td>Bates et al., [21]</td>
<td>Two-year patency rates of 91-92%</td>
<td></td>
</tr>
<tr>
<td>de Vries et al., [14]</td>
<td>89% at 5 years</td>
<td></td>
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<tr>
<td>Henry et al., [19]</td>
<td>84.5% at 2.9 years</td>
<td></td>
</tr>
<tr>
<td>Patel et al., [28]</td>
<td>83% at 66 months</td>
<td>96% at 55 months</td>
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<tr>
<td>Paukovits et al., [33]</td>
<td>98% at 24 months</td>
<td>100% at 24 months</td>
</tr>
<tr>
<td>Wang et al., [9]</td>
<td>82% at 5 year</td>
<td></td>
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<tr>
<td>Berger et al., [34]</td>
<td>85.3% at 10 year</td>
<td>92.6% at 10 year</td>
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</table>
In our study few cases of carotid artery disease were present with 1 case of carotid artery atherosclerotic stenosis managed with Iry stenting and post stent dilatation with technical success was 100% with one attack of TIA 1st day post intervention and Iry patency rate was 100% at 1 year and another case of carotid pseudo aneurym who was management with covered stent. Technical success was 100% and no mortality with Iry patency rate and stroke free survival was 100% at 1 year. There are few data regarding the outcome of common carotid endovascular interventions. Most reports are small retrospective series, and the majority report on the technique of surgical exposure of the carotid followed by retrograde endovascular treatment.

There are few reports detailing the use of trans femoral stenting of the common carotid artery in the literature. Chio et al., reported the outcome of 42 proximal common carotid angioplasty and stenting procedures in 37 patients. Procedural success was 95%, and complications included two minor strokes (4.7%), no major strokes, and no per procedural deaths. At 24 months mean follow-up, restenosis rate was only 5.1%. [38].

The largest series comes from Paukovits et al., with percutaneous treatment of 153 proximal common carotid lesions in 147 patients over a 12-year period. The majority of patients were treated with stent placement after predilatation (70.5%), embolic protection was used in 16 patients, 13 of which were done because of simultaneous treatment of a carotid bifurcation lesion. Technical success rate was 98.7%, and per procedural neurologic complications included three (2.0%) ipsilateral major strokes and four (2.6%) TIA's. No neurologic complication rate was 6.4% and included primarily access site hematomas. There were no deaths. One-year and 4-year primary patency was 97.9% and 82.0%, respectively, whereas secondary patency at the same intervals was 100% and 88%, respectively [33].

The principal advantage of stent placement in the treatment of carotid artery stenoses is its impact on immediate outcome. The stent serves to limit embolization of atherosclerotic debris liberated during the PTA procedure. In addition, it reduces elastic recoil and prevents propagation of intimal dissection created during the procedure. However, there is no evidence that stenting is superior to angioplasty alone for proximal CCA lesions; current practice, however, includes primary stenting in most cases for the reasons discussed above.

The recommendations for use of possible protection device are not conclusive. As we did not look for any possible embolic events in the supraaortic arteries, including macro-and microemboli, our recommendation is just based on the clinical observation.

In our study we didn't use any protection device because it was not possible or was not deemed necessary as most of carotid lesions in our study was near the origin of common carotid artery away from the bifurcation. Paukovits et al., use Embolic protection devices in 16/37 patients, 13 of which were done because of simultaneous treatment of a carotid bifurcation lesion [33].

Conclusion:

Endovascular therapy of supra aortic trunks occlusive disease offers good success rates, even in total occlusions with excellent functional outcome, safety, and midterm results. Long-term patency following endovascular procedure is in favor of stent placement even if PTA achieves an optimal acute result. Therefore, stenting should be the preferred technique of endovascular therapy of supra aortic trunk occlusive disease at least in complex lesion, double access have to be considered and may be flossing technique to give more accessibility and stability to the system, open surgical bypasses should be considered for cases in which surgical intervention is indicated for another reason or in lesions after failed angioplasty or in which angioplasty is contraindicated.

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الملخص العربي

إن علاج انسداد الشرايين العظمى لشريان جذع الشريان الأبهر باستخدام القسطرة العلاجية له نسبة نجاح عالية، حتى في الانتظار الكامل ونسبة نجاح عالية على المدى القصير والمتوسط.

إن استخدام الدعامات يزيد من نسبة النجاح على المدى البعيد. لذا، يجب أن تكون الدعامات الأسلوب المفضل لعلاج انسداد الشرايين العظمى لشريان جذع الشريان الأبهر (الأورطي) الناتجة عن انسداد الشرايين من السمع أن يدخل المركز الأول بين طرق العلاج المختلفة وذلك لأنها أثبتت ذات نسبة وفاة نادرة تكاد تكون منعدمة وتقليل قليل بعد الجراحة ونسبة نجاح عالية بعد الجراحة، كما يفضل استخدام الدعامات لزيادة نسبة نجاح خاصة في حالات الانتظار الكامل أو الضيق الشديد وحالات الترسبات الكبيرة بجدران الشريان ويقترح التدخل الجراحي لعلاج مثل هذه الحالات عند فشل القسطرة العلاجية أو ضرورة التدخل الجراحي لأسباب أخرى.