With Takayasu’s Lesions Requiring Invasive Treatment, When Endo, When Open: Tips And Results

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Title: With Takayasu’s Lesions Requiring Invasive Treatment, When Endo, When Open: Tips And Results

I do not have any relevant financial relationships with any commercial interests.

Takayasu’s Arteritis (TA)

- Takayasu’s arteritis (TA) is a ‘systemic’ vascular disease affecting entire wall of the aorta and its main branches as a nonspecific pan-arteritis leading to occlusive disease or aneurysm formation, usually in young female patients (typically less than 40 years of age) with considerable morbidity and premature mortality (3-11%).
- TA is fundamentally different from atherosclerosis! Therefore, same principle/indication to relieve ischemic symptoms based on the atherosclerosis should NOT be applied to TA!
- TA is a medical condition to need the medical treatment and NOT a surgical condition till it develops the complication. Hence, the primary aim of treatment is to control active inflammation and induce remission to prevent the development of stenotic or occlusive arterial lesion as its complication.
- Only these vascular complications are indicated for surgical intervention to relieve ischemic condition.
- The inflammatory nature of TA waxes and wanes with active or chronic systemic inflammation. Hence, strict control of acute/subacute condition with medical regimen is warranted for all the TA lesions before any surgical/endovascular management is considered.
- “After all, TA is a medical condition, and NOT a surgical one from the outset!”
- TA has a strong nature of the collateral development to provide excellent natural compensation, sufficient to relieve the symptoms in general. Hence, NOT all ‘symptomatic’ stenotic or occlusive lesions actually require the intervention though appeared to need for the intervention; independent surgical intervention is seldom indicated.
- Further, the intervention accompanies with significant morbidity: restenosis (75.7%), thrombosis (10%), bleeding (8.6%), and stroke (5.7%). Hence, less than 20% of the lesions actually get the benefits through the intervention.

TA is therefore, generally indicated for the intervention ONLY when three conditions are met:
1. Definitive lesion(s)
2. Equivalent ischemia condition, and
3. Functional impairment which does NOT respond to the medical treatment.

Tips: the intervention, open surgical or endovascular, should be reserved for specific indications: uncontrolled hypertension caused by renal artery stenosis, critical limb ischemia by stenotic/occlusive lesions, severe coronary artery or cerebrovascular ischemia, severe aortic regurgitation or coarctation.

Open surgery with bypass has been able to relieve most of the occlusive lesion to cause acute/chronic arterial insufficiency and remains a gold standard for the management of TA especially for its end stage with excellent track record with durable long term results in its majority.

But, bypass graft improves the long-term survival mostly on the patients with ‘advanced’ Stage 3, already combined with major complication and progressive disease is in ‘chronic in active’ status, but NOT on the patient in ‘early’ Stage 1 and 2 disease with no major complications and no evidence of progressive disease. Conservative medical management is more beneficial in early stage of the disease to avoid the higher risk of serious surgical complications.

Conservative medical management is more beneficial in early stage of the disease to avoid the higher risk of serious surgical complications.

Therefore, bypass surgery is NOT a panacea to relieve all the occlusive lesions permanently but remains vulnerable for the future involvement to TA. Through the rest of life, the surgical/anastomotic site of the artery will remain with the risk to be involved to TA by its nature, sooner or later.

The patient has to remain under constant vigilance to monitor the status of TA to provide a strict life-time control of the flare/recurrence of TA with adequate immunosuppressive therapy.

During the active phase, surgical and endovascular treatment should be held altogether till the medical therapy provides substantial control to stabilize the condition.

Tips: Surgery should not be undertaken lightly and is good only for those in advanced stage with serious complications: the outcome of intervention is good ONLY if disease activity can be controlled prior to surgery. “Anticipate the higher risk of serious surgical complications when done in early stage of the disease.”

Nevertheless, the diffuse, proximal, and multifocal involvement of the arch vessels may make surgical revascularization with bypass graft is often difficult and the lesions at the origin of arch vessels is much more complex.

Hence, a new approach of less invasive nature was mandated and endovascular treatment with percutaneous transluminal balloon angioplasty (PTA) and stenting has been proved as safe and very effective alternative to open surgery for TA as well.

The main indication for the PTA and/or stent includes clinically significant ischemia involving one or more vascular beds, renovascular hypertension, cerebrovascular ischemia, and upper extremity ischemia.

Intervention was made to a single vessel lesion with critical stenosis over 75%, or involvement of at least three cerebrovascular vessels with greater than 50% luminal diameter narrowing.

Indications for stenting include the presence of a post-angioplasty flow-limiting dissection, residual stenosis greater than 30%, and pressure gradient greater than 5 mm Hg.
Endovascular intervention gains popularity especially as an interim management for the unsettled case with multiple lesions and further to bridging the gap till the disease reaches its late/end stage to become safe for the bypass an completely burned-off artery as a permanent solution.

However, it has been shown that in-stent stenosis remains the main issue as for open surgical approach.

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Our own results of balloon angioplasty and stenting on N=35 lesions among N=24 patients in ‘inactive’ chronic stage fulfilled the role as an interim measurement if not a semi-permanent solution to restore the hemodynamic status and to relieve clinical symptoms especially for the condition of multiple vessel involvement during 11 year period. (January 1995 to December 2005) as previously reported. (Lee BB, Laredo J, Neville R, Villavicencio JL: Endovascular Management of Takayasu Arteritis: Is It a Durable Option? Vascular, Vol. 17, No. 2, pp.1–10, 2009)

A further extended assessment (average of 76.2 months follow up) on the long term efficacy of endovascular approach upheld the initial results. Numano’s classification of Takayasu’s arteritis

Hence, intense postprocedural management/strategy of dual antiplatelet therapy for at least 6 months combined with coherent systemic treatment with steroids and antiproliferative drugs is crucial to reduce the risk of stenosis in term of disease progression inhibition as drugs withdrawal might be associated with in-stent stenosis.

(Tips: A diligent control of disease activity prior to and following revascularization, either by open or endovascular approach, is crucial to preventing complications through lifelong regular follow-up.)

Conclusions

Together with the bypass, the endovascular management of TA lesions with PTA/stenting is now well accepted as an alternative option.

Symptomatic TA lesions in “inactive” chronic stage can be managed safely either with surgical bypass or endovascular therapy to providing excellent to good clinical improvement in its majority.

However, endovascular therapy accompanies higher rate of the recurrence to require re-intervention as less ideal for long term care regimen.

Surgical bypass remains a gold standard as excellent treatment modality with durable long term results. But it accompanies higher risk of serious early and postprocedural surgical complications.

Recommendation

Open surgery, at present, remains the preferred option delivering better long-term outcomes especially in the advanced stage of the disease, compared to endovascular management with angioplasty and stent. Endovascular intervention fulfills its new role as an interim measure, especially for the group “open” surgery carries too high risks (e.g. acute stage). Multivessel, symptomatic lesions which are not ideal for the open surgery can be treated successfully with good immediate and mid-term results although close follow-up for the risk of early restenosis and disease progression diagnosis is mandatory.


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Thank you for your attention!