Single Center Experience with Wingspan Stent: A Real World Experience Outside SAMMPRIS

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Background

• Intracranial arterial stenosis is one of the most common causes of stroke
• May account for up to 10% of all ischemic strokes in the United States
Background

• Medical Management has been the mainstay of treatment
• Ipsilateral recurrent TIA/stroke occur in up to 18% of these patients
• Evolution of percutaneous transluminal angioplasty and stenting as potential strategy
Background

• Wingspan Stent
  • 2005 FDA approval
  • 50-99% symptomatic intracranial arterial stenosis
    • Consensus conference (2009)—endovascular angioplasty and stenting may provide particular benefit to those with >70% stenosis or ischemic symptoms related to hemodynamic changes
Background

• Safety and efficacy
  • Medical management alone versus medical management plus stent placement
  • SAMMPRIS Trial (Stenting and Aggressive Medical Management for Preventing Recurrent stroke in Intracranial Stenosis)
    • Enrollment stopped: increased periprocedural risk in stented arm, decreased risk in medical arm
  • CONCLUSION: Aggressive medical management deemed superior
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Methods

• Study Design:
  • Single institution retrospective review
    • August 7, 2006 to July 13, 2011
  • Symptomatic ICAD 50-99% evaluated
  • All but 2 had failed medical management with antiplatelets and/or antithrombotics
  • Patients treated for acute stroke or dissection were excluded
Results – patients characteristics

- 49 patients (34 M, 15 F, mean 64 yo)
- 45 (91.8%) with ≥ 70% stenosis
- 4 (8.2%) with 50-69% stenosis

- 100% suffered from ICAD-related TIA/Stroke
- 47 (96%) failed medical management
  - 2 preferred stenting over medical management
- Symptoms occurred days to years prior to intervention
  - Half occurring within 1 month of stent placement
Results – lesion characteristics

• Anterior and posterior circulation stenosis
  • 12 basilar
  • 13 vertebral
  • 3 petrous
  • 5 cavernous
  • 5 supraclinoid
  • 11 M1
• 100% with focal lesions
• 16% (n=8) with tortuous vessel anatomy
Results – lesion characteristics

- Successful stent placement in 91.8% (n=45)
- All 4 unsuccessful attempted stents were attributed to tortuous vessel anatomy
  - 50% failure rate among patients with tortuosity
  - 3 failed deployments in M1
  - 1 failed deployment in basilar artery
Immediate Post-operative Complications

- 4 strokes (8.9%)
  - 2 fatal (4.4%)
    - Complete in-stent thrombotic occlusion
- 1 STEMI requiring coronary stents
- No intracranial hemorrhagic complications
Long-term Follow-up

• Data available for 77.8% (n=35)

• Ipsilateral stroke/death rate = 9% (n=3)
  • →20% composite long-term stroke risk
Long-term Follow-up

- Imaging f/u for 65% of patients
  - (40% angiogram, 25% MRA/CTA)
  - 25% (n=7) with in-stent thrombosis
    - 3 of 7 symptomatic
De novo mid-basilar aneurysm formation
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Variables Affecting Risk Rate

• Length of lesion
  • 100% were focal
  • Diffuse lesions $\rightarrow$ difficulty navigating, more stents, longer procedure times

  • Short stenotic lesions = 8% stroke rate
  • Diffuse lesions = 87% stroke rate
Variables Affecting Risk Rate

• Tortuosity
  • 4 of 4 unsuccessful stent attempts related to tortuous vessel anatomy

• Assessment of tortuosity preoperatively may help stratify risk and safety of stent placement
Variables Affecting Risk Rate

- In-Stent Thrombosis
  - Eurasian Registry -- 7.5% ISR
  - Levy, et al -- 29.7% ISR
    - 76% asymptomatic

- Our series -- 25% ISR
  - 57% asymptomatic

- Stent-sizing and post-stent dilation may be factors
- Age<55 and anterior circulation $\rightarrow$ increased risk
- Supraclinoid lesions most prone to symptomatic stenosis
  - 2 of 3 symptomatic ISR
Variables Affecting Risk Rates

- Timing of Treatment
  - WASID - highest risk of recurrent ischemic attack in first 3 weeks
  - SAMMPRIS – treated within 30d of enrollment
  - 26 of our patients had symptoms >30d
    - → increased immediate risk of waiting
    - → more stable, less mobile atherosclerotic plaque

- Conversely, risk of stroke decreases at 1 year with medical management alone if no symptoms within 1 month of first event
Variables Affecting Risk Rates

• Iatrogenic Issues
  • Intracerebral Hemorrhage-
    • SAMMPRIS – 30.3% of periprocedural strokes
    • Our series – No hemorrhages periprocedurally

• Potentially related to:
  • Aggressive intraprocedural heparinization & antiplatelet therapy in patients with recent infarcts
  • Blood pressure management
  • Operator experience with delicate intracranial vessels
Limitations

- Retrospective Study
- Follow-up data, monitoring
- Too few numbers to perform subset analyses
- Patient compliance
Conclusions

• Our “Real World” Experience is consistent with risk profile of initial trials regarding Wingspan safety and efficacy

• Anatomical characteristics, timing of treatment, experience may play a role in differences in results

• Further studies need to be done to evaluate this
Conclusions

• Improvement of success rates may prove the value of stenting for ICAD, particularly for those who have already failed optimal medical management, and who are lacking other options
References


