

# Wingspan Intracranial Stent for Intracranial Atherosclerotic Disease

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# What is the Wingspan Stent?

- This is a small, metal mesh tube that is placed across an intracranial arterial stenosis (narrowing) to increase the diameter of the vessel so that it approaches normal diameter
- This device is placed after the stenosis is dilated using a balloon (Gateway Balloon)
- The stent is placed within the blood vessel and pushes against the inner wall of the vessel
- The goal of the device is to re-establish normal blood flow to a region of the brain

# What is an intracranial lesion?

- An “intracranial lesion” is a section of an artery that is narrowed or fully blocked thus restricting blood flow to a portion of the brain
- The “intracranial lesion” is secondary to atherosclerotic disease
- Atherosclerotic disease is thickening of the inner wall of an artery (plaque) due to cholesterol, fatty deposits, calcium, and platelet clumps

# What is the potential result of an intracranial lesion?

- If blood flow is reduced to the brain to a significant degree and for a significant period of time the brain tissue can die
- This brain tissue death is termed an ischemic stroke

# Risk factors for ischemic stroke

- Diabetes
- Smoking
- Alcohol use
- Hypertension
- Elevated cholesterol, lipids
- Family history of arterial vascular disease
- Overweight

# Treatment of intracranial atherosclerotic disease and stroke

- Medical management to control, reduce, or eliminate risk factors
- Invasive procedures
  - Dilation of narrowed vessel using a balloon that is attached to a catheter that is advanced from the femoral artery in the groin to the narrowed artery in the brain (aka: Balloon Angioplasty)
  - Balloon angioplasty with the addition of a stent to hold the vessel open from the inside too reduce the chance of re-stenosis of the vessel (aka: Arterial Stenting)
    - The stent is a small, expandable, mesh metal tube that opens inside the artery
    - The stent remains in the vessel forever
  - Arterial bypass procedure
    - Artery from the neck or scalp is connected to an artery of the brain to increase blood flow to the brain

# Complications (not all inclusive)

- Arterial blockage
- Contrast allergy
- Vessel injury
- Bleeding
- Pain
- Death
- Stroke
- Infection
- Re-narrowing of the blood vessel after successful dilation (re-stenosis)

# Study results

- Study #1
  - 45 Patients
  - Followed for 6 months
  - Wingspan implantation resulted in significant reduction in the stenosis
  - 1/45 patients had re-stenosis
  - 2/45 had a stroke within 30 days of the procedure
  - 4/45 had a stroke within 6 months of the procedure

# Study results

- Study #2
  - 451 patients
  - All had an ischemic event due to a stenosis  $\geq 70\%$
  - Study compared medical therapy to stent therapy
  - Stented patients had 30 day stroke/death rate of 15%
  - Patients treated with medical therapy had a stroke rate of 6%
  - Conclusion: Medical therapy should be the first line treatment before angioplasty/stenting is tried

# Study results

- Study #3
  - 33 patients
  - All patients taking an anti-platelet or anti-thrombotic medication at the time that their stroke occurred
  - 30 day stroke rate in medical managed group was 12.2%
  - 30 day stroke rate in the stent plus medical management group was 12.5%