I, Dr. *Yuyang Zhang* have no financial relationships to disclose.

*If there is a financial relationship to disclose, please replace “no financial relationships” with the name of any commercial entity with which you or your spouse/partner have an affiliation. Otherwise, delete this smaller print before including as the first slide in your case conference presentation.
Moyamoya disease

• What the meaning of Moyamoya?
• It is Japanese.
• Angio have the appearance of a "puff of smoke" ("もやもや (moyamoya)" in Japanese) due to small collaterals
Moyamoya disease

• progressive cerebrovascular disorder caused by blocked arteries in the basal ganglia, primarily in the internal carotid artery
• primarily affects children, also occur in adults
• the first symptom of Moyamoya disease: stroke, or recurrent transient ischemic attacks
• disturbed consciousness, speech deficits (usually aphasia), sensory and cognitive impairments, involuntary movements, and vision problems
• inherited genetic abnormalities or acquired
From Stanford moyamoya surgery website
treatments

• **The same concept**: a blood and oxygen "starved" brain reaching out to grasp and develop new and more efficient means of bringing blood to the brain and bypassing the areas of blockage.

• **Direct revascularization.**
  - **STA-MCA** procedure (the treatment of choice) - the scalp artery (superficial temporal arterial or STA) is directly sutured to an artery on the surface of the brain (middle cerebral arterial or MCA).
STA-MCA bypass surgery illustrations

From Stanford moyamoya surgery website
• Indirect revascularization

• EDAS (encephaloduroarteriosynangiosis)
• the EMS (encephalomyosynangiosis)
• multiple burr holes procedure
One year post surgery

Moyamoya Disease and Moyamoya Syndrome
Diagnosis

• initially suggested by CT, MRI, or angiogram
• MRI and MRA should be performed for the diagnosis and follow-up of moyamoya disease
• Diffusion-weighted imaging useful to follow up
• nuclear medicine studies such as SPECT
  to demonstrate the decreased blood and oxygen supply to
  areas of the brain involved with moyamoya disease
• Conventional angiography is the gold standard
Cerebral Angiogram
Moyamoya Disease and Moyamoya Syndrome
‘ivy sign’

• diffuse leptomeningeal enhancement on post-contrast MR or FLAIR images
• the pattern of contrast enhancement resembled ivy creeping across stones
• disappears or decreases after successful bypass surgery
Gadolinium-enhanced T1-weighted images are superior to FLAIR MR images for depicting the ivy sign in patients with moyamoya disease.
MRI/Nova

from Stanford moyamoya surgery website
Summary

• Moyamoya is Japanese = puff of smoke
• 6 grades by severity
• Direct or indirect bypass surgery
• Ivy sign on MR
• Post contrast T1 is superior to FLAIR in detecting Ivy sign
References

- Moyamoya Disease and Moyamoya Syndrome  
- Stanford moyamoya surgery website.
Thanks!

Happy New Year!