

Susceptibility-Weighted Imaging (SWI) Case Reports

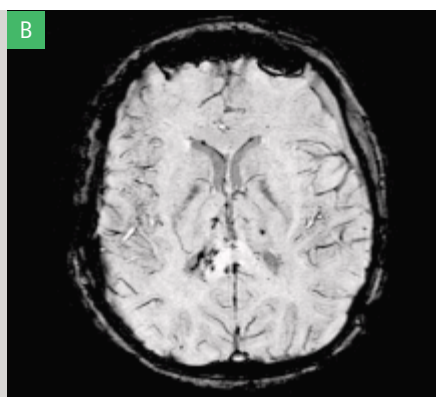
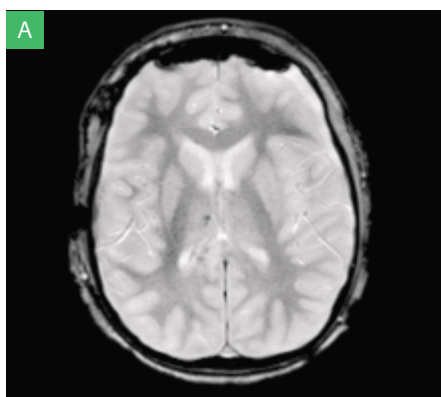
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Case 1

A 14-year-old female who was ejected 20 feet from an automobile in a motor vehicle accident. She had an initial Glasgow Coma Score (GCS) of 3. She was in a coma for 8 days, and in hospital for 93 days. MRI was obtained 11 days after injury. SWI images showed numerous small hemorrhages through-

out the deep brain, consistent with diffuse axonal injury. In these images, the small hemorrhages in the corpus callosum and thalami are better seen on the SWI image than on the conventional GRE (Gradient Echo) image. On long-term follow-up she had severe disability.

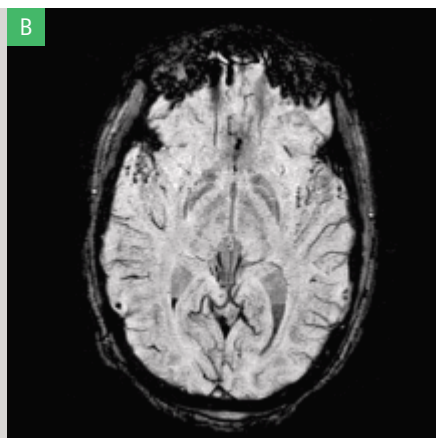
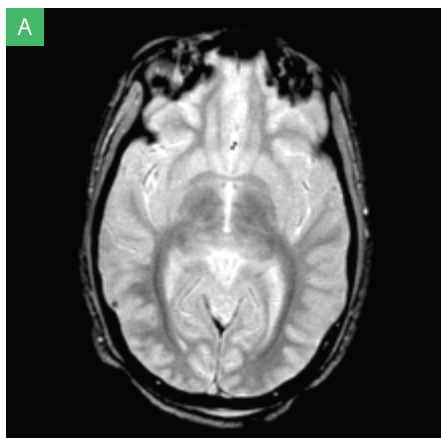


Traumatic Brain Injury: deep shearing injuries in corpus callosum and thalami. A: Conventional GRE, B: SWI

Case 2

A 12-year-old female who was a passenger in an automobile that struck a pole. Her initial GCS was 6. She was in a coma for 6 days and in the hospital for 29 days. MRI was obtained 3 days after injury. SWI images showed multiple small hemorrhages throughout the deep brain, consistent with diffuse

axonal injury. In these images, the small hemorrhages in the temporal lobes and occipital horns are better seen on the SWI image than on the conventional GRE image. On long-term follow-up she had moderate disability.

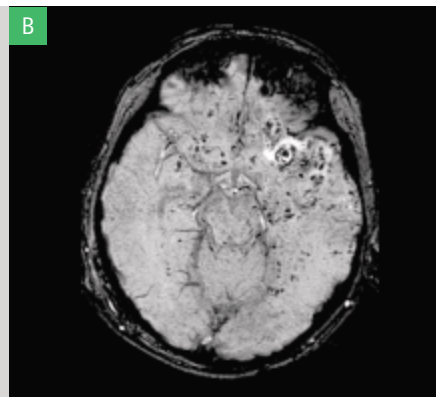
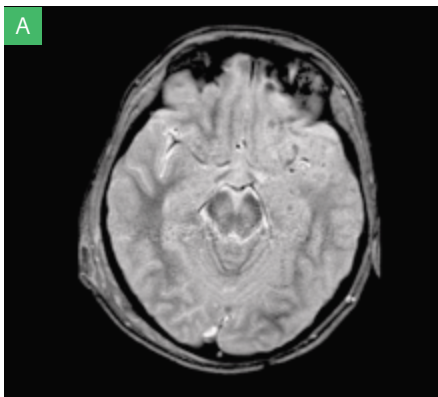


Traumatic Brain Injury: contusions and intraventricular hemorrhage. A: Conventional GRE, B: SWI

Case 3

An 11-year-old male who was riding a motorcycle when struck by an automobile. His initial GCS was 6. He was in a coma for 26 days, and was in hospital for 105 days. MRI was obtained 8 days after injury. SWI images showed multiple small hemorrhages throughout the deep brain, consistent

with diffuse axonal injury. In these images, the small hemorrhages in frontal and temporal lobes, and midbrain, are better seen on the SWI image than the conventional GRE image. On long-term follow-up he had moderate disability.

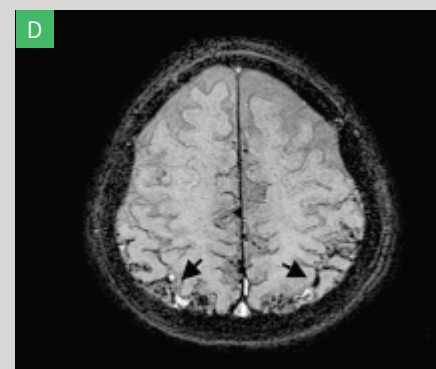
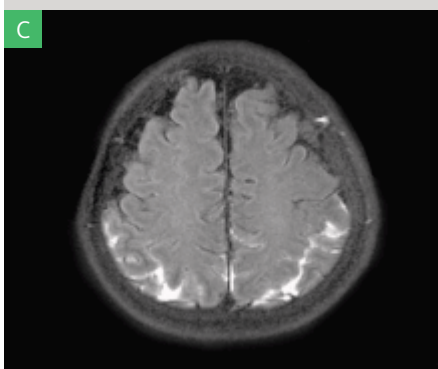
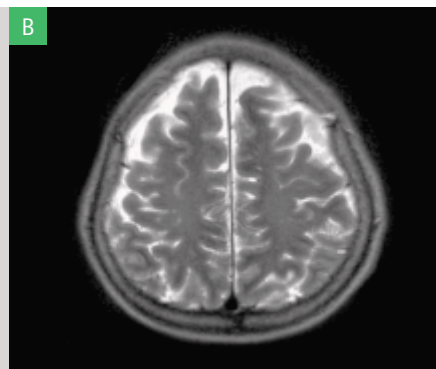
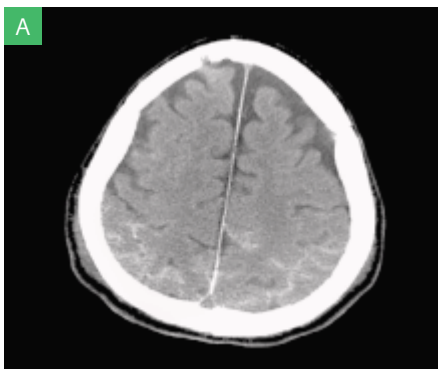


*Traumatic Brain Injury: contusions & shearing Injuries.
A: Conventional GRE, B: SWI*

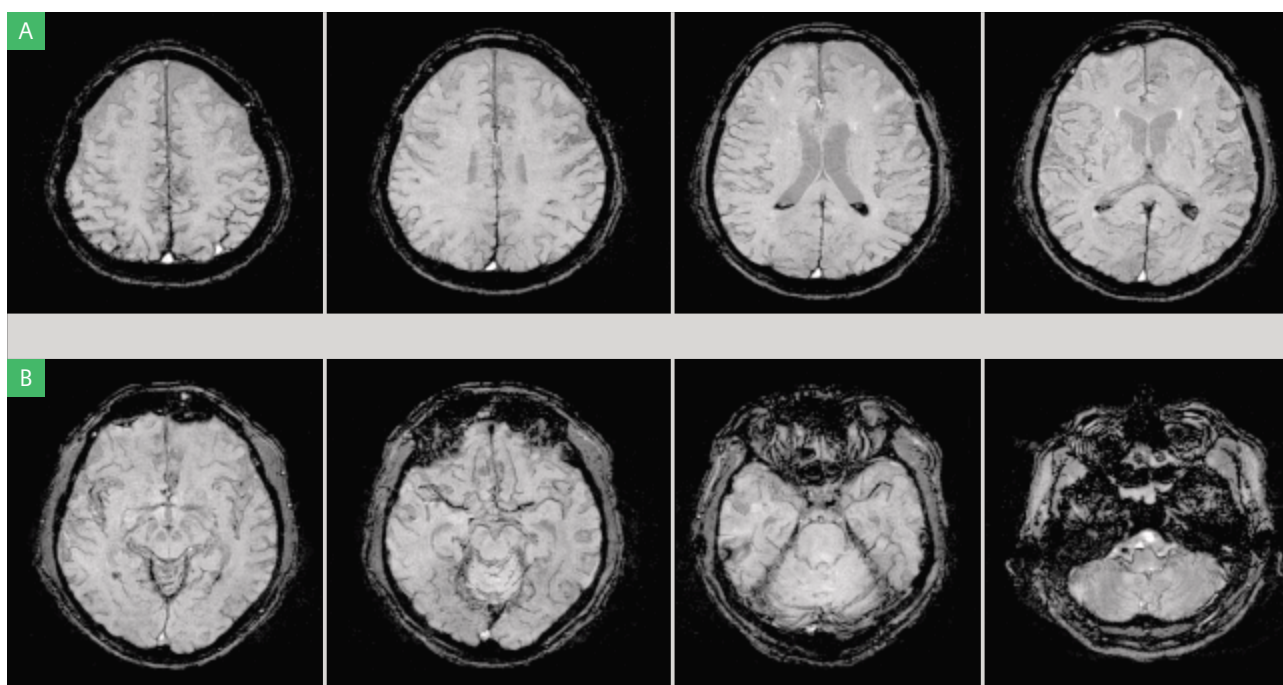
Case 4

A 60-year-old male who was involved in a rollover motor vehicle accident and was trapped under a semi-tractor trailer. SWI shows extensive dark signal outlining the surface of the brain, consistent with subarachnoid hemorrhage. A dark

fluid or FLAIR image shows bright signal in the parietal sulci, confirming recent bleeding. Hyperdense subarachnoid hemorrhage was also seen on computed tomography images (not shown).



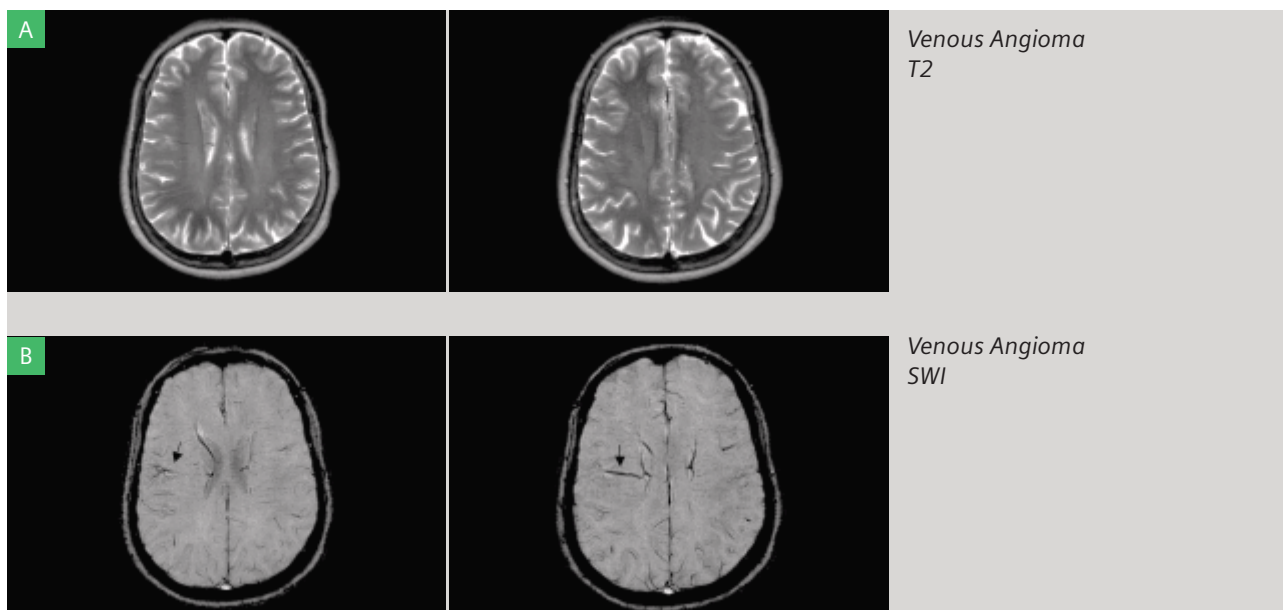
*Traumatic Brain Injury: subarachnoid hemorrhage
A: CT examination,
B: T2 weighted image,
C: Dark Fluid,
D: SWI*



Traumatic Brain Injury: subarachnoid hemorrhage. SWI images.

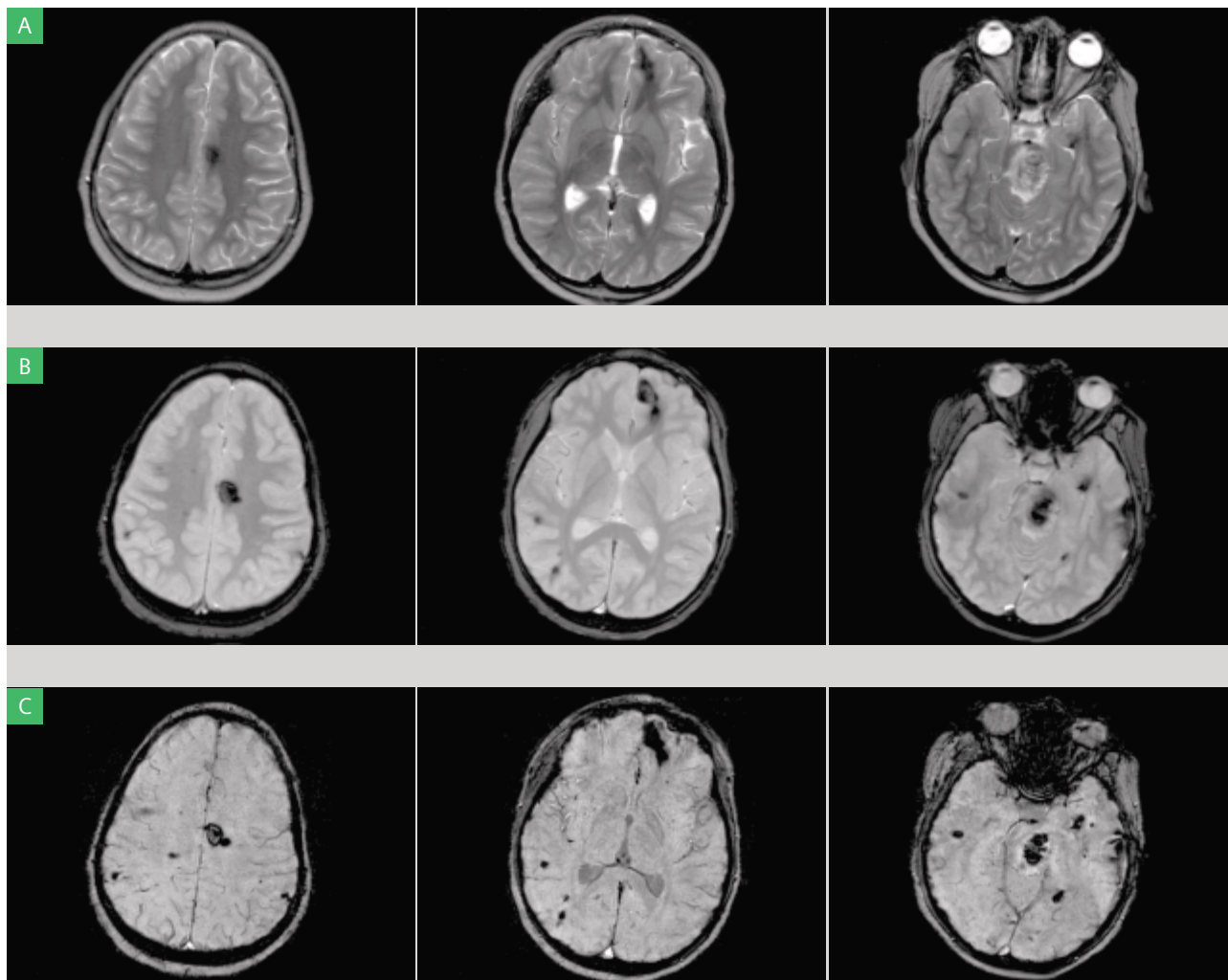
Case 5

A 57-year-old female with chronic headaches. An incidental venous angioma was found in the right hemisphere. This is best seen on the SWI images, and is barely visible on the TSE (Turbo Spin Echo) T2 image.



Case 6

A 7-year-old male who presented with visual disturbance. He was found to have multiple cavernomas in the brain on MRI, best seen on the SWI images, compared to the GRE and TSE T2 images.



Multiple Cavernomas, A: T2, B: T2*, C: SWI.

Sequence Details

Scanner	Conventional 1.5T system	MAGNETOM Avanto 1.5T
	Susceptibility-weighted imaging – SWI [3D FLASH]	
slice thickness	64 partitions 2 mm	56 slices, 2 mm
TR/TE	57 / 40	48 / 40
TI	–	–
TA	9:46 min	2:58 min PATx2**
Matrix	256 x 512	256 x 512
FoV	5/8 FoV 240	173 x 230
Bandwidth	78	80

* post-processing

** almost three times faster than
a conventional 1.5T system