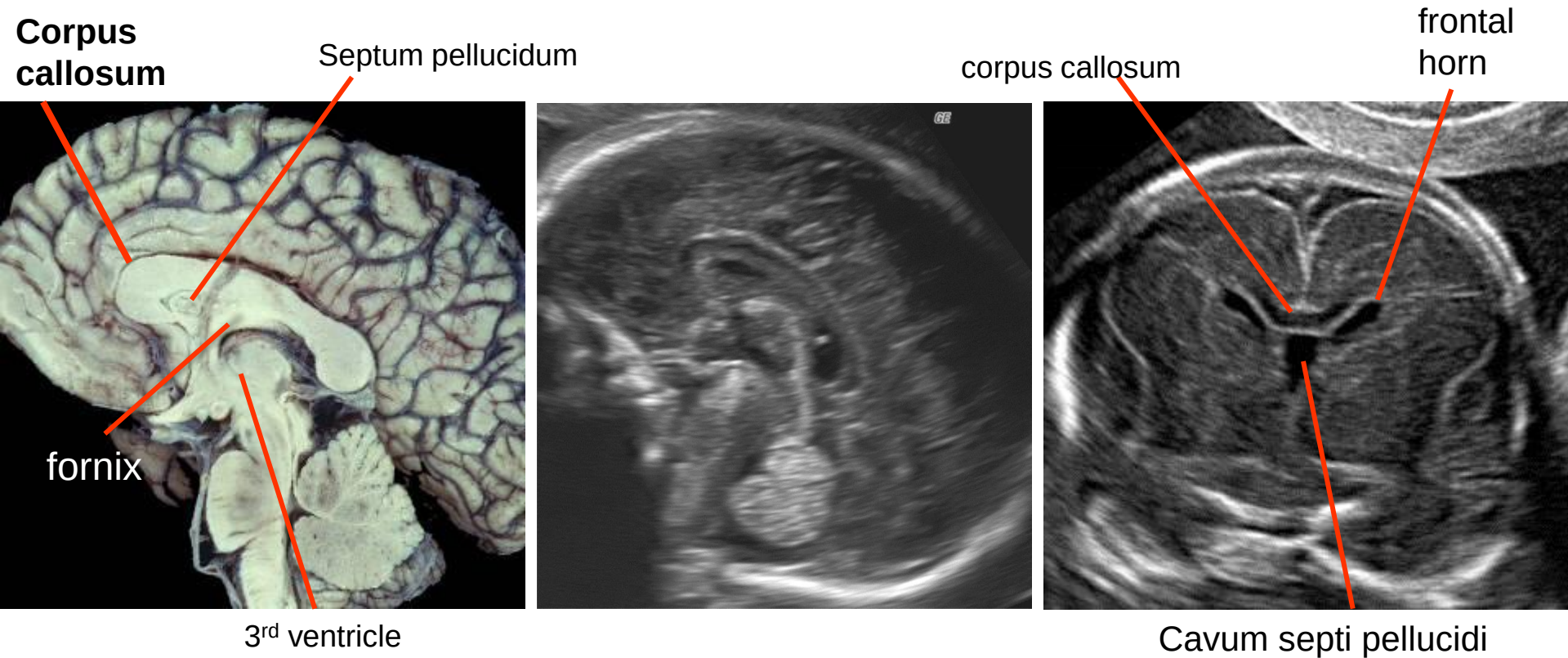


The normal corpus callosum

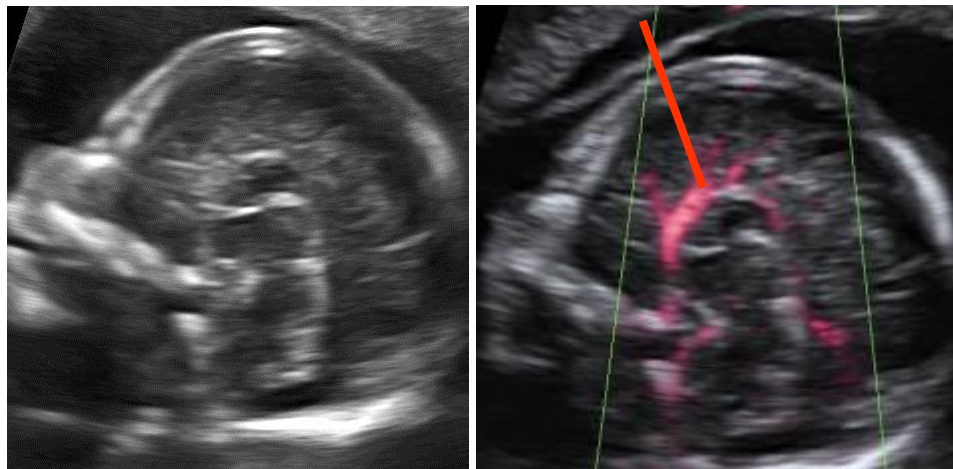


The corpus callosum is the largest commissure connecting the cerebral hemispheres. It is not clearly visualized in axial scans. Identification requires a sagittal or coronal approach. The sagittal approach is favored because it allows demonstration of the entire corpus callosum. In the coronal planes, only a section of it is seen.

The corpus callosum throughout gestation

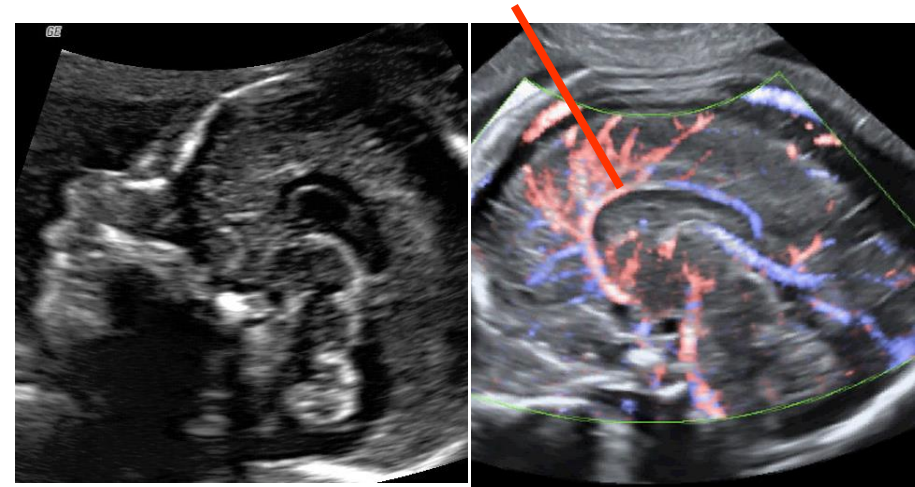
16 weeks

Pericallosal artery



20 weeks

Pericallosal artery



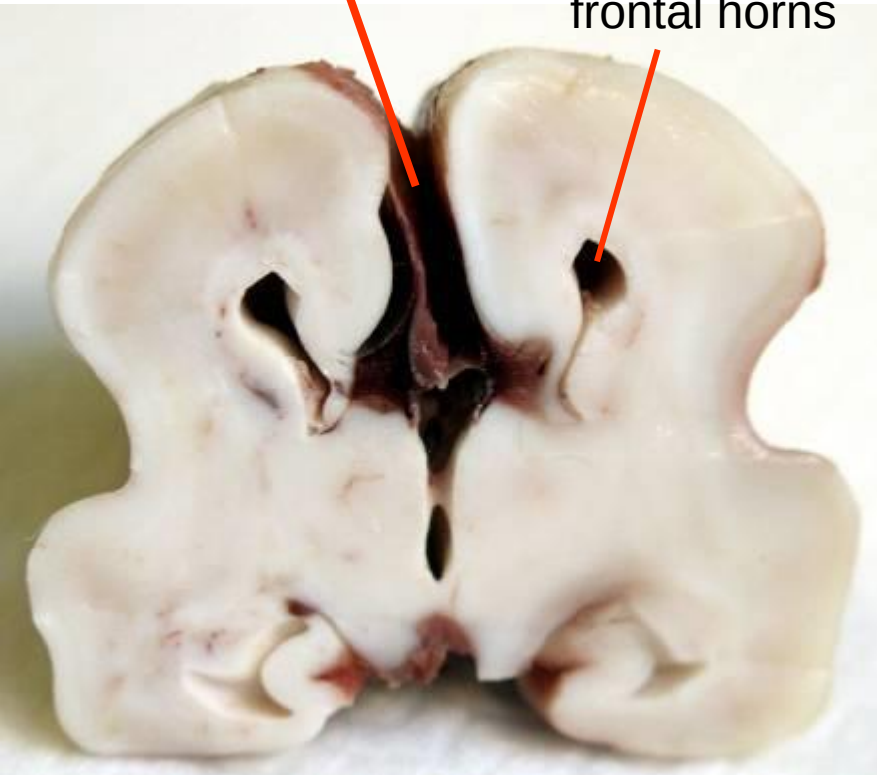
Formation of the corpus callosum is a late event in cerebral ontogenesis. The most anterior part may be seen around 15 weeks' gestation, but the demonstration of the entire structure is usually possible only around 19 weeks' gestation.

Visualization is enhanced by color Doppler demonstration of the pericallosal artery

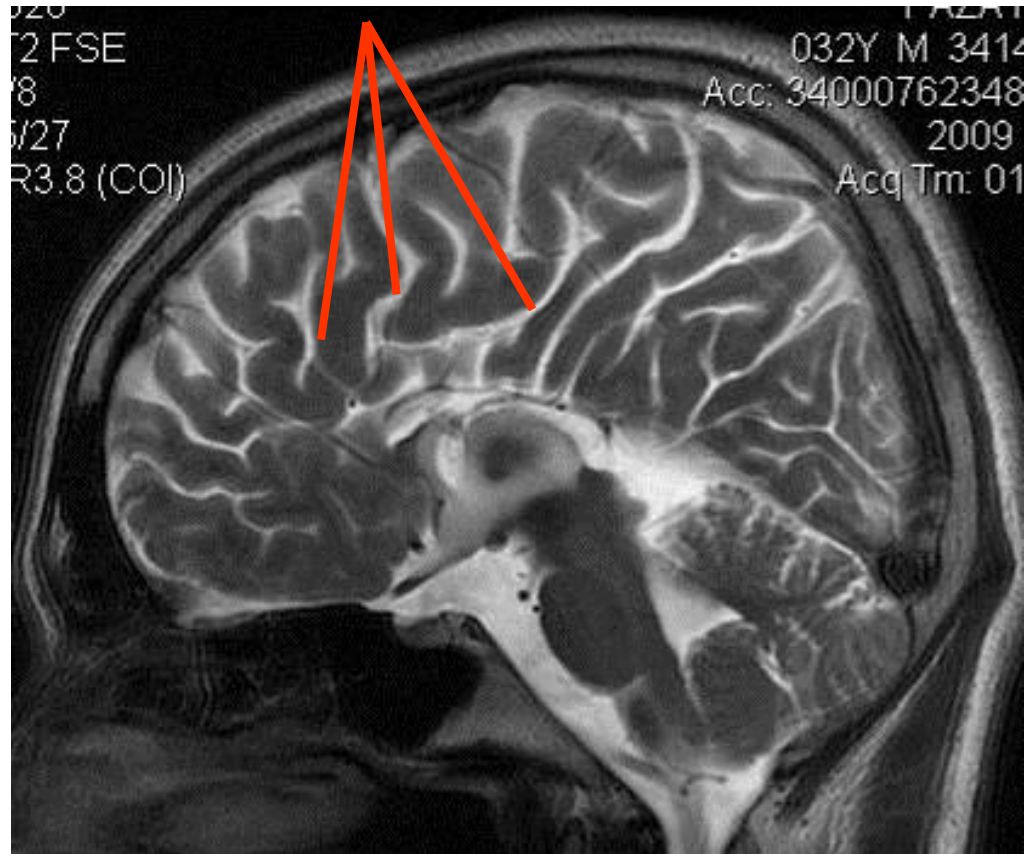
Complete agenesis of the corpus callosum

enlarged interhemispheric
fissure

comma-shaped
frontal horns

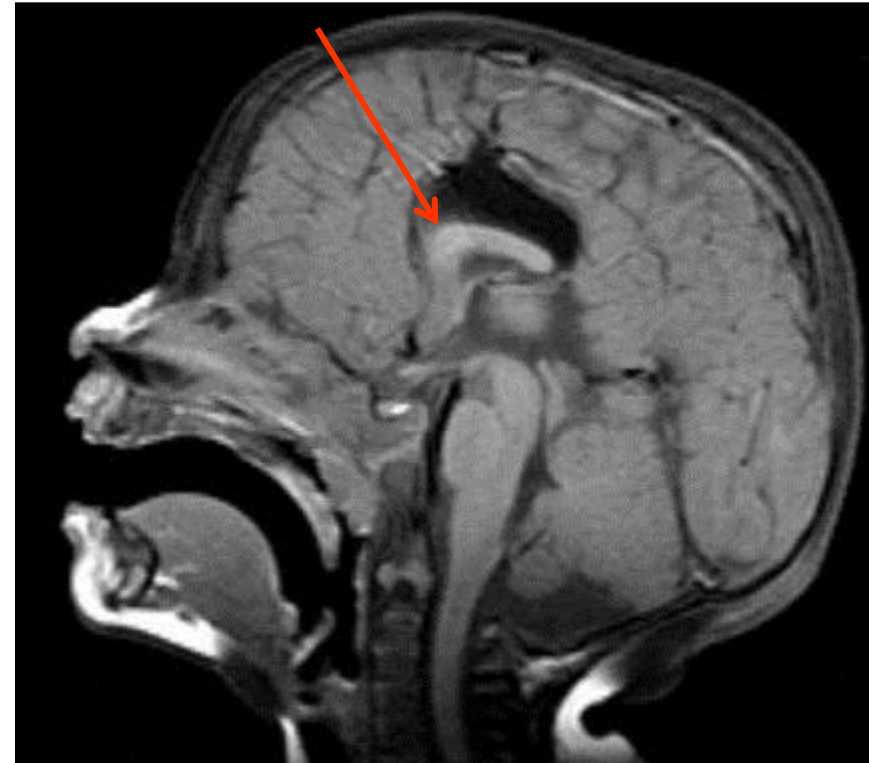


radiate array of sulci around
the roof of the third ventricle



Partial agenesis of the corpus callosum

Incomplete corpus callosum

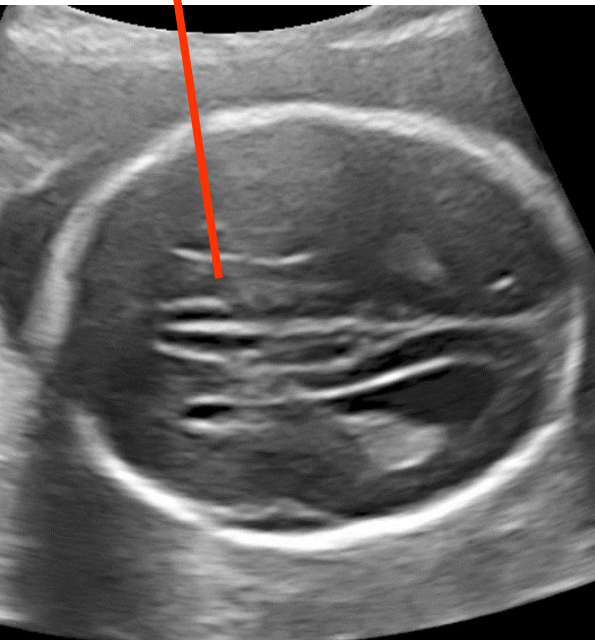


With partial agenesis, the caudal portion is missing to varying degrees; typically, the corpus callosum does not form an entire arch over the roof of the third ventricle; the anterior portion of the septum pellucidum is present



Sonography of complete callosal agenesis

No cavum septi pellucidi, wide interhemispheric fissure



no corpus callosum and cavum septi pellucidi above the third ventricle

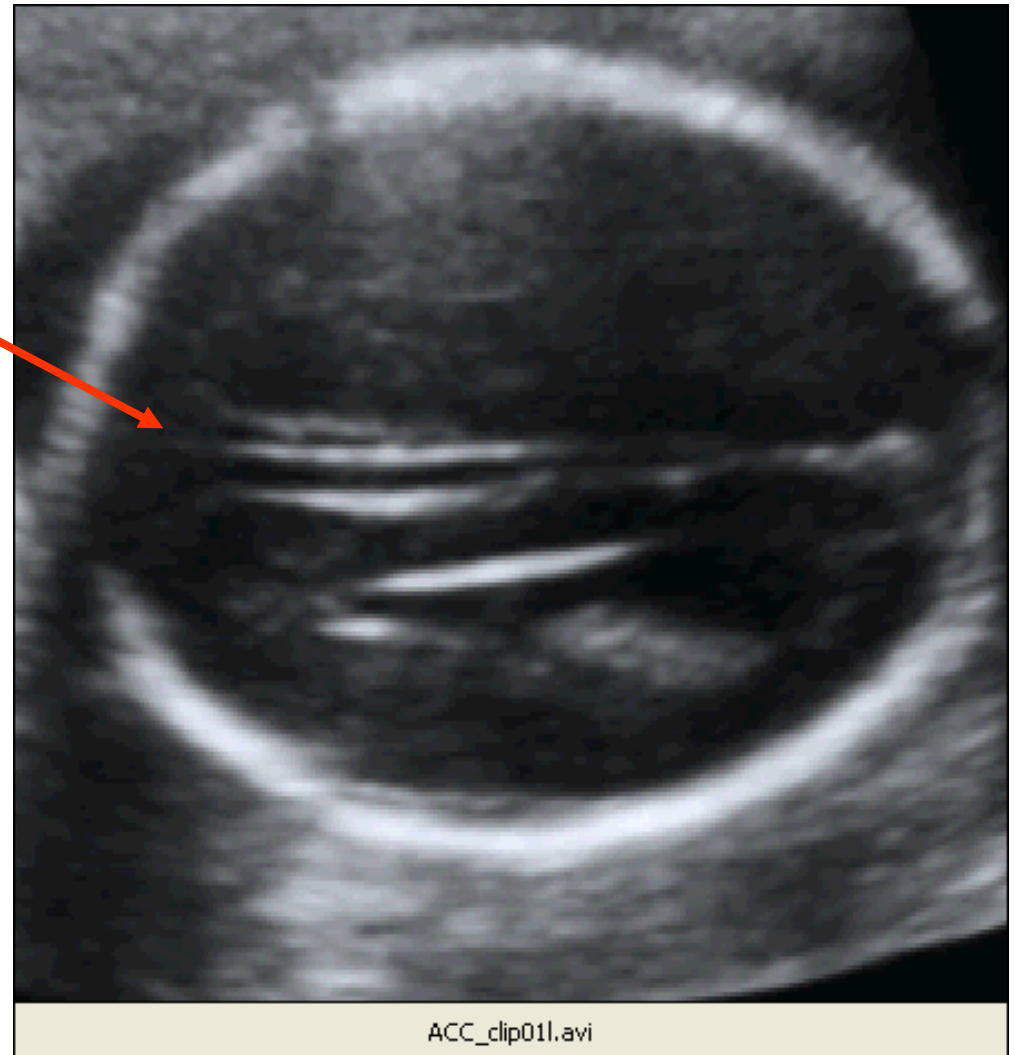


Sonographic appearance of complete agenesis of the corpus callosum is variable; most consistent findings include failure to visualize the cavum septi pellucidi and widening of the interhemispheric fissure in the axial plane and absence of the complex normally formed by the cavum septi pellucid-corporpus callosum in coronal and sagittal planes

Axial views of complete agenesis of corpus callosum

Clip 01

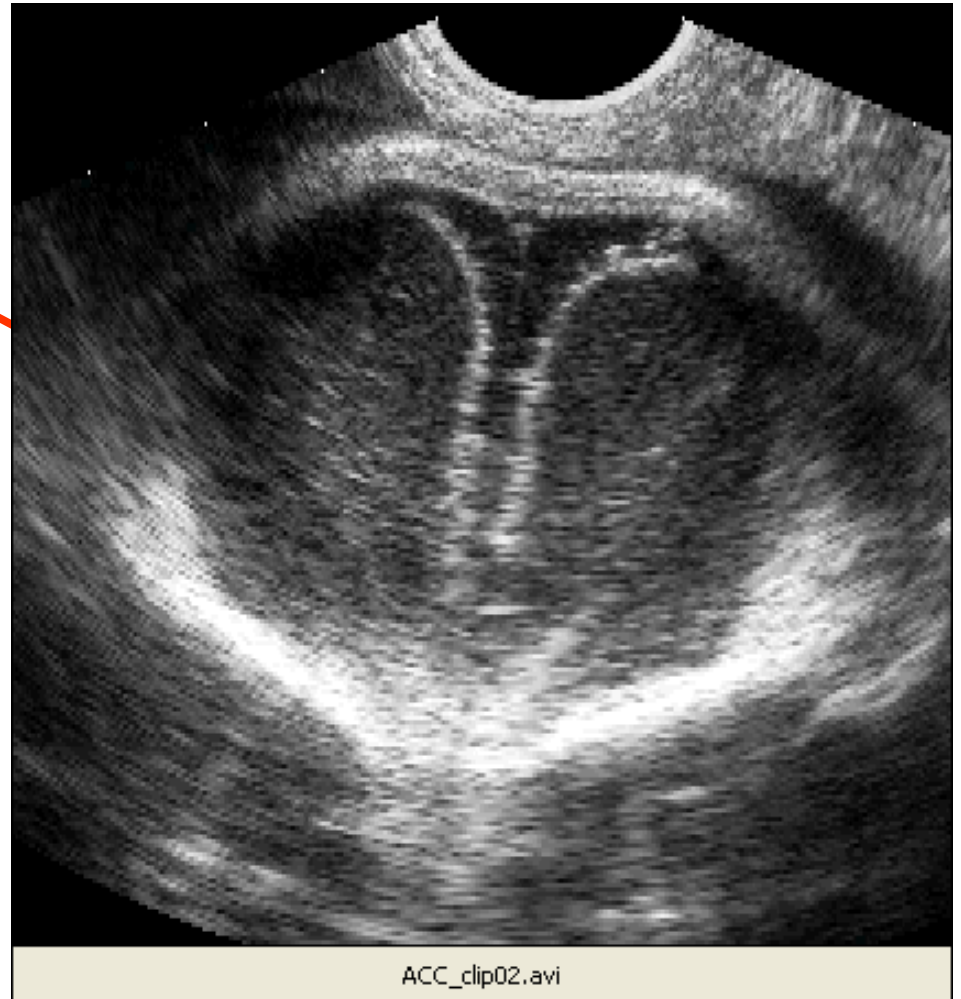
In the axial views the diagnosis of agenesis of the corpus callosum requires scrolling to demonstrate that the cavum septi pellucidi is absent, the interhemispheric fissure distended and the frontal horns unusually separated



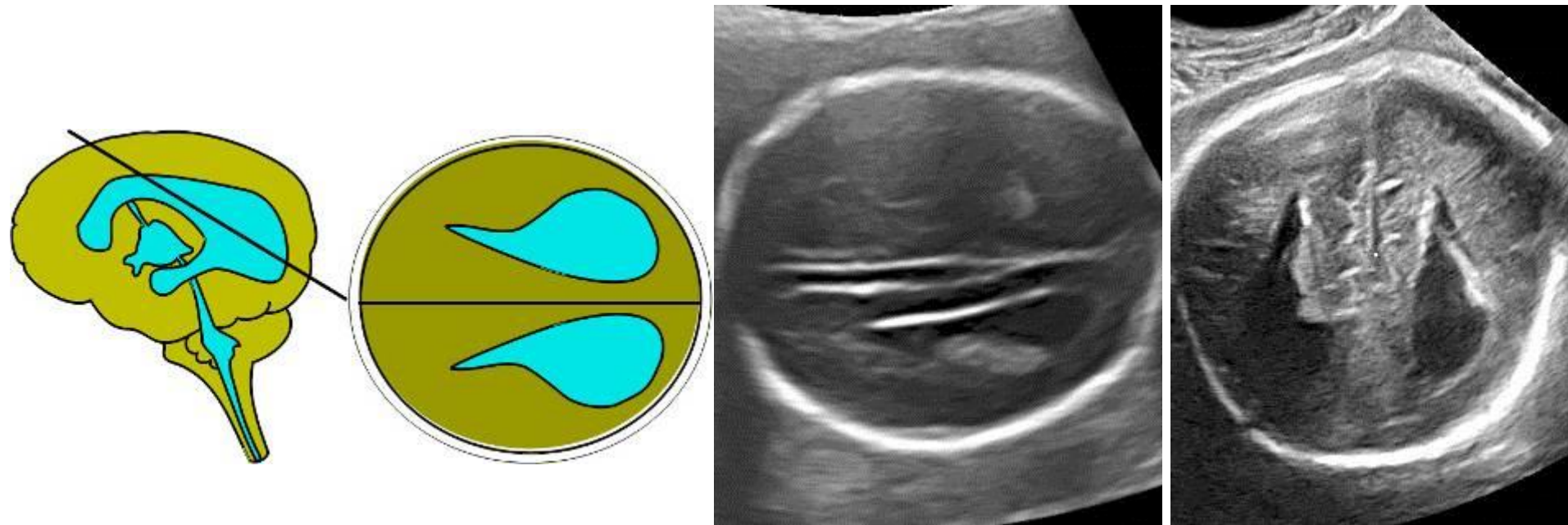
Coronal views of complete agenesis of corpus callosum

Clip 02

In the coronal views the absence of the corpus callosum results in an increased separation of the cerebral hemispheres, with a wide interhemispheric fissure; the frontal horns have a typical comma shape

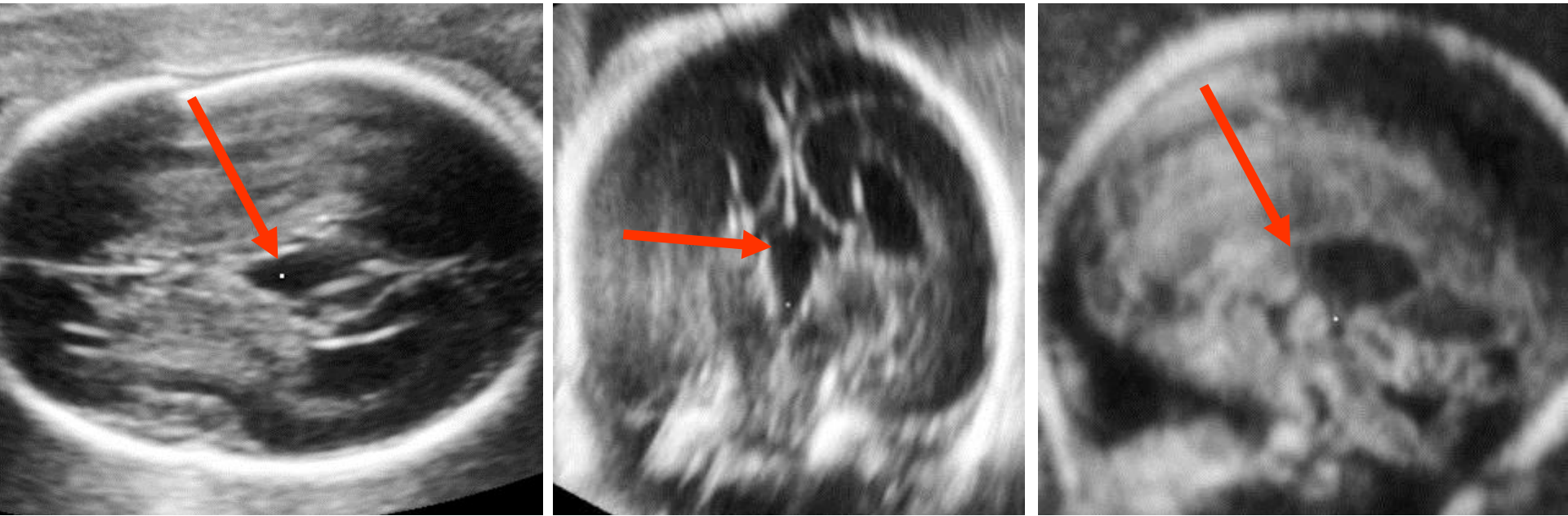


The tear-shaped lateral ventricles: a typical finding of agenesis of the corpus callosum



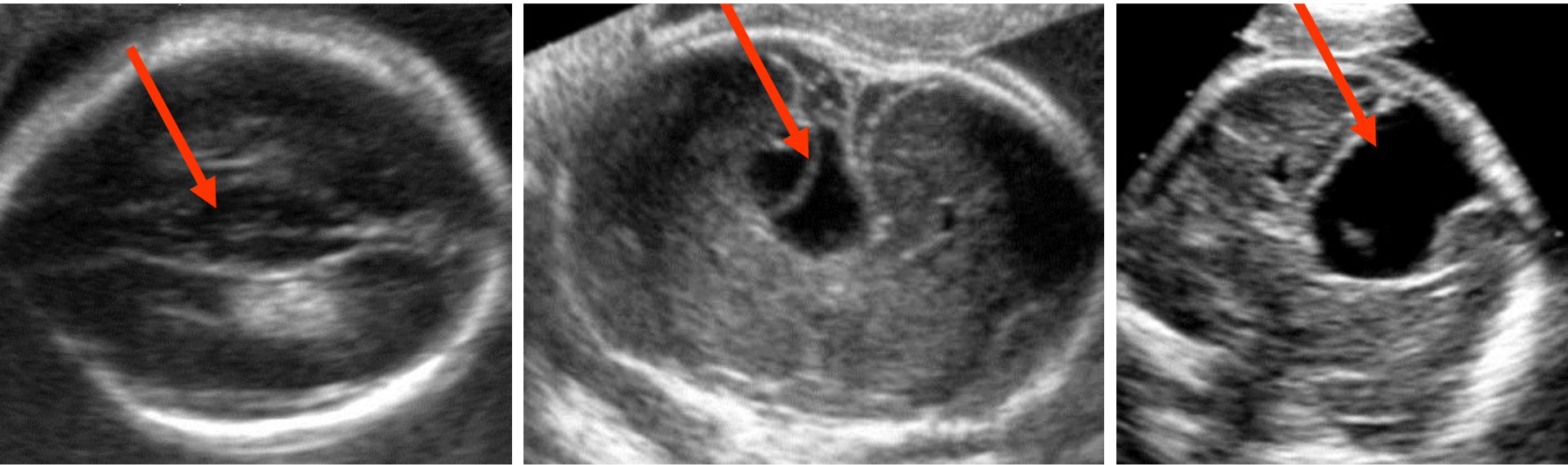
In agenesis of the corpus callosum mild posterior enlargement of the occipital horns and anterior separation of the frontal horns result in a typical tear-shaped appearance of the lateral ventricles

Agenesis of the corpus callosum with upward displacement of third ventricle



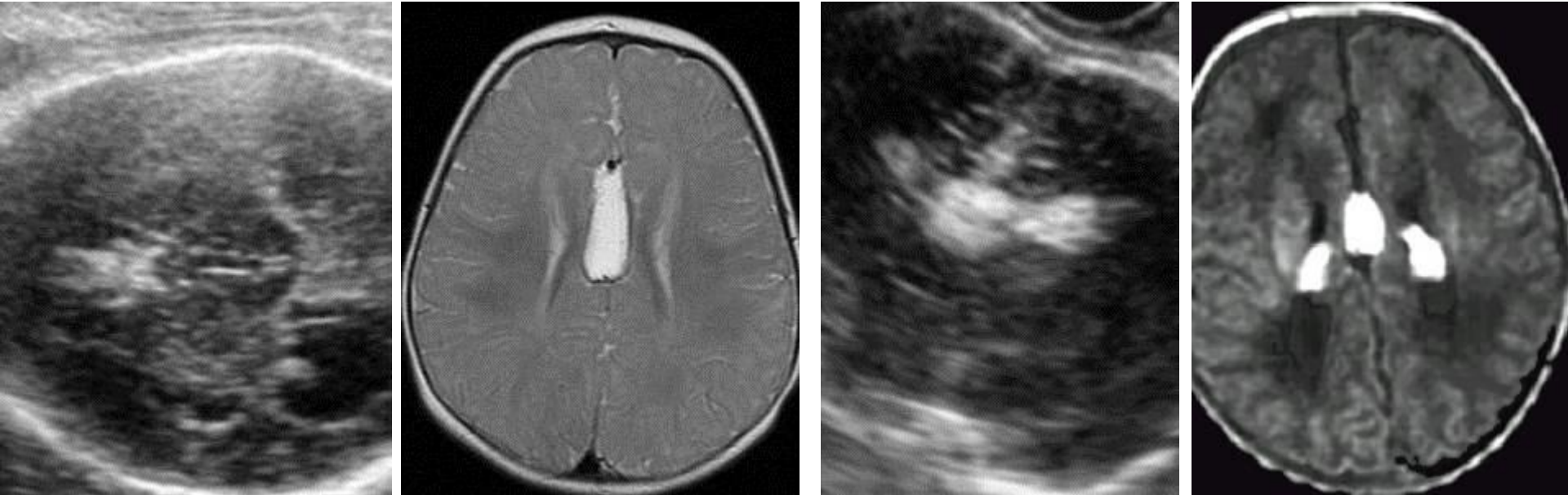
The third ventricle may be enlarged and displaced upward; this results in a cystic area in the center of the brain

Agenesis of the corpus callosum with interhemispheric cyst



An interhemispheric cyst may develop in the position normally occupied by the corpus callosum, distending the interhemispheric fissure; this may be difficult at times to differentiate from an enlarged and displaced third ventricle

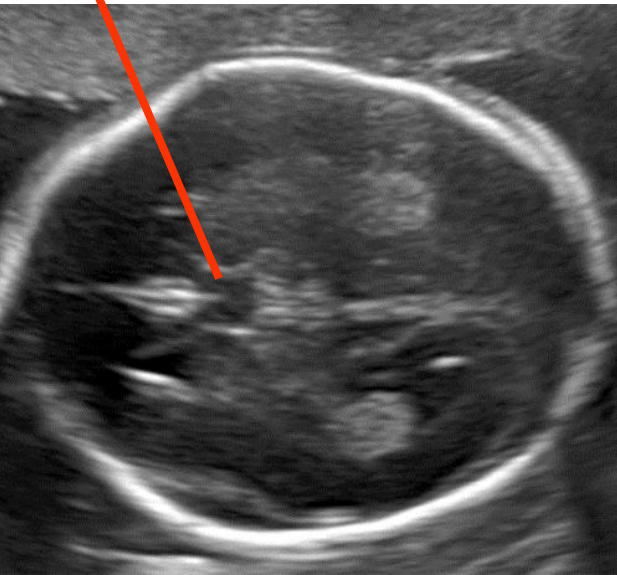
Agenesis of corpus callosum with lipomas



Lipomas may develop in the position normally occupied by the corpus callosum, usually in the third trimester; a typical appearance seen at times is due to the presence of three lipomas, one at the level of the interhemispheric fissure, and one in each lateral ventricle

Sonography of partial agenesis

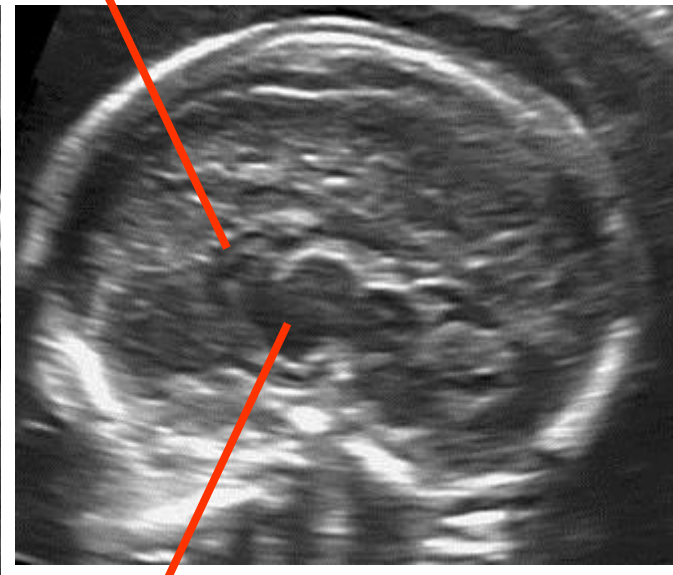
Cavum septi pellucidi



Corpus callosum



Incomplete corpus callosum

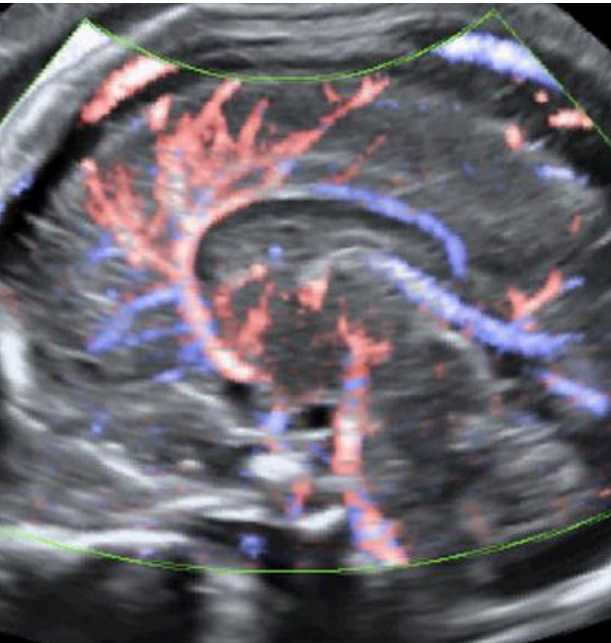


3rd ventricle

Recognizing partial agenesis of the corpus callosum is difficult; the cavum septi pellucidi is seen in the axial plane and the anterior portion of the corpus callosum can be visualized in the coronal plane; only in the sagittal plane the diagnosis is possible by demonstrating a thin and short corpus callosum that does not form a complete arch over the third ventricle

Color Doppler of the cerebral circulation

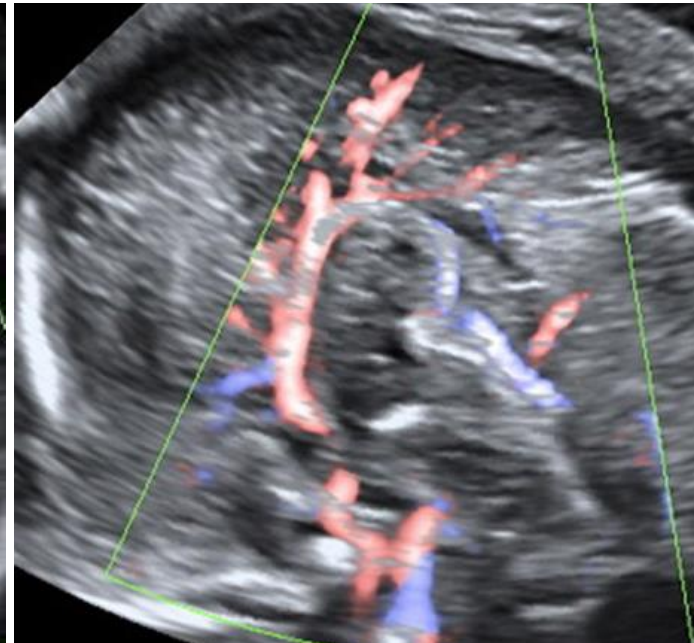
Normal



Complete agenesis



Partial agenesis

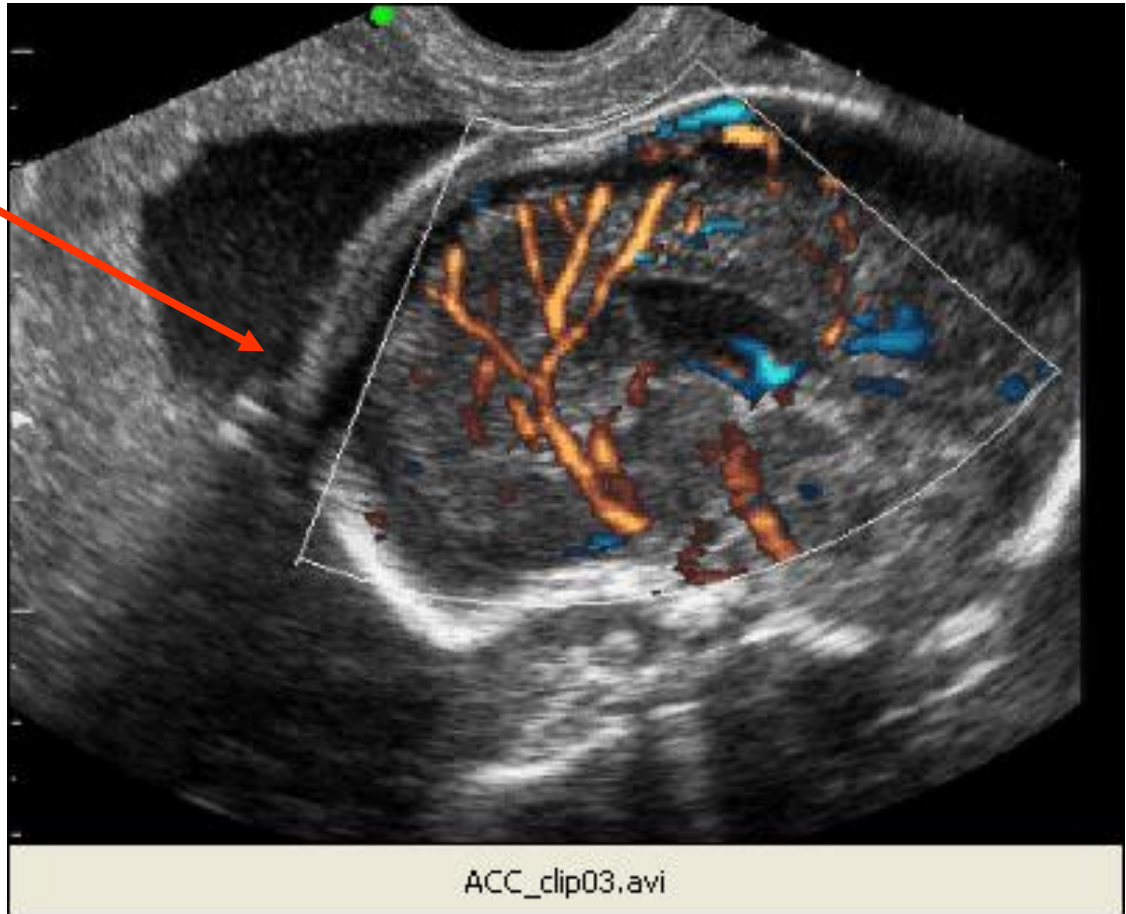


Color Doppler evaluation of the cerebral circulation may be helpful in diagnosing agenesis of the corpus callosum: in complete forms the anterior cerebral artery ascends vertically without forming the loop of the pericallosal artery; with partial agenesis the loop of the pericallosal artery is present but shortened

Color Doppler of complete agenesis of corpus callosum

Clip 03

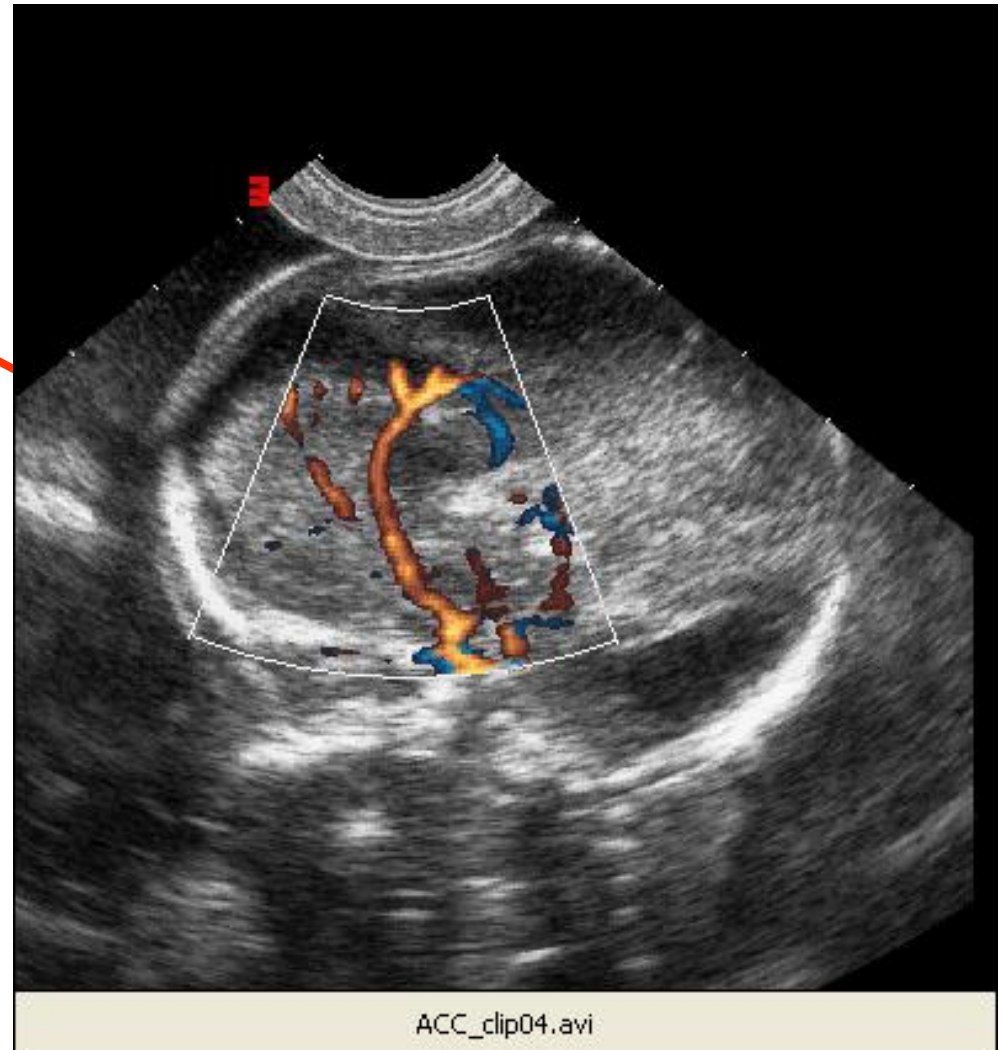
Branching of the anterior cerebral artery



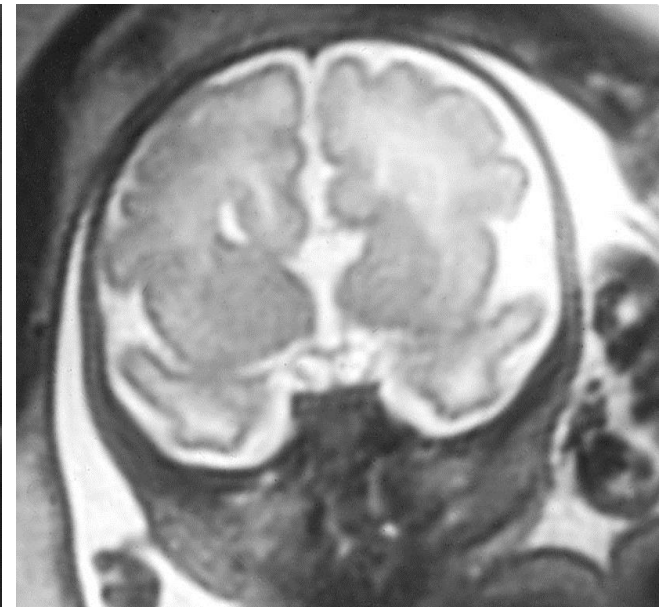
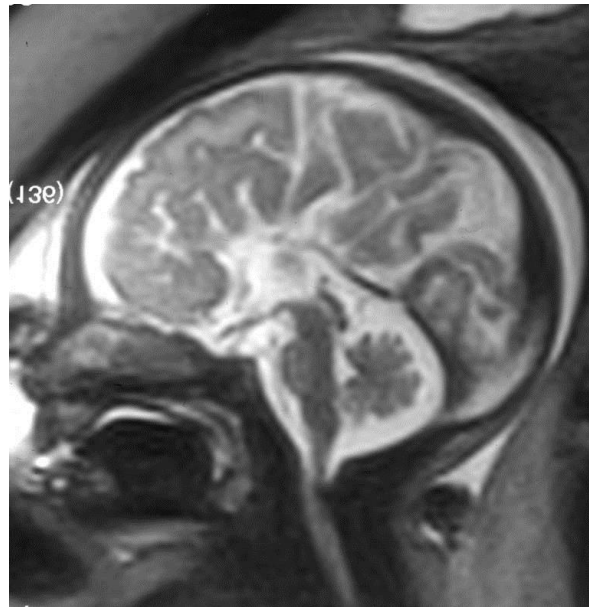
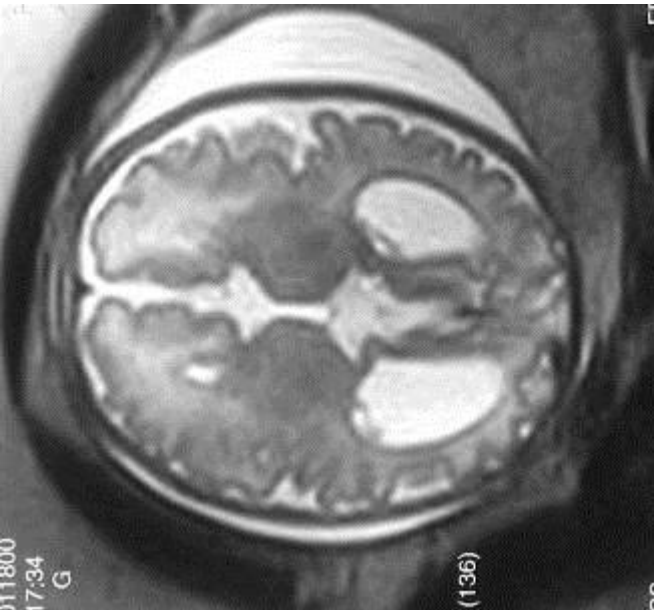
Color Doppler of partial agenesis of corpus callosum

Clip 04

In partial agenesis the pericallosal artery is present but it forms a very short loop



MR of fetal agenesis of corpus callosum



MRI allows the diagnosis of fetal agenesis of the corpus callosum and may be used to support sonography in dubious cases; it is probably more informative with regard to the identification of associated cerebral anomalies, cortical malformations in particular