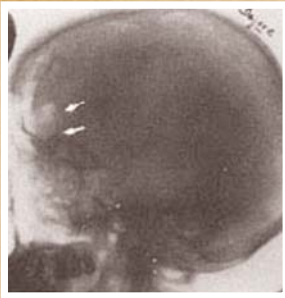


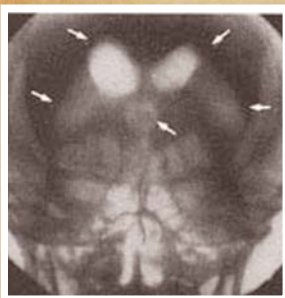
Air Encephalography and Angiography



Like all imaging, the key to visualisation is detecting contrast. In 1917, a case report from London appeared in the English medical literature of a patient with headaches and a feeling that 'her brain was splashing'. Radiography showed air inside the head, due presumably to a dural opening following previous surgery for an orbital osteoma. The air outlined the brain and cortical structures. A year later in 1918, Walter Dandy, a neurosurgeon at the Johns Hopkins Hospital, devised the technique of air ventriculography, in which air introduced by injection into the lateral ventricle provided sufficient contrast to outline the ventricular system, initially through the fontanelles and then via a lumbar puncture. This air encephalography became the predominant form of neuroradiology. Dandy also carried out contrast ventriculography with lipiodol in 1925, and in 1932 published his magnum opus, *The Brain*, based on his radiological research.



In 1927, the Portuguese neurologist Egaz Moniz hit on the idea of using the position of the cerebral vasculature, rather than the ventricular system, to outline abnormalities of brain structure.



After various fatal experiments in patients with severe epilepsy and Parkinson's disease, including tests where the carotid was ligated to increase the concentration of contrast media, Moniz discovered the value of 25% solution of sodium iodide. Intra-arterial angiography was thus introduced and widely used in epilepsy. Moniz also devised the frontal lobotomy for the treatment of severe depression. He was awarded a Nobel prize for this mutilating and misguided operation, but not for angiography, which perhaps was a greater contribution.