The blood-brain barrier (BBB) is a physiologic interface between the bloodstream and the brain. The BBB has tight junction (TJ) proteins that restrict blood and toxins from entering the brain and allow important nutrients and ions to pass through. In recent studies, we found a significant increase in the TJ protein, occludin, in microvessels (MV) isolated from the parietal lobe of female subjects of advanced age with Alzheimer’s dementia (D) relative to aged match females (F) without dementia (ND) (n=8 D and 8 ND, age range: 79-99, mean: 93 years for both groups). There were no significant differences in occludin between MV of male subjects with and without dementia, who were of a much younger average age (mean: 74 years old). To further evaluate this finding, we examined MV in cut sections of the superior parietal lobes of a separate group of F subjects with D and ND via immunohistochemistry (IHC) (n=12 D, age range: 82-93 and n= 5 ND, age range: 83-98). We also measured levels and distribution of occludin in isolated MV from the same original group of female subjects with D and ND utilizing immunofluorescence (IF). Preliminary analysis of IHC was not able to detect differences in occludin, but initial IF studies support higher levels of occludin in MV derived from F D subjects. Current studies are evaluating occludin localization in both groups of brain MV. In summary, we have data that occludin is increased in brain MV from female subjects of advanced age with D, relative to ND. Ongoing studies with IHC and IF will confirm differences in levels and determine localization. The increase in occludin in F D MV is an unexpected finding, and could reflect a compensatory mechanism within brain MV in the context of advanced age and Alzheimer’s dementia.