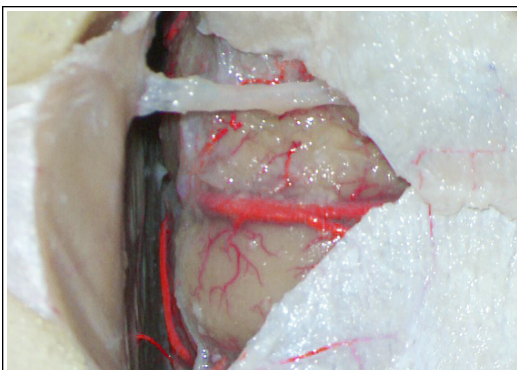


Introduction

The anterior interhemispheric approach and its variants provide access to the anterior circulation, the suprasellar area, and/or the anterior third ventricle. We investigate the feasibility of a 3D-endoscope assisted anterior interhemispheric approach through a minimally invasive tubular retractor system for the management of anterior third ventricular lesions, anterior communicating artery aneurysms, and planum sphenoidale lesions.

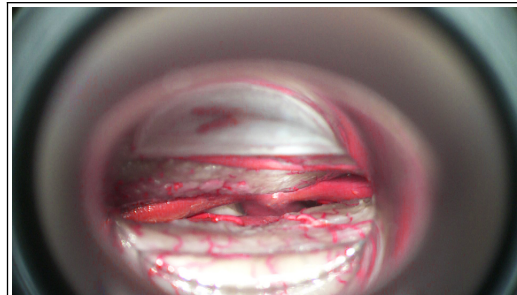
Methods

Anterior interhemispheric approaches with superior, middle, and inferior variants were performed on 5 preserved cadaveric heads (10 sides) injected with colored latex. A ViewSite™ Brain Access System (Vycor Medical, Inc., Boca Raton, FL, USA) of tubular retractors was used. 2 to 3 cm burr holes were fashioned for each specimen with the aid of neuronavigation.



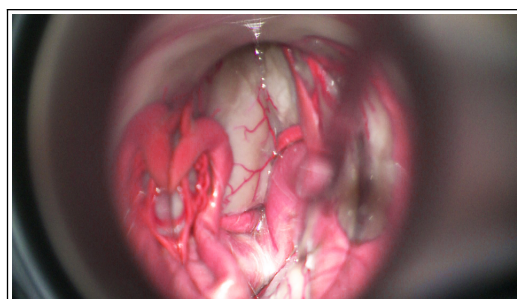
Dural opening.

The tubular retractor was introduced under direct 3D endoscopic visualization.



Insertion of the tubular retractor.

Following observation of crucial neurovascular structures, dissection through the retractor was performed using bayonetted micro-instruments. Surgical exposure and maneuverability were qualitatively evaluated for each approach by 3 surgeons using a scoring system.

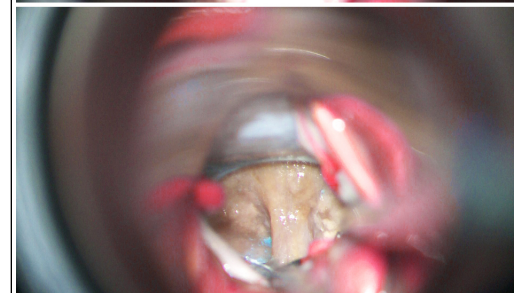
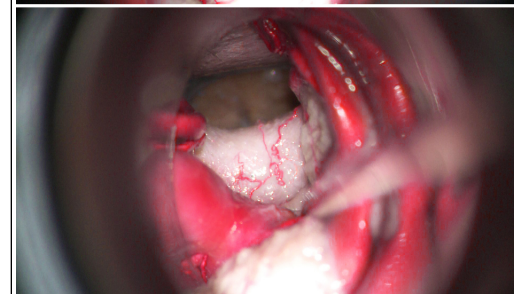
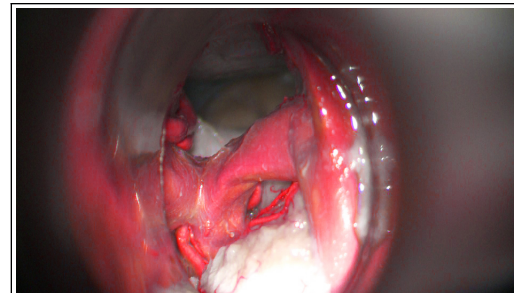


Opening of the anterior interhemispheric fissure.

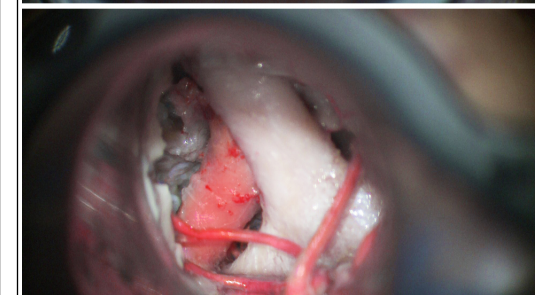
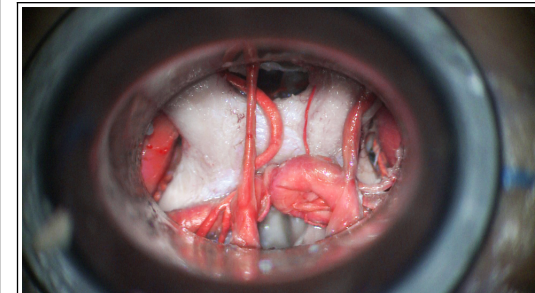
Results

This approach provided full exposure of the anterior circle of Willis and the anterior third ventricle with minimal

retraction of the frontal lobes and anterior cerebral arteries. The tubular retractor enabled adequate anatomical visualization and provided stable frontal lobe retraction. Bayonetted instruments and bipolar cautery were passed through the tubular retractor without difficulty, and the tubular retractor applied rigid, constant, and equally distributed pressure onto the impacted surfaces.



Exposure of the anterior circulation.



Complete bilateral exposure of the anterior circulation and suprasellar area.

This technique facilitated dissection of the anterior circulation and would permit clipping of anterior communicating artery aneurysms and adequate control of the planum sphenoidale.

Conclusions

An endoscope-assisted transtubular approach to this region is both safe and effective for the management of anterior communicating artery aneurysms and lesions of the anterior third ventricles and planum sphenoidale. Further clinical studies are necessary to determine potential clinical complications.