Three-dimensional Endoscopic Supraorbital Trans-eyebrow Keyhole Approach to the Anterior Skull Base Lesions. 3D VS 2D

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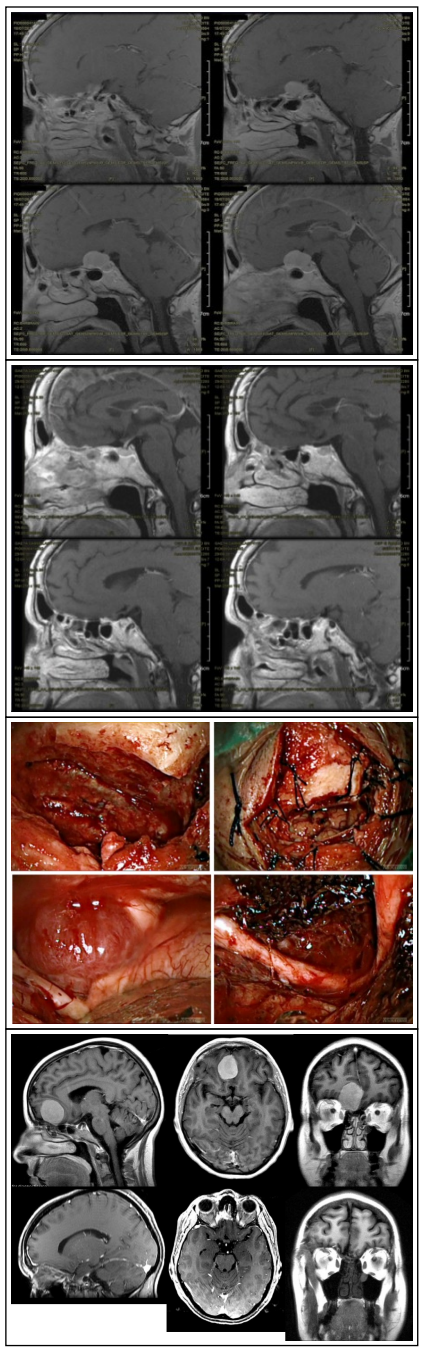
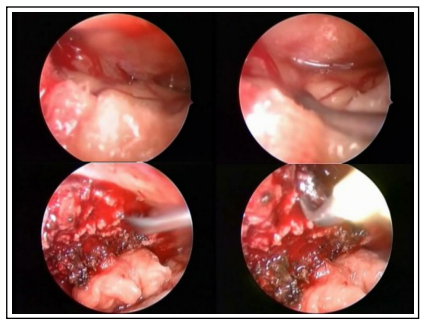
Introduction

Keyhole surgery has developed since the 1990s as a less invasive therapeutic strategy for intracranial lesions. With the increasing use of endoscopes and the development of endoscopic procedures has come an increase in the technologies for building smaller and lighter endoscopes with quality displays and ensuring greater ease of use.The purely endoscopic eyebrow supraorbital approach is an alternative microsurgical routes to the anterior and middle cranial base.The purpose of this study is to compare 3D endoscope with 2D endoscope.

Methods

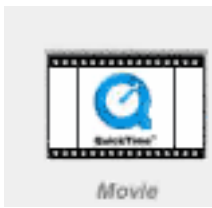
12 patients with anterior fossa mengiomas(6 olfactory groove,3 tuberculum sellae,3 planum sphenoidale) were operated on via purely stereoscopic endoscope eyebrow supraorbital approach.The surgical results were studied retrospectively and compared with patients affected by lesions at the same locations but treated via a conventional microsurgery eyebrow supraorbital approach and the fully endoscopic supraorbital trans-eyebrow keyhole approach.

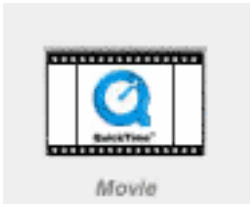


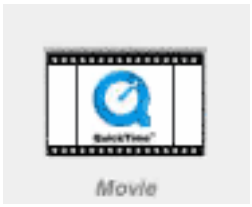


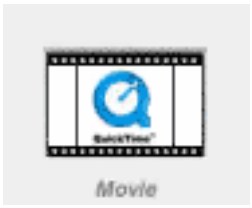
Results

Visualization is considerably improved, while the keyhole mini -invasive concept is respected. There were significant differences in operative time, or extent of resection compared with cases in which a 2-D endoscope was used.Simple tasks took about 20% longer to complete and more complex tasks took 70% longer with 2D than with 3D vision. Subjective depth perception was improved compared with standard 2-D scopes.









	2D(Assisted)	3D
Total	13	12
CSF Leaks	2	1
Operative Time (minutes mean range)		
Olfactory Groove	142	118
Tuberculum Sellae	136 (130)	100
Planum Sphenoidale	118(103)	89
Length of hospitalization		
Mean (range)	5 (2 – 10)	5 (2 – 8)
Residual	0	0
Recurrence	0	0

Conclusions

The purely endoscopic eyebrow supraorbital keyhole approach is a valuable and alternative minimally invasive route to anterior skull base lesions. In this first reported series of purely threedimensional endoscope eyebrow supraorbital approach, we demonstrate subjectively improved depth perception and excellent outcomes with no increase in operative time and in some cases a decrease of surgery time. For a supraorbital endoscopic approach, the 3D endoscope fulfilled the ultimate aim of endoscopy, providing depth and an excellent view of the operating field similar to the microscope view.Three-dimensional endoscopes may become the standard tool for minimal access neurosurgery.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of stereoendoscopy 2) Discuss, in small groups about advantage of different approach for anterior skull base lesions, 3) Identify an effective treatment for anterio skull base lesion.