Introduction. Orbital approaches can be very challenging and often require the combined expertise of neurosurgeons, ophthalmologists and ENTs. The main concerns in orbit surgery are the maintenance of vision and ocular movements and the achievement of an acceptable cosmetic result. Traditionally the orbital approaches are divided in two major categories: the transorbital, which manifest no orbital walls opening and the extraorbital with orbital walls opening. Endoscopic approaches to the orbit constitute an important addition to the orbital surgery armamentarium the last 2 decades.

Purpose: In this cadaveric study we aim to present a novel minimally invasive, endoscopic approach to the lateral-inferolateral orbit through an extradural middle fossa route.

Material-Method: Eight fresh cadaveric heads (16 sides) were prepared for dissection. Anatomic dissection was performed using rod lens endoscope (Karl Storz, 0 degrees 18 cm length, 4mm diameter). A classic curvilinear incision was performed. The galea flap was turned anteriorly after performing a subfacial dissection. The upper edge of the zygomatic arch was exposed and drilled with a diamond burr size 3. After the exposure of the lower lateral middle fossa wall a 2cm length by 1cm height craniotomy was performed. With the use of the endoscope the dura matter was dissected from the anterior part of the middle fossa and the foramen rotundum, was identified. The lateral part of the superior orbital fissure was also identified and the meningo-orbital band was dissected. The bone covering the foramen rotundum was drilled using a 3 cm cutting drill and the intraforaminal V2 was exposed. By removing more bone and following the route of V2 the superior aspect of the pterygopalatine fossa was exposed. Further bone removal towards the supraorbital fissure exposes the periostibium at the lateral wall of the orbit.

Results: The part of the greater sphenoid wing between the supraorbital and infraorbital fissures was removed and the lateral periorbital surface was exposed. In all the specimens the posterior 2/3 of the lateral orbit wall was removed and the anterior limit of the removal was the sphenozygomatic suture. The inferior orbital fissure was identified just in front of the pterygopalatine fossa. After removing the fat the infraorbital nerve entering the orbit was exposed. The junction of the lateral and inferior wall of the orbit had to be drill for the better exposure of the infraorbital nerve. At the floor of the orbit the infraorbital groove/canal was identified.

Conclusion: The minimally invasive purely endoscopic approach to the superior-lateral aspect of the pterygopalatine fossa and lateral orbit through a middle fossa extradural route is a good alternative approach to the lateral orbit. Further studies and clinical application of this approach is necessary for a better evaluation of its usefulness.

References