



Case Report

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Endoscopic Trans-Sinus Approach for Biopsy of the Inferior Rectus Muscle

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Abstract

We describe a case of a 68 year-old female presenting with a posterior left inferior rectus muscle mass. The patient underwent biopsy of the mass via an endoscopic trans-sinus approach, only rarely discussed previously in the literature. The Pathology results obtained from the muscle showed atrophic and fibrotic muscle with mild chronic inflammatory infiltrate, compatible with the diagnosis of inflammatory process. The patient was started with oral prednisone for idiopathic orbital inflammation.

Keywords

Biopsy; Inferior rectus muscle; Trans-sinus

Introduction

Minimally invasive endonasal techniques to approach the posterior orbit have been previously described [1-4], but only rarely [2] as an approach to biopsy the inferior rectus muscle.

We describe a case of a 68 year-old female presenting with a posterior left inferior rectus muscle mass. The patient underwent biopsy of the mass via an endoscopic trans-sinus approach-only rarely discussed previously in the literature [1]. Collection and evaluation of protected patient health information was HIPAA-compliant.

Case Report

A 68-year-old year old female with a history of controlled hypothyroidism, dyslipidemia and osteoarthritis presented for evaluation of painless binocular vertical diplopia of 6 weeks duration. On examination BCVA was 20/25 OD and 20/30 OS. Anterior and posterior segment examination was normal. Left hypotropia with supraduction limitation was noted. Laboratory tests and contrast-enhanced MRI of the orbits were obtained. The tests showed inflammatory markers in the normal range (ESR and CRP) and negative acetylcholine receptor antibodies. Contrast-enhanced MRI of the orbits showed isolated enlargement of the left inferior rectus muscle with the appearance of an intrinsic mass lesion within the muscle, sparing the muscle insertion (Figures 1a and b). Suspecting a systemic process, CT chest/abdomen/pelvis was subsequently ordered to look for primary disease. These tests revealed hepatosplenomegaly.

Flow cytometry of the peripheral blood was consistent with marginal zone lymphoma. Bone marrow biopsy was also consistent with marginal zone lymphoma. A repeat MRI performed 1 month later showed stability of the inferior rectus muscle mass. For diagnostic purposes, the patient underwent biopsy of the inferior rectus mass via an endoscopic trans-sinus approach. The Procedure was performed under general anesthesia (Video 1).

Procedure

Endoscopic sinus surgery was performed-The orbital floor and medial strut were identified visually and with anatomic guidance, using the FUSIONTM navigation system (Medtronic, Inc.) The medial strut was burred and removed exposing the orbital periosteum. The identification of the inferior rectus muscle was carried after the orbital periosteum was opened with a ball seeker and forced duction testing was performed on the left inferior rectus. Once identified image guidance was used to confirm the location of the inferior rectus mass at the posterior orbit (Figure 2).

Biopsies of the muscle were obtained and sent for pathologic correlation (frozen section revealed muscular tissue with lymphoid infiltrate). Hemostasis was obtained with thrombin soaked neurosurgical cottonoids.

The procedure time was recorded to be 70 minutes in total, which included approximately 20 minutes for processing and review of the frozen section specimen.

The Pathology results obtained from the inferior rectus muscle showed atrophic and fibrotic muscle with mild chronic inflammatory

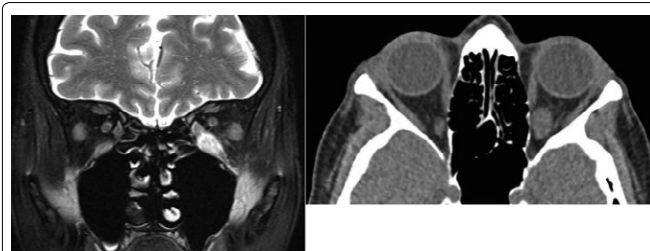
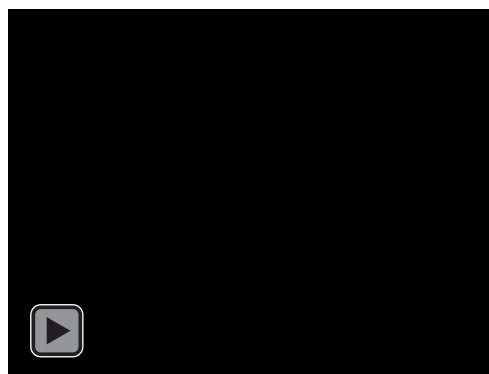


Figure 1: a) T2 MRI coronal cuts shows the IR enhanced mass lesion. b) CT axial cuts of the IR mass showing the mass involving only the muscle belly and not the tendons.



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Figure 2: Shows the exact IR mass location confirmation via image guidance using the FUSION™ navigation system (Medtronic, Inc).

infiltrate. Immunostaining demonstrated a mixture of CD20+ B cells and CD3+ T cells, compatible with the diagnosis of inflammatory process.

The patient was started with oral prednisone for idiopathic orbital inflammation.

Discussion and Conclusion

Herein we report the use of the endonasal endoscopic approach for biopsy of the inferior rectus muscle. The endoscopic trans-sinus

approach was previously reported as an approach to the lateral and posterior orbit [1-4]. It is direct and efficient, with a total operative time of 70 minutes in our case. The use of image guidance afforded the surgeons the opportunity to accurately biopsy the mass. Other techniques were considered, and included a direct EOM approach with disinsertion of the inferior rectus [4-6], although the mass was felt to be too far posterior to allow reasonable access. An orbital floor approach [6] was also contemplated, and while possible, the space within the posterior orbit was expected to be quite tight and there was concern for the inability to navigate the small space and obtain an adequate biopsy. Last, a modified Caldwell-Luc procedure [7] could be performed, but would create a more invasive option, with likely longer healing and longer operative times.

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