

DEHISCENCE OF THE LAMINA POPYRACEA: MRI FINDINGS IN CORRELATION WITH CT APPEARANCE

Pir Abdul Ahad Aziz Qureshi, Marina Rukhsar Qureshi, Bushra Rehan

Department of Radiology, Liaquat National Hospital, Karachi, Pakistan

PJR October - December 2017; 27(4): 398-400

ABSTRACT

Dehiscence of lamina papyracea is an important but rare anomaly which is associated with protrusion of orbital fat and medial rectus muscles into the ethmoid air cells. It is important to mention this anomaly in radiology reports to prevent surgical complications in patients undergoing FESS.

Key words: Lamina papyracea, dehiscence of lamina papyracea, medial orbital wall dehiscence.

Introduction

Dehiscence of lamina papyracea can result in protrusion of orbital contents into the ethmoid air cells.¹ The herniation of contents depends on the degree of defect or inward displacement of lamina papyracea. It is important to evaluate this anomaly in cases where patients are to undergo functional endoscopic sinus surgery (FESS) which is a common treatment procedure in patients who suffer from chronic sinusitis² as this anomaly has been reported to be associated with orbital complications in cases where FESS was performed without prior information of dehiscence of lamina papyracea.²

Case Presentation

We present here a case of a 47 years old middle aged male who presented to the emergency department with history of sudden fall due to vertigo followed by right sided weakness. On examination his GCS was 15/15. MRI brain (stroke protocol) was requested considering the provisional diagnosis of stroke which revealed normal MRI of the brain without evidence of any infarction, bleed or intracranial mass. However there was an incidental finding of deformity in medial orbital wall with herniation of orbital fat and medial rectus muscle into the ethmoid air cells on left side

representing dehiscence of lamina papyracea (Fig. 1). A subsequent non contrast CT scan of orbits was done which confirmed MRI findings and showed bony defect within the lamina papyracea with her-niation of orbital fat and medial rectus muscle into the ethmoid air cells through this defect (Fig. 2).

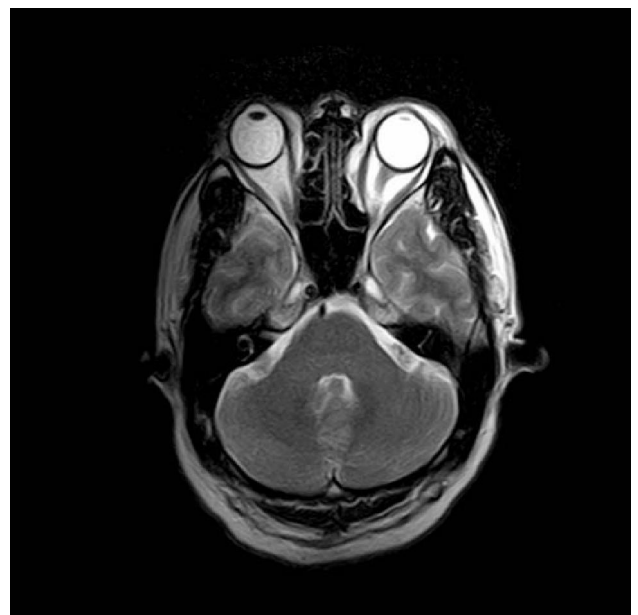


Figure 1a: axial T2 weighted image showing herniation of orbital fat and medial rectus muscle through defect in lamina papyracea.

Correspondence : Dr. Pir Abdul Ahad Aziz Qureshi
Department of Radiology,
Liaquat National Hospital,
Karachi, Pakistan
Email: abdulahad.q@gmail.com

Submitted 20 June 2017, Accepted 26 July 2017

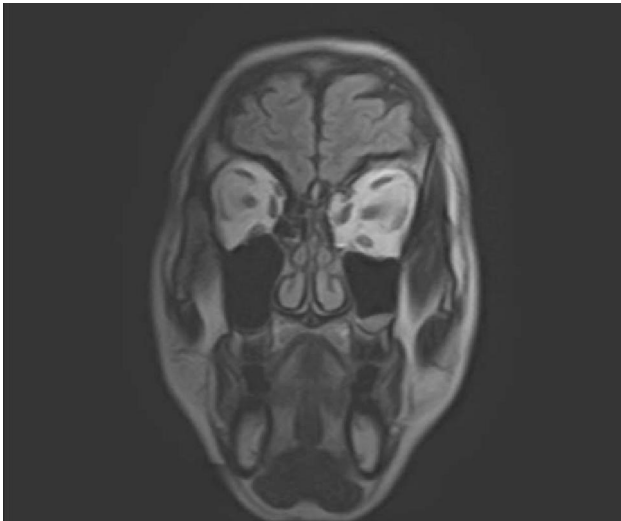


Figure 1b: Coronal (Flair) showing dehiscence of lamina papyracea with herniation of orbital fat and medial rectus muscle.



Figure 2a: axial NECT showing bony defect within lamina papyracea with herniation of orbital fat and medial rectus

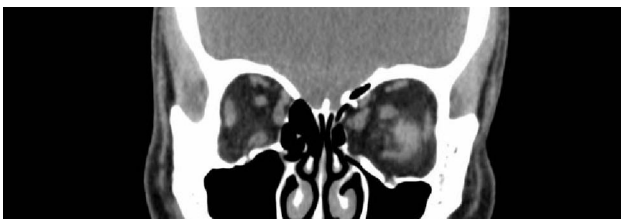


Figure 2b: Coronal NECT showing bony defect within lamina papyracea with herniation of orbital fat and medial rectus

Discussion

The Lamina papyracea is a smooth, thin plate like bone which separates orbital cavity from ethmoid sinus. Dehiscence of lamina papyracea is a rare anomaly of paranasal sinuses in which there is defect or inward displacement of the lamina papyracea.³ It is associated with herniation of orbital fat and medial rectus muscle; and in severe cases optic nerve or even the eye globe itself and is classified into 3 grades on the basis of area of lamina papyracea involved. Grade 1 is when the area of involvement of lamina papyracea is less than 1/3rd, Grade 2 is when the area of involvement of lamina papyracea is less than 2/3rd and Grade 3 is when the area of involvement of lamina papyracea is more than 2/3rd.² The anterior and posterior limit of this defect is bulla lamella and basal lamella respectively in most of the cases. It can be congenital or acquired as a result of trauma or surgery.³

The dehiscence of the lamina papyracea has been recognized since 19th century. It was first observed by Hyrtk and Zuckermandl in 1869 and 1893 respectively in skull dissections as gaps in medial orbital wall; similar findings were observed for the first time in 1987 and 1989 on CT scan by Teatini and Chow respectively.⁴ Teatini only reported a small gap in lamina papyracea without herniation of orbital fat; on the other hand Chow reported dehiscence of lamina papyracea with prolapsed of medial rectus muscle into ethmoid.⁴ The incidence of dehiscence of lamina papyracea varies greatly in literature from 0.5-10% in general population.³

It is important to evaluate dehiscence of lamina papyracea and differentiated it from opacification of ethmoid air cells secondary to sinusitis as dehiscence of lamina papyracea has been linked with orbital complications like orbital wall perforation, injury to globe or extraocular muscles, infection, hematoma during ethmoid sinus surgery.⁵ Some authors have also linked the dehiscence of lamina papyracea with ophthalmological symptoms like diplopia and blurred vision.³

Conclusion

Dehiscence of lamina papyracea is an important anomaly which should be evaluated particularly in patients with visual disturbances like blurring of vision

and diplopia who are under consideration for functional endoscopic sinus surgery (FESS) to avoid unnecessary surgical complications.³

References

1. Chao TK. Protrusion of orbital content through dehiscence of lamina papyracea mimics ethmoiditis: a case report. *Otolaryngol Head Neck Surg* 2003; **128**: 433-5.
2. Han MH, Chang KH, Min YG, et al. Nontraumatic prolapsed of the orbital contents into the ethmoid sinus: evaluation with screening sinus CT. *Am J Otolaryngol* 1996; **17**: 184-9.
3. Makarioua E, Patsalidesa A, Harleyb E. Dehiscence of the lamina papyracea: MRI findings. *Clinical Radiology Extra* 2004; **59(5)**: 40-2.
4. Moulin G, Dessi P, Chagnaud C, et al. Dehiscence of the lamina papyracea of the ethmoid bone: CT findings. *AJNR Am J Neuroradiol* 1994; **15**: 151-3.
5. Hudgins PA. Complications of endoscopic sinus surgery. The role of the radiologist in prevention. *RadiolClin N Am* 1993; **31**: 21-31.