



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 10(D), pp. 29296-29298, October 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

A CASE REPORT ON NON TRAUMATIC DEHISCENCE OF LAMINA PAPYRACEA ON CT

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DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0910.2832>

ARTICLE INFO

Article History:

Received 12th July, 2018

Received in revised form 23rd

August, 2018

Accepted 7th September, 2018

Published online 28th October, 2018

Key Words:

Lamina papyracea; Non traumatic; Dehiscence; Computed Tomography; Herniated orbit contents.

ABSTRACT

Background: Dehiscence of lamina papyracea (DLP) is a rare anomaly of ethmoid bone with a defect on the medial wall of orbit and often associated with protrusion of orbital fat and sometimes ocular muscles through that defect into ethmoid air cells. It can be congenital or acquired (post trauma/post surgery).

Case Report: A 34 year old male presented with complaints of nasal congestion, discharge, sneezing which was persistent against all allergens prevention measures and intranasal steroids. No ocular complaints as such. No history of trauma / nasal instrumentation in the past. Axial CT scanning of the paranasal sinuses was performed complemented by coronal and sagittal views showed defect in left medial orbit wall with herniation of orbital fat into ethmoid sinus.

Conclusion: Recognition of DLP is of utmost importance on imaging prior any nasal or/ & sinus surgery so as to escape any damage to herniated orbital structures.

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INTRODUCTION

The lamina papyracea is a term for a thin sheet of the ethmoid bone which forms medial wall of orbit and lateral wall of ethmoid air cells. It is also known as orbital lamina. Coronal and axial sections of CT scan are best for evaluating lamina papyracea. Dehiscence of the lamina papyracea is a rare anomaly that may be congenital or acquired (post trauma or post surgery). With dehiscence of orbital lamina, a defect is noted in the medial wall of orbit which serves as conduit for orbital contents into ipsilateral ethmoidal sinus air cells. Often the orbital fat and ocular muscle (the medial rectus muscle) protrude through this defect, which usually is small in size. Rarely other orbital structures like optic nerve or even the globe itself may herniate (1).

These herniated structures possess risk of injury during any nasal instrumentation. We present a case of non-traumatic left sided dehiscence of lamina papyracea in which the diagnosis was confirmed by MDCT.

Aim: To be able to easily identify and report dehiscence of lamina papyracea on CT.

CASE REPORT

A 34 year old male presented with complaints of nasal congestion, discharge, sneezing which was persistent against all allergens prevention measures and intranasal steroids. No

ocular complaints as such. No history of trauma / nasal instrumentation in the past. On CT scan, there is inward displacement of the lamina papyracea into ethmoid air cells with herniation of orbital fat through a gap in the left lamina papyracea. The ocular muscles especially medial rectus did not herniate but showed evidence of thickening and irregular outline. The basal lamella is the posterior limit of the dehiscence. The part of the lamina papyracea that is depressed medially formed the anterior limit (fig 1, 2, 3).

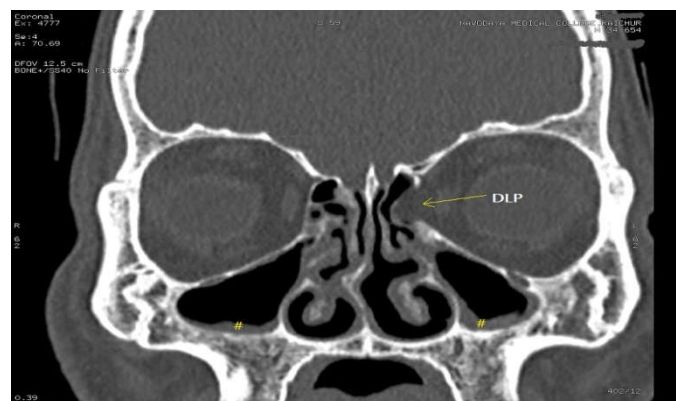


Fig 1 Coronal CT image show focal dehiscence of the left lamina papyracea (yellow arrow) with focal herniation of orbital fat into ethmoid sinus filling the ethmoid bulla. DLP: dehiscence of lamina papyracea, #: mucosal thickening.

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Fig 2 Axial CT examination (bone window) shows inward displacement of the lamina papyracea into the ethmoid sinus with herniation of the orbital fat. The medial rectus muscle (yellow arrow) is slightly thickened and irregular although it does not herniated through bony defect. The orbital globe and the optic nerve appear normal. The basal lamella is the posterior limit of the dehiscence.

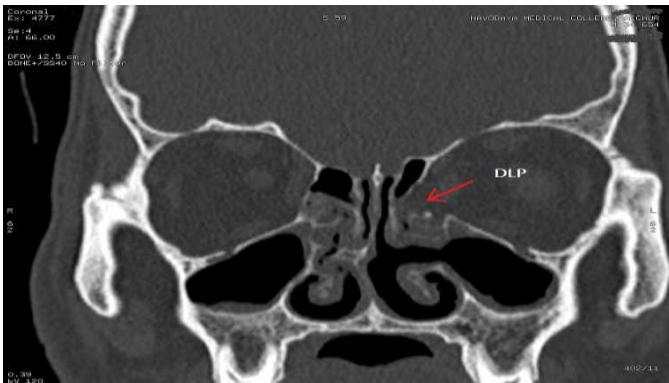


Fig 3 Coronal CT image show focal dehiscence of the left lamina papyracea (red arrow) with focal herniation of orbital fat into ethmoid sinus.

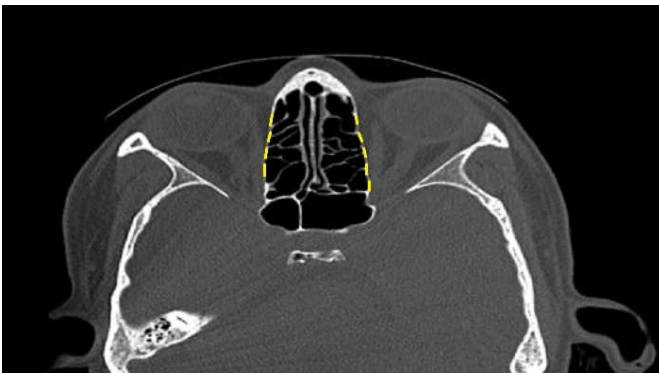


Fig 4 Axial section PNS showing normal outline of lamina papyracea (yellow dotted line).

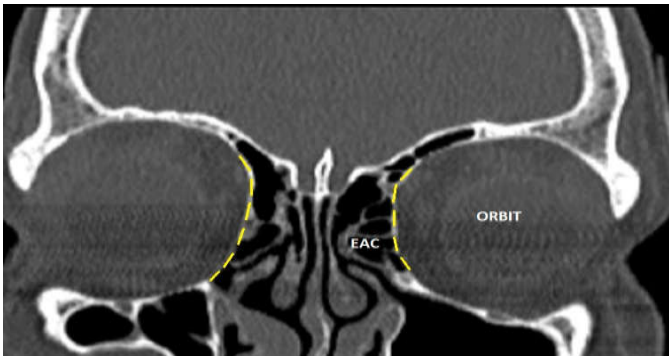


Fig 5: Coronal section PNS showing normal outline of lamina papyracea (yellow dotted line). EAC; ethmoid air cells

Table 1 Degree of dehiscence of lamina papyracea

Types	Description
Type I	Less than one third of the lamina papyracea involved
Type II	Less than two thirds of the lamina papyracea involve
Type III	More than two thirds of the lamina papyracea

DISCUSSION

CT of the paranasal sinuses is frequently performed in patients with the clinical diagnosis of sinusitis or in patients scheduled for a functional endoscopic sinus surgery (FESS) (2, 3).

The ethmoid bone is frequently the site of anatomic variations (4).

Dissections performed on skull by Hyrtl (5) in 1869 and by Zuckerkandl (6) in 1893 reported defects in the medial orbital wall. Identical conclusion was noticed by Sieur and Jacob (7) in 5 of the two hundred skull dissections performed in 1901. This anomaly has a highly variable incidence reported among population. The total incidence being 10.9%.

On CT for the first time, identical findings were reported in 1987 and 1989 by Teatini (8) and Chow (9) respectively.

As reported by Teatini, there was a small defect in lamina papyracea but orbital contents did not herniated; but in case reported by Chow there was prolapse of medial rectus muscle associated with dehiscence of lamina papyracea into ethmoid sinus (8, 9).

Major risk factor in case of any misinterpretation is perforation of the herniated orbital contents during surgery, results of which can be disastrous. Damage of the ocular muscles (medial rectus and superior oblique), hematoma, and ocular infections are usual complications of ethmoidal surgery (8, 10).

Increasing age has a reported statistically significant correlation with incidence of dehiscence of lamina papyracea (11).

Dehiscence of lamina papyracea is classified into 3 grades based on area involved (table 1) (12).

CONCLUSION

Dehiscence of lamina papyracea is an rare but important anomaly which must be reported to otolaryngologists in every reported case and specially in cases undergoing FESS to avoid unnecessary and dreadful surgical complications.

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How to cite this article:

Anurag Pratap Singh Chauhan *et al.* 2018, A Case Report on Non Traumatic Dehiscence of Lamina Papyracea on CT. *Int J Recent Sci Res.* 9(10), pp. 29296-29298. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0910.2832>
