Open Access Original Research Article

MedPeer Publisher
Abbreviated Key Title: MedPeer
ISSN : 3066-2737
homepage: https://www.medpeerpublishers.com

INCIDENTAL FINDING OF ISOLATED PITUITARY STALK DUPLICATION IN AN ASYMPTOMATIC ADULT

DOI: 10.70780/medpeer.000QGOT

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ABSTRACT

Pituitary stalk duplication (PSD) is an extremely rare congenital anomaly, typically associated with complex midline malformations. We report the incidental discovery of an isolated PSD in a 36-year-old asymptomatic man who underwent MRI for chronic headaches. Imaging revealed two distinct paramedian stalks converging toward an ectopic posterior pituitary, while the anterior pituitary remained normally positioned. No other cerebral, vascular, or facial malformations were identified, and endocrine evaluation was unremarkable. This case highlights a unique, clinically silent radiological entity and underscores the importance of recognizing PSD to prevent misdiagnosis and to ensure adequate endocrine follow-up given its uncertain long-term significance.

KEYWORDS

Pituitary stalk duplication; MRI; Congenital anomalies; Endocrinology; Case report

MAIN ARTICLE

Introduction

Complete duplication of the pituitary gland is an extremely rare congenital anomaly, most often associated with a wide spectrum of midline malformations. While most reported cases involve complete duplication, a few describe partial forms affecting only the pituitary stalk or the adenohypophysis.

We report an exceptional case of partial duplication of the pituitary stalk, with a single gland, incidentally discovered in an asymptomatic adult.

Case report

We present the case of a 36-year-old man, married and father of two, with no significant medical history, who underwent a brain MRI as part of the workup for chronic headaches. The examination incidentally revealed a partial duplication of the pituitary stalk, associated with an ectopic posterior pituitary located superiorly, adjacent to the two paramedian stalks. The hypothalamic-pituitary MRI revealed an isolated duplication of the pituitary stalk, visible on sagittal FSE T1 (figure 1) and coronal T2 (figure 2) slices, with two distinct paramedian stalks directed towards a high-lying ectopic posterior pituitary. The anterior pituitary was normally located in its sella turcica, which was also not duplicated.

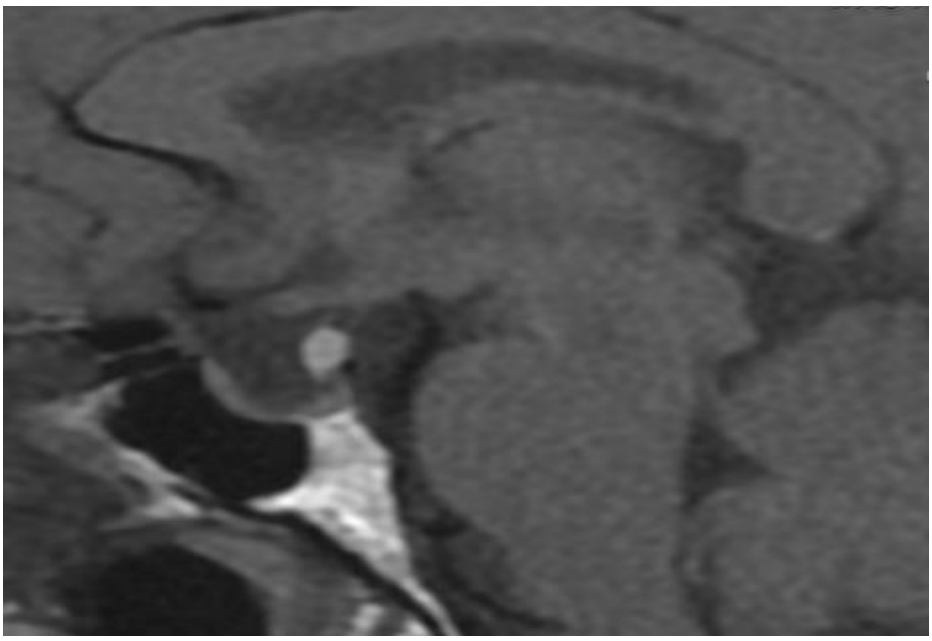

Figure 1: *Sagittal brain MRI T1 FSE showing isolated duplication of the pituitary stalk (red arrows), directed toward a single, ectopic posterior pituitary gland located high in the suprasellar region. The adenohypophysis is normally placed in the sella*

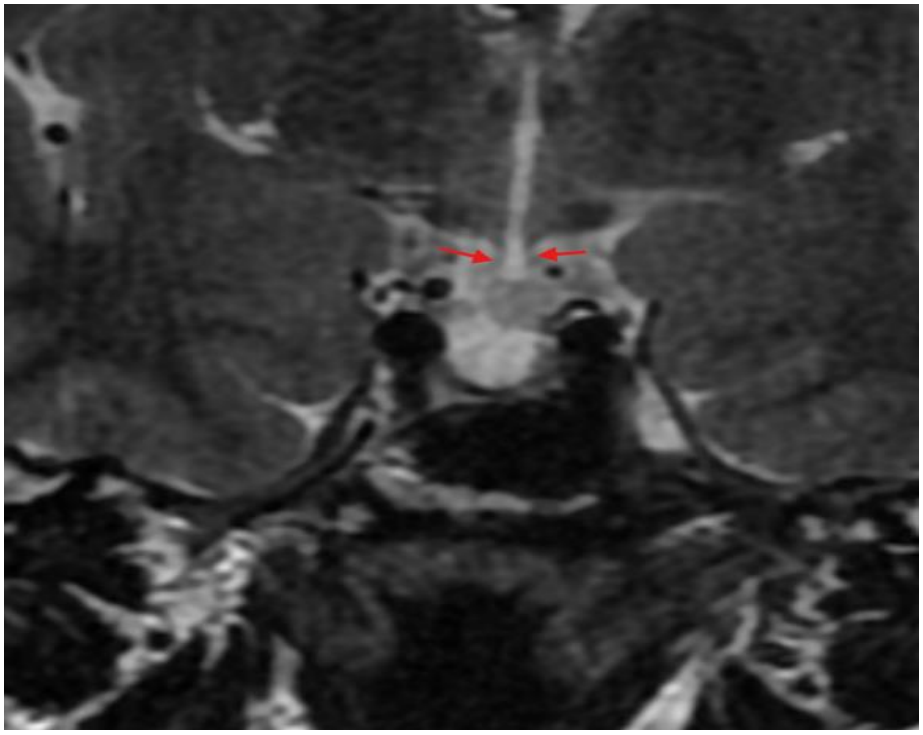

Figure 2 : *Coronal hypothalamo-pituitary MRI T2 FSE confirming the presence of two paramedian stalks (red arrows) joining an ectopic posterior pituitary.*

Dynamic sequences (Figure 3) were the most sensitive and clearly showed the two enhanced stalks after gadolinium injection.

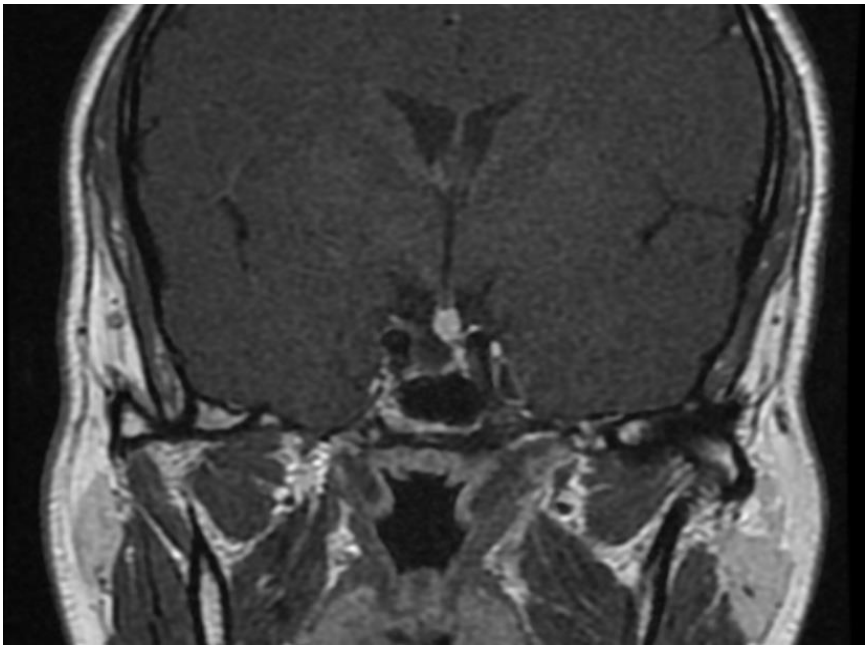

Figure 3: *Coronal post-contrast dynamic T1: The contrast-enhanced sequence helps rule out artifacts or differential diagnoses.*

The midline structures were morphologically normal, with no signal abnormalities in the brain parenchyma or major facial or vascular malformations. Hormonal laboratory tests were unremarkable. Nevertheless, endocrinological follow-up was recommended due to potential long-term risks.

Discussion

Pituitary gland duplication is an extremely rare congenital anomaly, usually seen in the context of complex syndromic malformations involving midline structures. It typically involves complete duplication of the stalk, adenohypophysis, and neurohypophysis, and is often associated with craniofacial, vertebral, or vascular abnormalities [1,2].

Partial forms, limited to the stalk or part of the gland, are even more exceptional and sparsely documented. The term 'Pituitary Stalk Duplication (PSD)' was recently proposed by Sethi et al. (2024) to designate this isolated entity, without gland duplication or major facial anomalies [3].

Our case clearly falls into this atypical category, incidentally discovered in an asymptomatic adult. MRI revealed two distinct stalks joining a single, morphologically normal pituitary gland, with no other cerebral, facial, or vascular abnormalities.

Embryologically, PSD may result from early disruption of the prechordal plate or notochord induction between the 15th and 16th day of embryonic development [1,4], leading to localized axial bifurcation.

In recent literature, Patil et al. [5] described a child with isolated stalk duplication associated with growth hormone deficiency. Similarly, Alkhyeli et al. [6] reported a case in an adult woman with stalk duplication, an empty sella, and late-onset hypopituitarism. These reports highlight the importance of long-term endocrine monitoring even in initially asymptomatic patients.

Conclusion

Isolated pituitary stalk duplication is an exceptionally rare congenital anomaly. The present case illustrates a purely radiological entity, incidentally discovered in an asymptomatic adult without endocrine abnormalities or associated malformations. Recognizing this entity on imaging is crucial to avoid misdiagnosis and to support long-term endocrine follow-up, given the uncertain evolutionary potential of such anomalies.

ACKNOWLEDGEMENTS

The authors have no acknowledgements to declare and report no conflicts of interest.

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