

Pourfour du Petit Syndrome Following Superficial Parotidectomy: A Case Report

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Ethical Approval

Ethics committee approval was not required for this case report in accordance with our institutional policies and local ethics committee guidelines.

Informed Consent

Written informed consent was obtained from the patient for publication of the case report and associated clinical photographs.

Conflict of Interest

The authors declared no conflicts of interest.

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Abstract

Pourfour du Petit syndrome (PDPS) is a rare oculosympathetic hyperactivity disorder and is considered the clinical counterpart of Horner syndrome, resulting from irritation of the cervical sympathetic pathway. We report a 62-year-old man with no significant medical history who developed PDPS in the early postoperative period after left superficial parotidectomy for a painless, mobile 3 × 3 cm mass. Preoperative imaging and fine-needle aspiration biopsy were consistent with a Warthin tumor. Within the first postoperative hour, the patient developed left-sided anisocoria with mydriasis, conjunctival hyperemia, and hemifacial sweating. Neurological and ophthalmological evaluations excluded acute central and ocular causes. Given the lesion's anatomical proximity to the external carotid artery, the findings were attributed to transient irritation of the periarterial sympathetic plexus secondary to surgical manipulation. The patient improved clinically without specific pharmacologic treatment, was discharged on postoperative day 3, and showed complete resolution of symptoms at the 6-month follow-up. PDPS is a rare postoperative complication that should be considered after head and neck surgery in patients presenting with anisocoria or other autonomic findings. Prompt evaluation is important to exclude serious neurological and ophthalmological conditions.

Keywords: pourfour du petit syndrome, parotid neoplasms, parotidectomy, anisocoria, mydriasis, hyperhidrosis

Introduction

Pourfour du Petit syndrome (PDPS) is a rare oculosympathetic hyperactivity disorder resulting from hyperstimulation of the cervical sympathetic pathway [1, 2]. Clinically, it represents the reverse of Horner syndrome and may occur after irritation of preganglionic fibers emerging from the upper thoracic segments or the cervical sympathetic chain [2]. Although several surgical and interventional procedures in the neck region, including regional anesthesia, carotid surgery, and maxillofacial operations, have been associated with PDPS [3-5], tumor-related compression and other cervical or traumatic conditions have also been reported [6-10].

Although facial nerve injury and Frey syndrome are recognized complications of parotid surgery, PDPS is exceedingly rare. This report describes PDPS developing after superficial parotidectomy for a Warthin tumor extending toward the external carotid artery, with emphasis on diagnosis, clinical course, and spontaneous resolution.

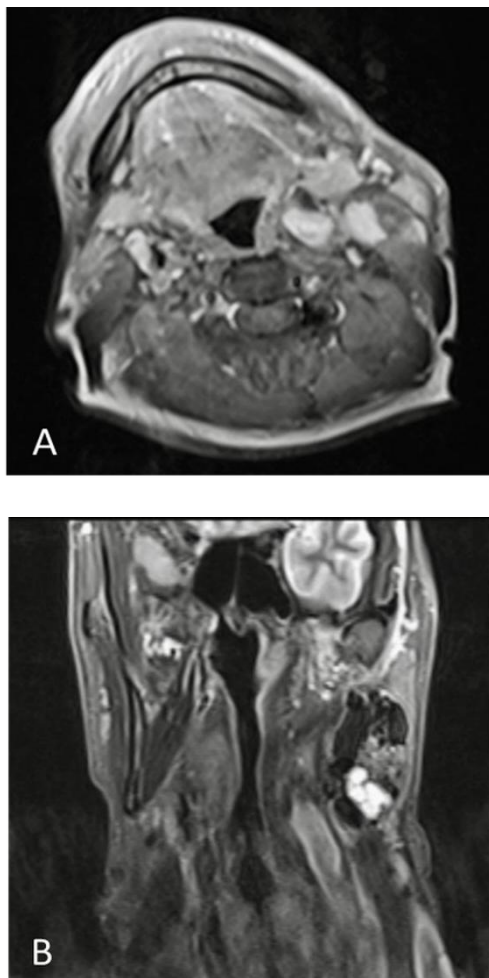
Case presentation

A 62-year-old man presented with a painless, gradually enlarging swelling in the left parotid region that had first been noticed 2 years earlier. His medical history was unremarkable, with no known systemic diseases or prior surgical interventions. Fine-needle aspiration biopsy performed at an external facility was consistent with a Warthin tumor. Baseline neurological and ophthalmological examinations were normal.

Neck ultrasonography and contrast-enhanced facial magnetic resonance imaging demonstrated a 30 × 35 mm heterogeneous mass extending toward the deep lobe of the left parotid gland (Figure 1). The lesion was located in close proximity to the carotid space.

The patient subsequently underwent superficial parotidectomy with continuous intraoperative facial nerve monitoring. During dissection, the lesion was observed to extend toward the deep lobe of the parotid gland in close proximity to the external carotid artery. No intraoperative complications occurred, and facial nerve integrity was preserved.

Figure 1. Preoperative contrast-enhanced MRI demonstrating a heterogeneous mass located within the deep lobe of the left parotid gland. (A) Axial and (B) coronal images show the lesion's proximity to the carotid space.



Within the first postoperative hour, the patient developed acute left-sided oculosympathetic hyperactivity characterized by anisocoria with mydriasis, conjunctival hyperemia, and hemifacial sweating (Figure 2). Urgent neurological and ophthalmological consultations were obtained. Brain computed tomography and diffusion-weighted magnetic resonance imaging showed no evidence of an acute central cause, including brainstem ischemia or postoperative hemorrhage. Detailed ophthalmological

evaluation, including a pilocarpine test, tonometry, and slit-lamp examination, excluded pharmacologic mydriasis, traumatic iris sphincter injury, Adie pupil, acute angle-closure glaucoma, and anterior uveitis.

Figure 2. Postoperative clinical photograph at 1 hour showing marked left-sided mydriasis and conjunctival hyperemia.



Given the temporal relationship with surgery and the anatomical proximity of the lesion to the sympathetic plexus surrounding the external carotid artery, PDPS was diagnosed. No specific pharmacologic treatment was administered. The patient's symptoms improved rapidly, and he was discharged on postoperative day 3. At the 6-month follow-up, all ocular and autonomic findings had completely resolved (Figure 3). Written informed consent was obtained from the patient for publication of this case report and the associated clinical photographs.

Figure 3. Clinical appearance at the 6-month follow-up showing complete resolution of the ocular findings.



Discussion

Pourfour du Petit syndrome is a rare clinical entity caused by hyperstimulation of the oculosympathetic pathway [1, 2]. Historically, PDPS was described as a manifestation of sympathetic pathway irritation and was named after François Pourfour du Petit, who experimentally demonstrated these effects in the early 18th century [2]. In contrast to Horner syndrome, which reflects interruption of sympathetic input, PDPS represents an excitatory state and can create a diagnostic challenge in the acute postoperative setting [3, 4].

The anatomical basis of PDPS after parotid surgery may be related to the close relationship between the superior cervical ganglion and the external carotid artery (ECA). Postganglionic sympathetic fibers arising from the superior cervical ganglion form a plexus around the ECA [4]. During surgery involving the deep lobe of the parotid gland, manipulation adjacent to the ECA may therefore cause transient irritation of the periarterial sympathetic plexus. In the present case, traction during deep-lobe dissection was considered the most likely contributing factor, although thermal irritation from bipolar cautery could not be excluded.

A clinically important feature of postoperative PDPS is its generally favorable course. Unlike permanent sympathetic nerve injury, many reported postoperative cases are self-limiting and improve spontaneously with supportive care [5]. Complete resolution within 6 months in our patient supports a transient and reversible neural irritation rather than structural damage.

Although our patient recovered without specific medication, topical alpha-2 adrenergic agonists such as brimonidine or clonidine have been discussed as potential symptomatic treatments. Their presynaptic alpha-2 activity reduces norepinephrine release from sympathetic nerve terminals and may therefore counter excessive adrenergic activity [6]. However, evidence for pharmacologic treatment of PDPS remains limited, and observation may be appropriate when serious central and ocular causes have been excluded.

PDPS should be considered in the differential diagnosis of new-onset postoperative anisocoria when there has been manipulation near the cervical sympathetic pathway or ECA [5]. Early recognition, together with neurological and ophthalmological assessment, is important to distinguish this uncommon syndrome from urgent central or ocular disorders and to avoid unnecessary invasive interventions.

Pourfour du Petit syndrome is a rare but important differential diagnosis in patients who develop new-onset anisocoria and facial autonomic findings after head and neck surgery. Awareness of this condition may facilitate early recognition and help distinguish it from more serious central or ocular disorders. Although PDPS is often self-limiting, prompt multidisciplinary evaluation remains important to exclude urgent causes and guide appropriate follow-up.

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