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POST-ANGIOPLASTY COMPLICATIONS IN POSTERIOR FOSSA STROKE: STENT FRACTURE IN THE LEFT VERTEBRAL ARTERY

José Alencar de Sousa Segundo
``Hospital Beneficência Portuguesa``, Department of Neurosurgery
Ribeirão Preto – SP
https://orcid.org/0000-0003-0402-6171

Breno Nery
``Hospital Beneficência Portuguesa``, Department of Neurosurgery
Ribeirão Preto – SP
https://orcid.org/0000-0002-0078-9377

Willian Pegoraro Kus
``Hospital Cristo Redentor``, Department of Neurosurgery
Porto Alegre – RS
https://orcid.org/0000-0002-7209-6115

Felipe Salvagni Pereira
``Faculdade Evangélica Mackenzie``
Curitiba – PR
https://orcid.org/0000-0003-2634-6176

Eduardo Quaggio
``Hospital São Francisco``, Department of Neurosurgery
Ribeirão Preto – SP
https://orcid.org/0000-0001-7426-3346

Luís Gustavo Biondi Soares
``Faculdade Estadual Central``
Vitória – ES
https://orcid.org/0000-0002-5478-6083

Filipe de Almeida Agra Omena
``Centro Universitário UNIFACISA``
Campina Grande – PB
https://orcid.org/0000-0002-2831-6571

Nathaly Araújo Nogueira Abella
``Centro Universitário UNIFACISA``
Campina Grande – PB
https://orcid.org/0000-0009-0265-8256

Raquel Costa Marques
``Centro Universitário UNIFACISA``
Campina Grande
https://orcid.org/0009-0007-7696-565X

André de Almeida Agra Omena
``Centro Universitário UNIFACISA``
Campina Grande
https://orcid.org/0000-0003-2760-3701

Érika Patrícia Lima da Silva
``Centro Universitário UNIFACISA``
Campina Grande
https://orcid.org/0000-0002-2831-6571

Izac Andersein de Souza Silva
Afya – Medical Sciences College
Jaboatão dos Guararapes
https://orcid.org/0009-0008-0551-2060

Abstract: Posterior fossa strokes account for 20% of ischemic strokes and present significant diagnostic and therapeutic challenges due to their anatomical complexity. The vertebral artery is crucial for the blood supply of the posterior fossa and cerebellum, making its stenosis a critical risk factor for recurrent strokes and significant neurological deficits. **Objective:** To report a rare case of vertebral artery stent fracture after angioplasty in an elderly patient with posterior fossa stroke. **Case description:** An 86-year-old man with hypertension presented with sudden dysarthria, right labial commissure deviation, and gait ataxia. Initial imaging revealed severe (90%) stenosis of the left vertebral artery ostium. Angioplasty with drug-eluting stent was performed without immediate complications. Follow-up imaging, however, showed severe (75%) restenosis associated with a stent fracture. **Discussion:** A Stent fractures, although rare, significantly impact the outcomes of endovascular treatment. Factors contributing to stent fractures include implantation technique, vessel stiffness, and stent design. This case highlights the importance of continuous monitoring and expert management to address complications such as restenosis and stent fractures, which can compromise cerebral blood flow and patient outcomes. **Conclusion:** The management of posterior fossa strokes with endovascular interventions is complex. The rare complication of stent fracture led to severe restenosis, emphasizing the need for vigilant post-procedural monitoring and personalized therapeutic strategies. Further studies are needed to understand the risk factors and develop preventive measures for stent fractures in intracranial procedures.

Keywords: Posterior Fossa Stroke; Vertebral Artery Stenosis; Drug-Eluting Stent; Stent Fracture; Restenosis

INTRODUCTION

Posterior fossa stroke accounts for approximately 20% of all ischemic strokes and can lead to an unfavorable prognosis due to the anatomical complexity and associated diagnostic and therapeutic difficulties. [6]. The vertebral artery is one of the main vessels involved in supplying blood to the posterior fossa and cerebellum, making its stenosis a critical risk factor for recurrent strokes and significant neurological deficit[7].

Drug-eluting stent angioplasty is a widely used therapeutic approach to treat arterial stenoses, particularly in patients who do not respond well to medical treatment or who are at high risk of ischemic recurrence[8]. However, this intervention is not free from complications. Stent fracture is a rare but potentially serious complication that can compromise the efficacy of treatment and result in significant adverse events such as restenosis and thrombosis[9].

This case report describes a rare complication of left vertebral artery drug-eluting stent fracture in an elderly patient with posterior fossa stroke, highlighting the therapeutic challenges and need for continuous monitoring and specialized interventions to optimize clinical outcomes.

CASE REPORT

The patient was admitted with sudden symptoms of dysarthria, deviation of the labial commissure and gait ataxia. Initial computed tomography (CT) did not show acute ischemic or hemorrhagic lesions. Cranial and cervical CT angiography revealed severe stenosis (90%) of the left vertebral artery ostium. Angioplasty was performed with placement of a drug-eluting stent (2.5x13 mm).

Angioplasty was performed with puncture of the right common femoral artery, followed by the introduction of a drug-eluting coronary stent covering the stenosis of the left vertebral artery. The procedure was uneventful in the initial clinical course, with good expansion of the stent and improvement of the distal flow. In post-angioplasty control, severe restenosis (75%) of the left vertebral artery ostium was observed associated with stent fracture (Figures 1 and 2).

A new angiographic evaluation also revealed moderate stenosis (50%) of the right vertebral artery ostium.

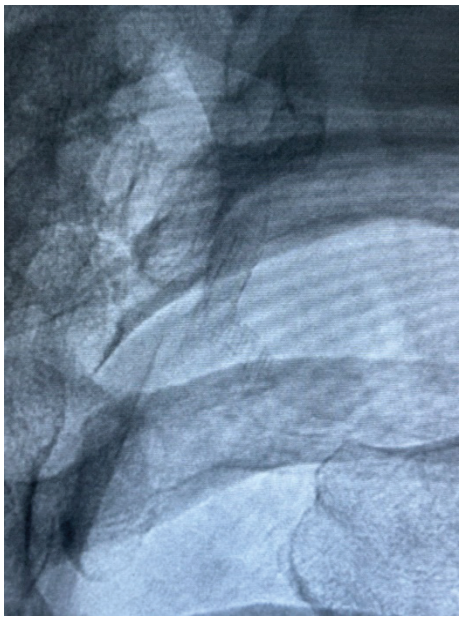

Figure 1: X-ray showing stent fracture

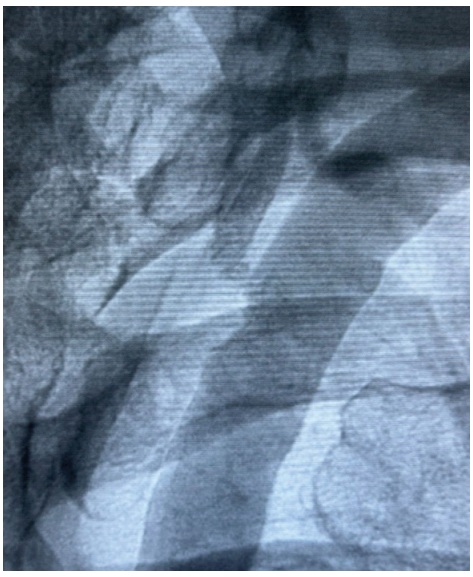

Figure 2. Radiographic magnification of stent fracture

DISCUSSION

Stent fracture, although rare, represents a critical complication that can significantly affect the outcome of endovascular treatment in patients with intracranial arterial stenoses. The incidence of this complication varies widely in the literature, being estimated at 1% to 5% of procedures, depending on the anatomical location and the technique used[10].

Location in the vertebral artery, particularly in its intracranial portion, presents unique challenges due to its tortuous anatomy and turbulent blood flow, which may contribute to mechanical stress on the stent[11].

Several factors can contribute to stent fracture, including implantation technique, vessel stiffness, vessel angulation, and the use of stents that are inappropriate for the patient's specific anatomy[12]. Studies have shown that stent fracture is more common in vessels with greater movement and flexibility, such as the coronary and vertebral arteries[13].

Post-angioplasty restenosis is a well-documented complication and may be exacerbated by stent fracture. Fracture may lead to an increased inflammatory response and proliferation of neointimal tissue, resulting in significant narrowing of the vascular lumen and compromising cerebral blood flow[14]. In the present case, severe restenosis (75%) of the left vertebral artery ostium was observed in association with stent fracture, highlighting the complexity of clinical management in these patients.

Management of stent fracture requires a multidisciplinary approach involving neurologists, neurosurgeons, and endovascular specialists. Treatment options may range from clinical observation with medical therapy to additional interventions such as placement of a new stent or surgical bypass[15]. In many cases, the therapeutic decision must be individualized, taking into consideration, the patient's clinical condition, the risk-benefit of the procedure and the availability of technical and human resources.

FINAL CONSIDERATIONS

This case report highlights a rare and challenging complication of left vertebral artery drug-eluting stent fracture in an elderly patient with posterior fossa stroke. Stent fracture resulted in severe restenosis, compromising cerebral blood flow and highlighting the need for continued surveillance and specialized management. Further studies are needed to better understand the risk factors and develop effective preventive strategies to minimize the occurrence of stent fractures in intracranial endovascular procedures.

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