

# National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



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## **MEDICAL**

Specialist's Factual Report

May 29, 2025

## TABLE OF CONTENTS

|                                                     |   |
|-----------------------------------------------------|---|
| A. ACCIDENT.....                                    | 3 |
| B. MEDICAL SPECIALIST.....                          | 3 |
| C. DETAILS OF THE INVESTIGATION .....               | 3 |
| 1.0 PURPOSE .....                                   | 3 |
| 2.0 METHODS.....                                    | 3 |
| D. FACTUAL INFORMATION.....                         | 3 |
| 1.0 FAA MEDICAL CERTIFICATION FILE .....            | 3 |
| 2.0 POST-ACCIDENT TREATMENT RECORDS.....            | 4 |
| 3.0 INTERNAL CAROTID ARTERY DISEASE AND STROKE..... | 5 |
| E. SUMMARY OF MEDICAL FACTS.....                    | 6 |

## **A. ACCIDENT**

Location: Venice, Florida  
Date: June 10, 2023  
Time: About 11:16 a.m. local time

## **B. MEDICAL SPECIALIST**

Specialist                      Turan Kayagil, MD, FACEP  
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## **C. DETAILS OF THE INVESTIGATION**

### **1.0 Purpose**

This investigation was performed to evaluate the pilot for potentially impairing or incapacitating medical conditions and substances.

### **2.0 Methods**

The surviving pilot's Federal Aviation Administration (FAA) medical certification file was reviewed, as were his hospital post-accident treatment records (these records included records from the pilot's immediate post-crash hospitalization, as well as from his subsequent inpatient rehabilitation hospitalization). Selected investigator reports and relevant regulation and medical literature were also reviewed.

## **D. FACTUAL INFORMATION**

### **1.0 FAA Medical Certification File**

The 73-year-old male pilot's most recent aviation medical examination was April 4, 2017. At that time, he reported 147 total civilian flight hours. He was issued a third-class medical certificate limited by a requirement to wear corrective lenses; this medical certificate subsequently expired.<sup>1</sup>

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<sup>1</sup> FAA medical certification is not required for a pilot to exercise sport pilot privileges in a light sport aircraft if other required qualifications and operating restrictions are met ([14 CFR Part 61 Subpart J](#)). Prohibitions on operations during medical deficiency ([14 CFR 61.53](#)) and while using drugs that affect faculties in a way contrary to safety ([14 CFR 91.17\(a\)\(3\)](#)) apply.

## 2.0 Post-Accident Treatment Records

Following the accident, the pilot was transported by air ambulance to a hospital trauma center. Upon arrival, he was noted to be confused and shortly later was also noted to have right-sided weakness and aphasia. He had external evidence of head injury and a right anterior neck hematoma. He underwent imaging to evaluate for injury and stroke.

Computed tomography (CT) of his head performed at 12:52 p.m. on the crash date showed no acute intracranial abnormality. Notably, most acute ischemic strokes are not seen on head CT in the early hours after stroke onset.<sup>2</sup> CT angiography of the pilot's head and neck performed concurrently with head CT showed prominent, irregular calcified and noncalcified plaque in the proximal left internal carotid artery, with a maximum estimated diameter stenosis of 50%. There was a second focal stenosis just distal to its origin also with a maximum estimated diameter stenosis of 50-60%. There was focal calcified plaque in the proximal aspect of the basilar artery with a maximum estimated diameter stenosis of 50%. There was atherosclerotic disease of the right carotid artery and left carotid bulb, without significant narrowing in these areas.

A CT head perfusion study performed at 2:03 p.m. on the crash date showed an abnormality in the left cerebral hemisphere.

The pilot was taken for angiography of his neck and cerebral arteries. This procedure identified a prominent left internal carotid artery pseudoaneurysm just distal to the bifurcation. A pseudoaneurysm is a bulging accumulation of blood within the wall of a blood vessel, and is a common occurrence with internal carotid artery dissection.<sup>3,4</sup> Angiography also identified a blockage of the left M2 segment middle cerebral artery and a blockage of the distal left A4-5 branch (anterior cerebral artery branch). The operating physician documented that the pseudoaneurysm likely was a source of emboli that caused the pilot's stroke. The physician performed carotid stenting and mechanical thrombectomy of the M2 blockage. The angiography procedure began just before 3 p.m. on the crash date and lasted about 1.5 hours.

MRI of the pilot's brain performed at 10:40 p.m. on the crash date showed left middle cerebral artery and left anterior cerebral artery cortical infarcts with

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<sup>2</sup> Go S. Stroke Syndromes. In: Tintinalli JE, Ma OJ, Yealy DM, et al., eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 9th ed. New York, NY: McGraw-Hill Education; 2020:1119-1136.

<sup>3</sup> Seven NA, Casanegra AI, Lanzino G, Keser Z. Extracranial Internal Carotid and Vertebral Dissecting Pseudoaneurysms. *Stroke Vasc Interv Neurol*. 2023;3:e000703. doi:10.1161/SVIN.122.000703.

<sup>4</sup> Kirkwood M. Extracranial carotid artery aneurysm. In: Post TW, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/extracranial-carotid-artery-aneurysm>. Updated August 16, 2023. Accessed May 15, 2025.

hemorrhagic transformation in the left frontal lobe with brain edema and some midline shift. Small subarachnoid blood was present. Scattered white matter changes were also present; the interpreting radiologist noted these were nonspecific but most likely represented chronic microvascular ischemic changes.

The pilot was discharged to an inpatient rehabilitation facility on June 16, 2023. His discharge diagnoses included closed head injury/concussion, dissection of the left carotid artery, and embolic stroke/cerebrovascular accident due to embolism of the left middle cerebral artery.

The pilot's hospitalization did not definitively identify any other acute medical event affecting him at the time of the crash. The pilot did not undergo toxicological testing during his hospitalization. Reviewed records documented that the pilot had reportedly been diagnosed with 70% stenosis of his left internal carotid artery in the weeks before the accident, and had been awaiting an upcoming vascular surgery appointment for this issue. This history was documented as having been provided at least in part by a family member who was an emergency medicine physician. Reviewed records did not contain additional related details.

### **3.0 Internal Carotid Artery Disease and Stroke**

The right and left internal carotid arteries are major arteries in the neck that supply blood to the brain, including via the middle and anterior cerebral arteries, which branch off the end of each internal carotid artery. Some individuals may develop chronic atherosclerotic plaque that causes narrowing (stenosis) of an internal carotid artery. Such disease conveys an increased risk of ischemic stroke, including stroke due to embolism (a blood clot forming and traveling to a downstream brain artery, blocking blood flow to an area of brain tissue). Management of carotid stenosis may involve medications or surgery, depending on the severity of the disease and whether it causes symptoms (such as neurological or visual symptoms). Asymptomatic stenosis of 70% may be severe enough to be considered for surgery, but often is appropriate for medical treatment without surgery.<sup>5,6</sup>

Carotid dissection is another condition that can affect the internal carotid arteries. Carotid dissection is when the inner layer of the carotid artery wall tears, allowing blood to get between the layers of the artery wall, separating the layers, and potentially causing blood clots to form. Carotid dissection may occur spontaneously

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<sup>5</sup> Mullen MT, Jim J. Management of asymptomatic extracranial carotid atherosclerotic disease. In: Post TW, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/management-of-asymptomatic-extracranial-carotid-atherosclerotic-disease>. Updated December 9, 2024. Accessed May 15, 2025.

<sup>6</sup> Mullen MT, Jim J. Management of symptomatic carotid atherosclerotic disease. In: Post TW, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/management-of-symptomatic-carotid-atherosclerotic-disease>. Updated July 3, 2023. Accessed May 15, 2025.

(without a clearly identified trigger) or as a result of minor or major traumatic injury.<sup>7,8,9</sup> Unlike carotid stenosis, carotid dissection generally is considered a non-atherosclerotic condition.<sup>10,11,12</sup> Traumatic carotid dissection may be caused by vehicle accidents, particularly when there is direct blunt injury to the neck or blunt injury causing neck hyperextension and rotation.<sup>13,14,15</sup> Once carotid dissection occurs, it may lead to stroke, including from embolism.<sup>8,9,14</sup> The onset of stroke after carotid dissection may be rapid (within the first hour) or delayed (for example, days or weeks later).<sup>14,16</sup>

## **E. SUMMARY OF MEDICAL FACTS**

The 73-year-old male pilot did not hold active FAA medical certification at the time of the crash. FAA medical certification is not required for an otherwise-qualified pilot to exercise sport pilot privileges in a light sport aircraft.

Following the crash, the pilot was admitted to a hospital trauma center. He was found to have head injury and a right anterior neck hematoma. He also was found to have left internal carotid artery dissection and embolic stroke involving brain arteries downstream of the left internal carotid artery. Hospital records indicated the pilot reportedly had been diagnosed with 70% narrowing of the left internal carotid artery

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<sup>7</sup> Liebeskind DS. Cerebral and cervical artery dissection: Clinical features and diagnosis. In: Post TW, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/cerebral-and-cervical-artery-dissection-clinical-features-and-diagnosis>. Updated February 4, 2025. Accessed May 15, 2025.

<sup>8</sup> Robertson JJ, Koyfman A. Cervical Artery Dissections: A Review. *J Emerg Med*. 2016;51(5):508-518. doi:10.1016/j.jemermed.2015.10.044.

<sup>9</sup> Clark M, Unnam S, Ghosh S. A review of carotid and vertebral artery dissection. *Br J Hosp Med (Lond)*. 2022;83(4):1-11. doi:10.12968/hmed.2021.0421.

<sup>10</sup> Rubinstein SM, Peerdeman SM, van Tulder MW, Riphagen I, Haldeman S. A systematic review of the risk factors for cervical artery dissection. *Stroke*. 2005;36(7):1575-80. doi:10.1161/01.STR.0000169919.73219.30.

<sup>11</sup> De Backer T. A Genetic Dissection of Vascular Risk Factors for Cervical Artery Dissection: Under Pressure. *J Am Coll Cardiol*. 2023;82(14):1424-1426. doi:10.1016/j.jacc.2023.08.011.

<sup>12</sup> Brunner E, Kaufmann JE, Fischer S, et al. Atherosclerosis in patients with cervical artery dissection. *Eur Stroke J*. 2025;10(1):198-205. doi:10.1177/23969873241274547.

<sup>13</sup> Perry MO, Snyder WH, Thal ER. Carotid artery injuries caused by blunt trauma. *Ann Surg*. 1980;192(1):74-7. doi:10.1097/00000658-198007000-00013.

<sup>14</sup> Galyfos G, Filis K, Sigala F, Sianou A. Traumatic Carotid Artery Dissection: A Different Entity without Specific Guidelines. *Vasc Specialist Int*. 2016;32(1):1-5. doi:10.5758/vsi.2016.32.1.1.

<sup>15</sup> Amadasi A, Franceschetti L, Crudele GDL, Roselli MR, Gentile G, Zoja R. The hidden aspect of carotid lesions in traffic accidents: A little-known phenomenon. *J Forensic Leg Med*. 2022;86:102316. doi:10.1016/j.jflm.2022.102316.

<sup>16</sup> Yamada S, Kindt GW, Youmans JR. Carotid artery occlusion due to nonpenetrating injury. *J Trauma*. 1967;7(3):333-42. doi:10.1097/00005373-196705000-00001.

in the weeks before the crash; further details were not documented. The pilot's hospital evaluation did not definitively identify any other acute medical event affecting him at the time of the crash. The pilot did not undergo toxicological testing during his hospitalization.

Submitted by:

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