Case Report

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# Morestin Syndrome in the Emergency Department: A Case Report

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## Abstract

Morestin Syndrome is a rare condition that occurs as a result of sudden compressive trauma to the thoracoabdominal region. It presents with cervicofacial petechial rash, edema, subconjunctival hemorrhage, and varying degrees of neurological symptoms. It can also be seen in non-traumatic situations such as severe coughing, asthma attacks, seizures, or difficult childbirth.

We present a case of a 5-year-old trauma patient referred to us from an external center. The patient had cervicofacial petechial rash, subconjunctival hemorrhage, and altered consciousness, but no serious organ injury was detected. The laboratory tests showed elevated liver function tests. Imaging revealed a minimal pneumothorax that did not require intervention and a proximal right humerus fracture. The patient's consciousness improved during follow-up in the emergency critical care area. After the emergency diagnostic and treatment process, the patient was admitted to the pediatric surgery ward for observation and was discharged in good health after 4 days.

It is important for emergency physicians to recognize this rare case early. It provides insight into the severity of the trauma and guides further investigation. Although there is no specific treatment, head elevation and oxygen support can increase venous return and accelerate the recovery process.

**Keywords:** Compressive trauma, morestin syndrome, traumatic asphyxia

## Introduction

Traumatic asphyxia is a rare condition referred to in the literature as Perthes Syndrome, Olivier Syndrome, Acute Thoracic Compression Syndrome, or Morestin Syndrome (1). It can also develop in non-traumatic situations such as difficult childbirth, epileptic seizures, severe coughing, or asthma attacks. Although a frequency of 1/18,500 traumatic cases has been reported in adult patients, the true pediatric incidence is unknown (2). This condition, typically seen in pediatric patients, occurs as a result of sudden compressive trauma to the thoracic and/or abdominal region. Clinical findings develop due to the direct and indirect effects of the trauma, along with the sudden and high-pressure reversal of venous drainage (3). Although characterized by facial edema, cyanosis, petechial rash, and subconjunctival hemorrhage, the clinical presentation may vary depending on the severity of the trauma and the duration of exposure (4). It is often accompanied by injuries such as pneumothorax, hemothorax, or pulmonary contusion (5). In critical cases, the presence of vital organ injury is the main factor that increases mortality.

## Case Report

A 5-year-old girl with no known medical history was referred to us from a regional hospital following an out-of-vehicle traffic accident. The history revealed that she had been trapped between a slowly reversing vehicle and the curb for approximately 1 minute. Upon admission, her general condition was good, her consciousness was lethargic, and her Glasgow Coma Scale (GCS) score was 12 (E:3 V:4 M:5). Her heart rate was 108 beats per minute, temperature 36.9°C, blood pressure 110/67 mmHg, respiratory rate 18 breaths per minute, and oxygen saturation 95%. On inspection, she had widespread petechial rash on her face and neck, dermabrasion on her chin and nose, and bilateral subconjunctival hemorrhage (Figures 1-2). Thoracic examination was unremarkable, with no tenderness on palpation. In the abdomen, there was a 3 cm superficial laceration and a 5x10 cm abrasion in the right inguinal region, without tenderness. Movement of the right shoulder was painful. A 2 cm superficial laceration was observed on the right knee, but joint movements were normal. Laboratory findings showed a white blood cell

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count of 18,900/mm³, hemoglobin level of 11 g/dL, and platelet count of 383,000/mm³. Coagulation parameters were normal. Lactate dehydrogenase (LDH: 2197 U/L), aspartate aminotransferase (AST: 1251 U/L), and alanine aminotransferase (ALT: 798 U/L) levels were elevated.

Brain, thoracic, abdominal, and vertebral computed tomography (CT) scans, along with direct radiographs of the right shoulder and right knee, were requested for the patient. Thoracic CT revealed minimal pneumothorax in the right hemithorax, and no intervention was planned, with follow-up recommended using daily chest X-rays. A non-displaced fracture was observed in the right humerus at the greater tubercle, and no surgery was planned; a Velpeau bandage was recommended. Analgesics and prophylactic antibiotics were administered. During follow-up in the emergency critical care area, the patient's consciousness improved, there was no hemoglobin drop, and no free fluid was detected on abdominal ultrasound. The patient was admitted to the pediatric surgery ward for observation.

**Figure 1.** Cervicofacial diffuse petechial rash

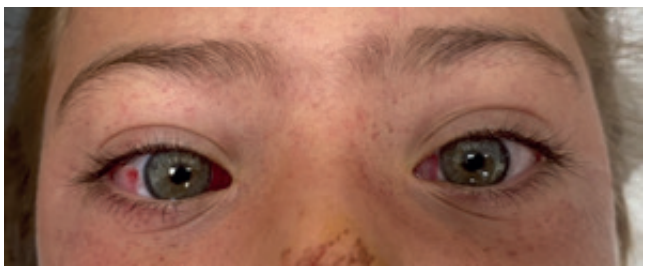

**Figure 2.** Bilateral subconjunctival hemorrhage
(Images were used with permission from the patient's parents)

## Discussion

First noted by Olivier in 1837, this condition was later defined as traumatic asphyxia by Perthes in 1900, following an increasing number of case reports (6, 7). This phenomenon, observed during autopsies of individuals who died as a result of crushing in crowds, is more commonly encountered in the pediatric age group (8, 9). In all cases, there is a history of compressive trauma to the thoracoabdominal region. It is also seen, though more rarely, in non-traumatic situations such as severe crying, coughing, epileptic seizures, difficult childbirth, or asthma attacks. The pathophysiological mechanism involves glottic closure following deep inspiration due to a fear reaction, along with a sudden increase in thoracoabdominal pressure, leading to impaired venous drainage from the superior vena cava (2). The insufficient valvular support of the cervicofacial venous system, coupled with the Valsalva maneuver, explains why the lower venous system remains unaffected. The retrograde transmission of pressure results in venous stasis and capillary ruptures, which manifest as petechial rash, edema, cyanosis, and subconjunctival hemorrhage (3). The severity and duration of trauma closely influence the resulting lesions. Further worsening this condition is the development of neurological damage due to impaired cerebral blood flow and hypoxia (10). Altered consciousness, ranging from mild drowsiness to coma, may accompany these symptoms. Neurological recovery typically takes 1-2 days, but recovery from visual injuries may take longer.

This condition can provide insight into the severity of the trauma, as the valve system in the internal jugular vein can tolerate pressures up to 45 mmHg (11). While the external jugular vein drains the superficial tissues, the internal jugular vein is responsible for draining the deep neck tissues, airway, and cerebral circulation. This reality necessitates the investigation of patients with a dramatic appearance for potential critical organ injuries. Indeed, cases of vision loss due to retinal hemorrhage, hearing loss resulting from edema in the eustachian tubes, and hoarseness have been reported in the literature (12). Clinicians should anticipate difficult airway management due to edema.

In cases of traumatic asphyxia, injuries to the pulmonary, cardiac, or intra-abdominal organs are common due to the compressive force applied to the thoracoabdominal region (13). As in this case, minimal pneumothorax may be detected, though such injuries may not require surgical intervention. In the pediatric population, while the elastic structure of the thorax provides more resistance to pressure, the underdeveloped chest wall can transmit trauma energy to deeper tissues, leading to more severe internal organ damage (14). Additionally, neurological effects of traumatic asphyxia can range from brief consciousness impairment to coma. Some cases in the literature have resulted in permanent neurological damage, emphasizing the importance of long-term follow-up for patients exposed to significant trauma (10).Additionally, elevated liver function tests without imaging evidence suggest liver injury.

Treatment should begin with the immediate removal of the compression and trauma life support. Airway difficulty

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secondary to cervicofacial edema should be anticipated. Supplemental oxygen and head elevation may help increase venous drainage (15). The duration of trauma exposure and the severity of accompanying injuries are parameters that closely affect mortality (16). In our case, the short duration of exposure and the absence of serious organ injuries contributed to a favorable prognosis.

## Conclusion

Early recognition of this uncommon condition and investigation of additional injuries closely affect the prognosis. The clinical course is quite good in patients without serious injuries.

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