

## Traumatic Breast Haematoma necessitating Emergency Surgery—A Rare Case Report

Case Report

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**Article Information**

Received: 25-09-2022;

Accepted: 29-09-2022;

Published: 11-10-2022.

### Abstract

A hematoma, which can develop anywhere in the body after an injury, including the breast, is one potential problem. It is caused by deeper blood arteries that become damaged and bleed into the surrounding tissue. There may be visible bruising on the skin's surface. As the blood collection increases, it may become solid and lumpy. Traumatic breast injury can be caused by any event that damages the breast tissue. The majority of traumatic breast injuries have no serious consequences, but rare complications can include severe bleeding. The majority of hematomas will heal on their own. Large hematomas may need to be surgically drained. We describe a very exceptional occurrence of traumatic breast hemorrhage requiring immediate surgery in a woman who had been traumatized in an accident and had no co-morbid conditions.

**Keywords:** Blunt Trauma; Traumatic breast injury; Hematoma; Hemorrhage.

### Introduction

The breasts, also known as mammary glands, are two pendulous or dome-shaped structures located along the anterior chest wall, next to the axilla. These modified sweat glands are made of fatty, glandular, and fibrous connective tissue. The glandular tissue is found in the superficial and deep fascia layers. The pectoralis major and minor muscles are found behind the breast and in the deep fascial plane. Despite the ease with which the breast slides over these muscles, the gland itself is firmly linked to the skin by fibrous connective tissue bands known as Cooper's ligaments. These suspensory ligaments extend outward in a radial direction from the deep fascial plane to the skin, enclosing fat lobules and supporting the glandular tissues of the breast [1–3].

The primary arterial blood supply to the breast comes from all of these vessel's artery between the ribs, which branch from the internal mammary, lateral thoracic, and, to a lesser extent, the external iliac arteries. There are arterial anastomoses just beneath the areolar level. Venous drainage takes place through shallow and deep networks. Some venous anastomosis appears in a circular pattern all around the base of the areolar. Deep veins drain the breast by following the path of the arteries [2,4].

As that breasts are so mobile, it is extremely rare for a blunt injury to have devastating consequences. Serious injuries are usually sustained by female seatbelt users or passengers in vehicles equipped with air bags. Changes in the clotting process,

arterial hypertension, platelet deficiencies, and artery wall abnormalities that promote bleeding tendencies [2,4,5].

### Case report presentation

A 48-year-old female with no co-morbidities and no history of oral antiplatelet or anticoagulant use presented with trauma from a road traffic accident. She was a passenger in a rickshaw travelling at approximately 40 kilometres per hour when it was forced to a halt by another two-wheeler making a dangerous sharp turn. The patient was thrown forward and suffered a blunt injury to the torso as a consequence. The accident occurred at 12:30 p.m. Bystanders assisted in the patient's removal from the vehicles and transportation to the hospital.

She arrived at the emergency department complaining of severe left breast pain and swelling. The patient was managed in accordance with the ATLS protocol. The initial examination demonstrates no life-threatening injuries. She was tachycardic at 108 beats per minute and had a blood pressure of 124/74 mm hg at first. On secondary head-to-toe exam revealed a significantly enlarged breast, approximately twice the size, that was tense and tender when palpated. There were no other trauma-related injuries found. The patient was given IV fluids, antibiotics, and 1g of Tranexamic Acid.

The patient was transferred to radiology for further evaluation. An extended-fast assessment with sonography for trauma (E-FAST)

**Citation:** Avinash MJ, Manisha HM, Tambat RM, Sreenivas MD, Tejas AP, et al. Traumatic Breast Haematoma necessitating Emergency Surgery—A Rare Case Report. Medp Case Rep Clin Image. 2022; 1(1): mpcrci-202209006.

examination revealed no abdominal fluid or hemopneumothorax. A chest X-RAY AP view revealed no hemopneumothorax or rib fractures. A large heterogeneous predominantly hyperechoic lesion with a peripheral rim of fluid containing fine internal echoes was seen within the breast parenchyma, measuring 7.6 x 7.3 x 6.1cm and involving all quadrants of the left breast, based on an ultrasound examination of the soft tissue of the breast. On colour doppler, there is no vascularity. The lesion was superiorly extended to the infraclavicular region and laterally to the axillary tail. In the supero-medial quadrant of the left breast, there was a mild heterogeneous appearance of breast fat tissue, which may represent an acute setting of traumatic fat necrosis.

After returning from Radiology, the patient was re-evaluated. The vitals were stable, with no signs of shock. Breast size had increased from 28cm x 26cm upon arrival to 32 x 30 cm. Operative management was chosen because of the large expanding haematoma (Figure 1). A 6cm curvilinear incision was placed in the inferior quadrants of the left breast and about 700mL of blood and clots were evacuated. Breast soft tissue was contused and fractured. Despite the fact that numerous spurters were coagulated, no major arterial vessel was found to be the source of the haematoma (Figure 2). The breast was closed in layers, and two large bore drains were placed in the inferior-lateral quadrant (Figure 3). There was no bleeding in the immediate post-op period. Packed Red Blood Cells were transfused post-operatively. Daily drain output was charted, and no significant secondary bleeding was observed. The patient was discharged on post-op day 7 and was regularly followed up. On post-operative day 15, the drains were removed (Figure 4).



Figure 3: Post-operative image with drains in-situ.



Figure 4: Post-operative day 12. Lump due to fat necrosis present. Nipple retraction and deformity of breast present.



Figure 1: Per-operative image of left breast.



Figure 2: Intra-operative view of evacuated blood and clots ~500mL. 200mL in suction canister not shown in image.

**Discussion**

Breast haematoma is a rare traumatic presentation. 16% of seat belt-restrained victims suffered bruises and abrasions of the chest wall after a car accident.<sup>4</sup> There was a 5.5% mortality rate among breast trauma patients, but no mortality rates were directly related to the trauma [4]. Sanders C et al reported the incidence of 2% of blunt breast trauma and only 7 patients out of 100 female blunt breast trauma cases requiring an invasive procedure [5]. After analyzing approximately 50 cases of seat-belt injuries to the breast, a breast trauma approach was developed. Majeski J et al. [6] proposed a classification for breast injuries caused by three-point lap-diagonal seat belts. The classification serves as a guide in developing a treatment plan for female blunt breast trauma, which is divided into four classes and their respective managements [6]. The first class represents a mild crush injury, which includes bruising, ecchymosis, skin blistering, breast swelling, tenderness, and friction burns over the contact area and is managed quickly with symptomatic care (analgesia). The second class represents moderate crush injury, which includes intramammary haematoma, fat necrosis, skin avulsion or loss, skin laceration, skin ulcer, and skin closure. Any expanding breast haematoma should be drained using ultrasound guidance. Analgesia and symptomatic care. The third class of crush injury is severe crush injury, which includes subcutaneous partial or complete transection of the breast, resulting in a permanent diagonal furrow across the breast corresponding to the line of the seat belt that cleaved the breast tissue into two parts, and requires contrast-enhanced computed tomography of the chest with subsequent endovascular or surgical intervention

as needed. The fourth class is Avulsion breast injury, which consists of subcutaneous avulsion of the breast from the chest wall with rupture of perforating branches of intracostal vessels, active bleeding into the breast and the space between the breast and the chest wall caused by a traumatic shearing force, and is managed with contrast-enhanced computed tomography of the chest with subsequent endovascular or surgical intervention as needed [6].

In our case, the patient was riding in a public auto rickshaw without a seat belt. The injury occurred when the rickshaw suddenly stopped, causing the patient to move forward and collide with the auto rickshaw meter. The rapidly expanding hematoma and grossly enlarged lump in our patient necessitated surgical intervention. Because the patient could not afford a contrast enhanced CT scan, the diagnosis and decision were reached after consulting with the radiologist who performed the ultrasound scan. If facilities are available, a chest arteriogram should be performed in an interventional radiology suite.

Although no standard of care exists, Sanders C et al. [5] recommend a thorough assessment in case of Female Blunt Breast Trauma, as breast haematomas are markers for other underlying soft tissue injuries to the torso—ribs, clavicle, sternum, lumbar spine, mesenteric tear and even hollow viscous perforation [5]. If no other such traumatic injuries are found, and if patient is stable a chest arteriogram is to be done and if indicated—embolization attempted [4]. However if the patient is unstable, or with an expanding haematoma, patient is to be taken up for surgical exploration [7]. A case of Class III shock has been reported with breast haematoma, illustrating the urgency of surgery and that soft tissue of breast is a compartment of hemodynamically—significant bleeding [8].

Post-operatively breast examination, baseline mammography was advised after 3–6 months after injury and annual mammography. A Breast Reconstructive Surgeon consult is advised for patients with significant deformity.

#### Acknowledgements

None.

#### Declaration of conflict of interest

The authors declared no potential conflicts of interests with respect to authorship and publication of this article.

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