

Case Report

Fatal Pulmonary Cement Embolism Following an Intermediate Hip Replacement Surgery, Case Report and Literature Review

Smiti Y*, Tadili J, Kettani A and Faroudi M

National Institute of Oncology, Anesthesiology and Resuscitation Department, Ibn Sina Hospital, Mohamed V University, Rabat, Morocco

***Corresponding author:** Yassine Smiti, National Institute of Oncology, Ibn Sina Hospital, Mohamed V University, Rabat, Morocco**Received:** October 21, 2019; **Accepted:** November 20, 2019; **Published:** November 27, 2019**Abstract**

Cement shock is an extremely rare event. It is a minor complication of orthopedic surgery. It poses an intraoperative diagnosis problem by the no specificity of the symptoms. The treatment is based primarily on anti-thrombotic drugs.

In this case, we report a circulatory cardiac arrest by pulmonary embolism, concomitant with cement injection during an intermediate hip replacement surgery.

Hip arthroplasty is a treatment option for disabling conditions of the hip especially osteoarthritis, which is increasingly take a place in the armamentarium of the disabling conditions of the hip. Its main aim is to restoring the normal function of eliminating any hip pain and restores mobility of the hip.

Cement embolism is an extremely rare event. It is a minor complication of orthopedic surgery.

Risk factors for intraoperative cardiac complications are ASA III or IV, high age and osteoporosis like the case of our patient.

Based on a recent review, no treatment is needed for asymptomatic patients, generally, the evolution is favorable, with or without anticoagulant therapy, but sometimes-pulmonary embolectomy can be used urgently because it can even be rapidly fatal.

A discussion with the surgical team regarding the use of cement less prosthesis may be required in patients with heart failure or pulmonary arterial hypertension suspected and ASA 3 or 4 patients.

Fatal pulmonary cement embolism following an Intermediate Hip replacement surgery, case report and literature review

Keywords: Cement; Pulmonary Embolism; Intermediate Hip replacement**Introduction**

Cement shock is an extremely rare event. It is a minor complication of orthopedic surgery. It poses an intraoperative diagnosis problem by the no specificity of the symptoms. The treatment is based primarily on anti-thrombotic drugs. In this case, we report a circulatory cardiac arrest by pulmonary embolism, concomitant with cement injection during an intermediate hip replacement surgery.

Observation

Miss A. Aicha, a 75-year-old female patient with a history of osteoporosis without any therapeutic adherence, admitted to the operating room for a right femur fracture.

Preoperative evaluation, found a heart rate at 80 beats per minute, with a blood pressure of 110/63 mmHg but a reduced functional capacity, reason why an ultrasound of the heart was requested, returned normal with a 65% Left Ventricle Ejection Fraction and no dilatation of the cardiac cavities or Valvulopathies, a Doppler

ultrasound did not objectify any deep vein thrombosis. Neurologically and respiratory stable patient with preoperative hemoglobin at 12g/dl and correct crase assessment.

In the Preoperative, spinal anesthesia was performed with 3 cc of bupivacaine hydrochloride and placed in the lateral position.

At the end of the procedure, our patient presented hypoxemia with hypotension that did not respond to physiological serum or ephedrine.

The evolution was quickly marked by the installation of an obtundation, desaturation with extreme bradycardia.

The procedure was interrupted, and the patient was placed in the dorsal position, then cardiopulmonary resuscitation was started by external cardiac massage, adrenaline.

Taking a right internal jugular central catheter and or tracheal intubation were performed.



Figure 1: Cardiac ultrasound revealing dilated straight cavities, evoking pulmonary embolism.

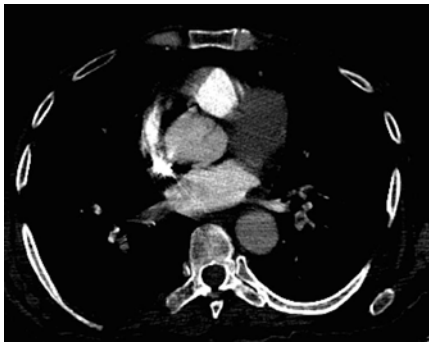


Figure 2: A middle right lobe branch and lower right and left lobe branches emboli showed in the chest CT scan.

The patient evaluated to an atrial fibrillation rhythm after 2 minutes of cardiac massage, a heart ultrasonography was performed which suspected a pulmonary embolism (Figure 1). Patient put on cordarone and dobutamine, and curative anticoagulation, and then transferred to intensive care unit.

A Chest CT scan was performed to confirm the theory (Figure 2).

The patient died 3 days later. No autopsy was performed.

Discussion

Femoral neck fracture is a public health issue in elderly women because of its high incidence, which impacts heavily their life expectancy [1].

Hip arthroplasty is a treatment option for disabling conditions of the hip especially osteoarthritis, which is increasingly take a place in the armamentarium of the disabling conditions of the hip. Its main aim is to restoring the normal function of eliminating any hip pain and restores mobility of the hip [2].

There are three main types of hip arthroplasties, total hip prostheses, bipolar or unipolar femoral prostheses, can be cemented or not [3].

Cement embolism is an extremely rare event. It is a minor complication of orthopedic surgery [4].

The possible mechanism of pulmonary cement embolism is that bone cement leaks into the vertebral venous plexus and further progresses into the azygous vein, inferior vena cava, right heart, and finally enters the pulmonary vasculature [5,6].

Risk factors for intraoperative cardiac complications are ASA III or IV, high age and osteoporosis like the case of our patient [7].

These emboli are constant when using cement and their frequency decreases with the use of a radon evacuator. Non-cemented prostheses seem as reliable and effective as cemented prostheses [1].

Clinical signs (hypotension, hypoxia, pulmonary arterial hypertension, cardiac dysfunction) are present in more than 60% of cases [8].

The pulmonary embolism is found in 85 to 93% of cases, on ultrasound during the impaction of the prosthesis in the femoral shaft or during the reduction of the fracture [9].

In our case, the presence of cement in the venous circulation was suspected clinically (shortly after the cement injection) and on cardiac ultrasound, then confirmed by Chest CT scan.

Based on a recent review, no treatment is needed for asymptomatic patients with peripheral embolism, and anticoagulant treatment is recommended for patients with symptomatic peripheral embolism or central embolism [10,11]. Generally, the evolution is favorable, with or without anticoagulant therapy [12,13], but sometimes pulmonary embolectomy can be used urgently [14] because it can even be rapidly fatal [15-17].

A discussion with the surgical team regarding the use of cement less prosthesis may be required in patients with heart failure or pulmonary arterial hypertension suspected and ASA 3 or 4 patients [1].

Conclusion

Cement embolism is a rare event that poses a diagnostic problem because of the non-specific nature of the symptoms it causes.

There is a serious morbidity and mortality caused by pulmonary cement embolism, reason why this case should make us fear its use for surgical procedures, especially in patients at high risk of heart disease.

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