

Bone wax extrusion in an above knee amputation stump: A Case Report

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Abstract

Introduction: Bone wax is a well-known topical hemostatic agent composed of beeswax and vaseline. Some of its known complications include inflammation, granuloma formation, infection, and impaired osteogenesis. We present a rare complication, hitherto not described in English literature, in an above knee amputation stump.

Case Presentation: A 55-year-old male presented with acute left lower limb ischemia which was not salvageable, requiring an above knee amputation. 2 weeks post-op, he presented with history of a painful stump, swelling and bone wax extrusion through his stump wound.

Conclusion: Bone wax is used as a safe, topical, nonabsorbable bone hemostat, but we should be aware of its adverse effects. Extrusion could be added to the possible drawbacks of its use.

Keywords: Bone wax, extrusion, stump wound healing, amputation

Introduction

Bone wax is routinely used in orthopedics, thoracic surgery, neurosurgery, and craniofacial surgery to reduce bleeding from bony structures [1]. It is a well-known topical hemostatic agent composed of beeswax and vaseline. Its hemostatic effect is based on physical rather than biochemical properties: it allows clot formation by stopping the blood flow from damaged vessels into the bone [2]. Bone wax use has minimal complications which include inflammation, granuloma formation, infection, and impaired osteogenesis. Several clinical reports of bone wax migration have been published, but, not in an amputation stump [3].

Case Presentation

A 55-year-old male, smoker with no other comorbidities, was referred to our hospital with signs and symptoms of acute limb ischemia of the left lower limb, which was not salvageable and he underwent an above knee amputation [AKA] to avoid sepsis and relieve pain. Post AKA, his stump wound was healthy. As he had a history of unprovoked pulmonary embolism months prior to the current admission, he was discharged on therapeutic dose of Rivaroxaban. 2 weeks post-op he reported to the emergency with history of swelling and pain on the stump edge. Examination revealed a 2 by 2 cm collection on the lateral edge of the stump incision. The collection was thought to be an infected hematoma. Under local anesthesia

while draining the collection, multiple pieces of bone wax extruded. He started regular physiotherapy once the incision site healed. 20 weeks later, the patient presented with mid stump wound redness and pain [Figure 1] with large quantity of bone wax extrusion through the wound [Figure 2].



Figure 1: Mid stump wound infection.



Figure 2a, 2b: Pieces of bone wax extruded through the wound.

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He received a course of antibiotics and an MRI was done to rule out an underlying collection, hematoma or osteomyelitis. After the course of antibiotics, the patient clinically improved and has been well three months, thereafter.

Discussion

Historically, bone wax was developed by Horsley in 1886. It contains beeswax softened with isopropyl palmitate or paraffin. It is nonabsorbable with no biochemical action. It achieves hemostasis by occluding the blood channels mechanically. Once applied it essentially never goes away [4]. Because it is nonabsorbable, complications can occur [5] such as failed bone healing, foreign body reaction, granuloma growth, thrombosis, infection and nerve compression [6]. Bone wax has been implicated in foreign body reactions in many different surgical specialties [7]. Few reports in different surgical specialties have associated the use of bone wax with delayed foreign body reaction [5]. In our case there was a foreign body reaction to bone wax presented with serosanguinous discharge, followed by bone wax extrusion through the stump wound. This has hitherto not been reported in an AKA stump in English literature. Bone wax is commonly used as bone hemostasis material and it is usually safe, but it should be used with caution. Its extrusion through surgical wounds should be addressed as a possible complication.

Conclusion

We report the first case of bone wax extruded from an AKA stump wound in English literature. Bone wax is usually a safe, topical, nonabsorbable bone hemostat, but we should be aware of its adverse effects. Extrusion should be added to the possible drawbacks of its use. Further studies regarding its adhesive properties should be investigated in view of this possible drawback.

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