

Preventing Retention of Vaginal Packing in Obstetrics: Implementation of a Protocol to Improve Patient Safety

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Abstract

Background: Retained vaginal packing can be associated with serious psychological and physical complications. The purpose of this study was to enhance patient safety by implementing an obstetrical vaginal packing protocol and to evaluate its efficacy. The study occurred in a tertiary maternity center with roughly 6,000 deliveries a year.

Methods: A vaginal packing protocol was instituted. The protocol added a "vaginal packing" button to the electronic health record that subsequently prompted a notification to remove and document removal of the packing. A retrospective chart review of compliance with the protocol was performed on all deliveries that occurred during a 1-year period after implementation.

Results: Of the 6,118 deliveries, 92% (5625/6117) completed the vaginal packing section of the delivery summary. Vaginal packing was placed in 1% (63/5625) of the deliveries in which the delivery summary was completed. A note documenting removal of the packing occurred in 73% (46/63) of the deliveries. There were no cases of retained vaginal packing.

Conclusions: This is an effective and sustainable protocol to prevent retention of vaginal packing. This process could be adopted in the gynecologic setting and among many hospitals.

Keywords: Patient safety, Retained surgical sponge, Electronic health records, Obstetrics.

Abbreviations

KMCWC = Kapiolani Medical Center for Women and Children
EHR = electronic health record

Introduction

In obstetrics, vaginal packing is an effective method of managing bleeding due to complex vaginal lacerations and postpartum hemorrhage [1]. Sterile gauze is inserted into the vagina to control bleeding by placing direct pressure on tissues, thereby promoting coagulation or to maintain proper placement of intrauterine tamponade balloons. Vaginal packing should be removed once hemostasis is achieved. However, in rare instances, the packing is retained.

At our institution, a patient had a complex vaginal laceration for which two strips of gauze were placed into the vagina for hemostasis. On the first day postpartum, the vaginal packing was removed. The patient returned five weeks postpartum complaining of foul vaginal

discharge and pain. An additional piece of vaginal packing was discovered in the vagina.

Retention of vaginal packing, whether gossypiboma or intentionally placed gauze, is associated with serious psychological and physical complications including depression, pain, infection, tissue necrosis, and even death [2-4]. The Joint Commission classifies retained vaginal packing as a reviewable sentinel event and is reportable as a breach in quality and patient safety [5]. In a study of closed malpractice claims of the Medical Professional Mutual Insurance Company from 1988 to 1994, there were 11 cases of retained vaginal sponges after uncomplicated vaginal deliveries with a median indemnity payment of \$5,063 [6].

One study implemented a sponge count protocol before and after vaginal deliveries to prevent accidentally retained sponges [7]. There are no studies in the literature to improve systems to prevent retention of intentionally placed vaginal packing.

Kapiolani Medical Center for Women and Children (KMCWC) in Honolulu, Hawaii is a nationally recognized tertiary care center and the leader in women’s health in the Pacific Region [8]. Historically, KMCWC did not have a system to alert providers that vaginal packing was inserted after a vaginal delivery. The purpose of this quality improvement project is to enhance patient safety by implementing a vaginal packing protocol and to evaluate the efficacy of this protocol. The primary outcome was to prevent retention of vaginal packing. The secondary outcomes were to assess the frequency of utilization and adherence to the protocol and to identify the incidence of vaginal packing placement.

Methods

The Vaginal Packing Protocol

At KMCWC, all vaginal and cesarean deliveries require the physician to complete a Delivery Summary in the patient’s electronic health record (EHR) (Epic 2017), by answering a series of standardized questions regarding different aspects of the labor and delivery. In 2016, the authors added a “Vaginal packing” (Yes or No) button to the Delivery Summary (Figure 1). If packing is placed in the vagina after the delivery, the “Yes” button is clicked, and the number of packs inserted and additional comments is completed. Otherwise, the physician selects “No” in this section.

Figure 1: Vaginal Packing section of the Delivery Summary at KMCWC

If the “Vaginal packing- Yes” button is selected, during the patient’s postpartum hospitalization, a notification will appear when the patient’s medical record is opened, alerting the providers that vaginal packing has been placed (Figure 2). If the “Removed, documented in a note” button is selected, the prompt will disappear. If the “Remind me later” button is selected, the notification will reappear the next time the patient’s chart is opened. When the physicians physically remove the vaginal packing from the patient, they should document the removal in a note solely dedicated to the removal procedure. A note template titled “.vaginal packing” was created to promote documentation of a removal note (Figure 3).

Figure 2: Postpartum notification when “Vaginal Packing-Yes” is selected

Figure 3: A completed note template that documents packing removal

Results

There were a total of 6,118 deliveries during the one-year period, of which 74.9% (n=4,581) were vaginal and 25.1% (n=1,537) were cesarean sections. One patient with vaginal packing placed was excluded from the study due to maternal mortality immediately postpartum. The incidence of retained vaginal packing (primary outcome) was zero. The vaginal packing section within the delivery summary was completed for 92.0% (5,625/6,117) of the deliveries (Figure 4). Of the patients with a completed vaginal packing section (Yes or No), 1.1% (63/5,625) had vaginal packing placed. For the patients with vaginal packing placed, 57.1% (36/63) had a progress note dedicated to removal of the vaginal packing. For those patients who did not have a removal note, 37.0% (10/27) had vaginal packing removal mentioned in a postpartum note. A total of 27.0% (17/63) of patients did not have mention of vaginal packing removal in any postpartum note.

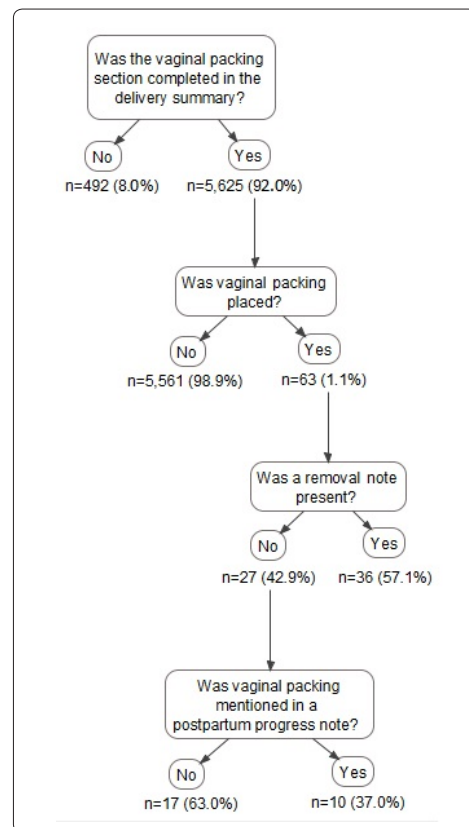


Figure 4: Utilization of the Vaginal Packing section of the Delivery Summary and documentation of packing removal

Discussion

Vaginal packing is a relatively uncommon procedure, and therefore the packing can be easily forgotten in the postpartum patient, thus emphasizing the importance of implementing a vaginal packing protocol. After implementing a hospital-wide vaginal packing protocol for one year, there were no cases of retained vaginal packing, which is a great success. Over 90% of delivery summaries had a completed vaginal packing section, which indicates successful integration into the electronic medical system based on this high usage. Therefore, EHR integration appears to be a feasible method of achieving zero harm.

When implemented properly, EHR can serve to improve patient safety. EHR combines technology and automation to produce standardization and reliability. Oster and Braaten report that “the goal of highly reliable strategies is to make it easier to do the right thing and harder to do the wrong thing. This increases the likelihood that distracted, busy, and fallible humans will consistently do the right thing” [9]. For these reasons, EHR was chosen as the method to standardize the hospital’s vaginal packing protocol. Alternative methods to alert staff that the patient has vaginal packing in situ include applying a stamp or wristband to the patient [10]. These methods were considered during development of the protocol, however, the logistics of storing, applying and removing the stamp or wristband and training the staff for this rare event was difficult. Including the vaginal packing section in the electronic health record is accessible to all staff and a more universal way to account for the vaginal packing.

Future adjustments to the EHR to ensure complete compliance with the vaginal packing section include making the vaginal packing section a mandatory hard stop. As a hard stop, the delivery summary cannot be signed without completing a response to the vaginal packing section. This should be strongly considered since retained vaginal packing is a Joint Commission sentinel event that should never occur and all feasible steps should be taken to avoid such an event [5].

A little more than a quarter of the patients did not have written documentation of packing removal, which is surprising since the EHR prompt regarding documentation of packing removal would only happen if the physician indicated it was removed and documented. To address this issue, when the physician addresses the alert that vaginal packing was placed in the postpartum period, an automatic popup window with a progress note with the template to complete could increase compliance. This automaticity would help to ensure documentation by decreasing reliability on memory and thus increase sustainability. Furthermore, given the importance of documenting vaginal packing removal, the removal note should be assigned its own note type. The hospital’s EHR has 26 different categories for note type, such as consults, H&P, procedures, and progress notes. The current practice is to document the packing removal as a progress note, even though it is a non-billable procedure. Both progress note and procedure note do not accurately describe the removal of vaginal packing, so a “vaginal packing note” category should be created within the HER [11].

A strength of this prospective study is its large sample size of over 6,000 women. A majority of Hawaii’s women—privately insured, publically insured, and uninsured—deliver at KMCWC, so this study population is a good representation of the state’s general population.

This study has minimal selection bias since nearly all deliveries at KMCWC were included. The data was readily available and did not require interpretation. The study’s primary outcome is a direct measurement of patient safety, with tremendous clinical and legal significance.

A limitation of this study is that identification of cases of retained vaginal packing was limited to information contained within the medical record. It is possible that cases of retained vaginal packing were not reported during the patient’s hospitalization or were discovered after hospital discharge. In the future, all subjects could be surveyed regarding retained vaginal packing in order to more accurately assess the number of cases of retained packing.

In conclusion, KMCWC’s vaginal packing protocol is effective at preventing retained packing and has been successfully integrated into the hospital’s EHR. Small adjustments can enhance this protocol such as making the vaginal packing section a mandatory component of the delivery summary to ensure compliance, linking the postpartum packing notification to a removal note to decrease reliability on memory, and creating a “vaginal packing note” type for accurate documentation. Future directions include adoption of the vaginal packing removal protocol into the gynecologic setting. Then ideally, the protocol could spread to other hospitals that provide obstetrical and gynecological services to enhance patient safety.

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