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Novel Intrauterine Haemostat Device for Post-partum Haemorrhage (PPH)

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Abstract

Postpartum haemorrhage (PPH) is life threatening complication of delivery. PPH is the leading cause of maternal mortality. To address the downsides of the existing device we propose a innovative needle less Intrauterine device. The use of intrauterine Haemostat device is often successful and serves as a definite therapy and it can also be used as a temporary measure to decrease hemorrhage while waiting and preparing for other definite treatment, such as open abdominal surgery.

Keywords: Hemostat; Post partum hemorrhage; Device; Intrauterine

Introduction

Postpartum haemorrhage (PPH) is life threatening complication of delivery. PPH is defined as the blood loss of 500 ml or more than within 24 hours after birth, while severe PPH is defined as blood loss of 1000 ml or more within the time frame. PPH is the leading cause of maternal mortality. According to WHO, 25% of maternal deaths are due to PPH Globally it is associated with nearly one quarter of maternal deaths In industrialized countries it ranks in the top 3 causes of maternal mortality. In the developing world, several countries have maternal mortality rates in excess of 1000 women per 100,000 live births.

Material and Methods

- Existing device - Intrauterine balloon tamponade
- Minimally invasive treatment option to control uterine bleeding
- Preserve the mother's ability to bear additional children

Mechanism of action

Exerting inward to outward pressure against the uterine wall, resulting in a reduction in persistent capillary and venous bleeding from the endometrium and the myometrium downside.

Uterine rupture

It requires insertion under ultrasound control which is usually not available in primary centres and moffussil areas. To address the downsides of the existing device we propose an Innovative needle less Intrauterine device.

Novel intrauterine haemostat device for Post partum haemorrhage (PPH)

The proposed needle less device is for intrauterine insertion which delivers a unique combination of sterile absorbable sponge powder/granules to provide fast, effective haemostasis. Prototype haemostat is based on novel biomaterial technology. It works purely as a mechanical device. Haemostat material in the pre filled device is the key in our Novel device. The powder to be used is a microfibrillar biomaterial used as an adjunctive in the management of PPH or can be used as a temporary measure to decrease hemorrhage while transporting the patient from moffussil area, waiting and preparing for other definite treatment when control of bleeding by conventional methods is ineffective or impractical.

Mechanism of action

Our needle less device controls bleeding without damaging tissues and adheres perfectly to all bleeding surfaces. The material swells and can create a tamponade effect as well.

Advantages

Reduces risk of adhesion development. Reduces risk of infection by reducing the intrauterine pH. Sponge powder is biocompatible and activates healing factors Haemostasis should be achieved in a few seconds to a minute dependent on the volume of bleeding Depending on the amount of powder used, sponge powder is completely resorbable in 3 to 21 days.

Indications

The use of intrauterine Haemostat device is often successful and serves as a definite therapy and it can also be used as a temporary measure to decrease hemorrhage while waiting and preparing for other definite treatment, such as open

abdominal surgery (ie, uterine artery ligation, uterine compression suture, hysterectomy) or uterine artery embolization, or while the patient is being transferred from primary centre to another unit with more experience and resources.

Conclusion

When uterotonics fail to cause sustained uterine contractions and satisfactory control of hemorrhage after vaginal delivery, tamponade of the uterus can be effective in decreasing hemorrhage secondary to uterine atony.