

Sandwich approach in the management of ongoing major obstetric haemorrhage

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Introduction

Primary postpartum haemorrhage (PPH) is one of the top 5 most prevalent causes of maternal morbidity and mortality world wide. It is an obstetric emergency that requires timely recognition and management so as to achieve positive patient outcomes. The leading cause of primary PPH is uterine atony; a condition that can be managed with a number of medical and surgical interventions. However, major obstetric haemorrhage with ongoing blood loss should be managed surgically. The management should begin with minimal invasive techniques like uterine balloon tamponade or B-Lynch suture. When combined, these 2 techniques can effectively control uterine bleeding and avoid hysterectomy. When used in combination, the uterine balloon tamponade and B-lynch suture technique can be referred to as the uterine sandwich approach.

Case studies

The case studies below depict scenarios in which the uterine sandwich approach was used to manage massive obstetrics PPH.

Case study 1

The patient had an emergency LSCS for failure to progress during the first stage of labour. After LSCS, there was continuous vaginal bleeding, despite use of uterotonics. To stop the bleeding, a balloon tamponade was inserted under USS guidance. However, the patient continued bleeding per vaginally, leading to hypovolemic shock. After a comprehensive assessment and discussion, the MDT decided to return the patient to the theatre for a laparotomy. During the surgery, there was evidence of uterine atony. This prompted the surgeons to proceed with a B-Lynch suture so as to reduce uterine volume and blood loss. On estimation, the patient lost 5 litres of blood, thus requiring a replacement of 11 units RBC, 4 units FFP, and a unit of Platelets. After the surgery, the patient's prognosis improved. She had complete recovery.

Case study 2

The patient had a category 3 caesarean section due to failed induction of labour. The caesarean section was successful and uneventful. However, in recovery, there was evidence of PPH, and despite the administration of uterotonics to counter the bleeding, severe per vaginally bleeding persisted. To stop this ongoing blood loss, the patient's care team decided to return her to the theatre. Under guidance of USS, a uterine balloon tamponade was inserted. However, by the end of the procedure, the patient had lost around 4 litres of blood. This necessitated an emergency laparotomy where a B-Lynch suture was used to counter uterine atony thus reducing blood loss. As part of the management, the patient received 8 units of RBC, 4 units FFP, and one unit of Platelets. She was transferred to ITU for close monitoring. Her prognosis was positive and she recovered without any other complications.

Global causes of maternal mortality



Retrieved from: <http://nursingexercise.com/maternal-mortality-morbidity-causes/>

Uterine sandwich technique

This is a surgical procedure that employs both the intrauterine hemostatic balloon and the uterine compression suture techniques to manage PPH. The B-lynch suture and the Bakri balloon are the most used combinations. In combination, the B-lynch suture stops bleeding in the uterine body while the Bakri balloon stops bleeding in the lower uterine segment. This technique can be used to manage obstetric haemorrhage in both cesarean and vaginal delivery.

Procedural explanation of the uterine sandwich

The Bakri balloon is inserted into the lower uterine segment. The B-lynch suture is then applied thus compressing the uterus. Application of the B-lynch suture not only fixes the Bakri balloon intrauterine, but also prevents prolapse of the Bakri balloon into the vagina. Since the B-Lynch compression suture and the Bakri balloon stop bleeding in the uterine body and the lower uterine segment respectively, they work under the role sharing concept.

Schematic explanation of uterine sandwich

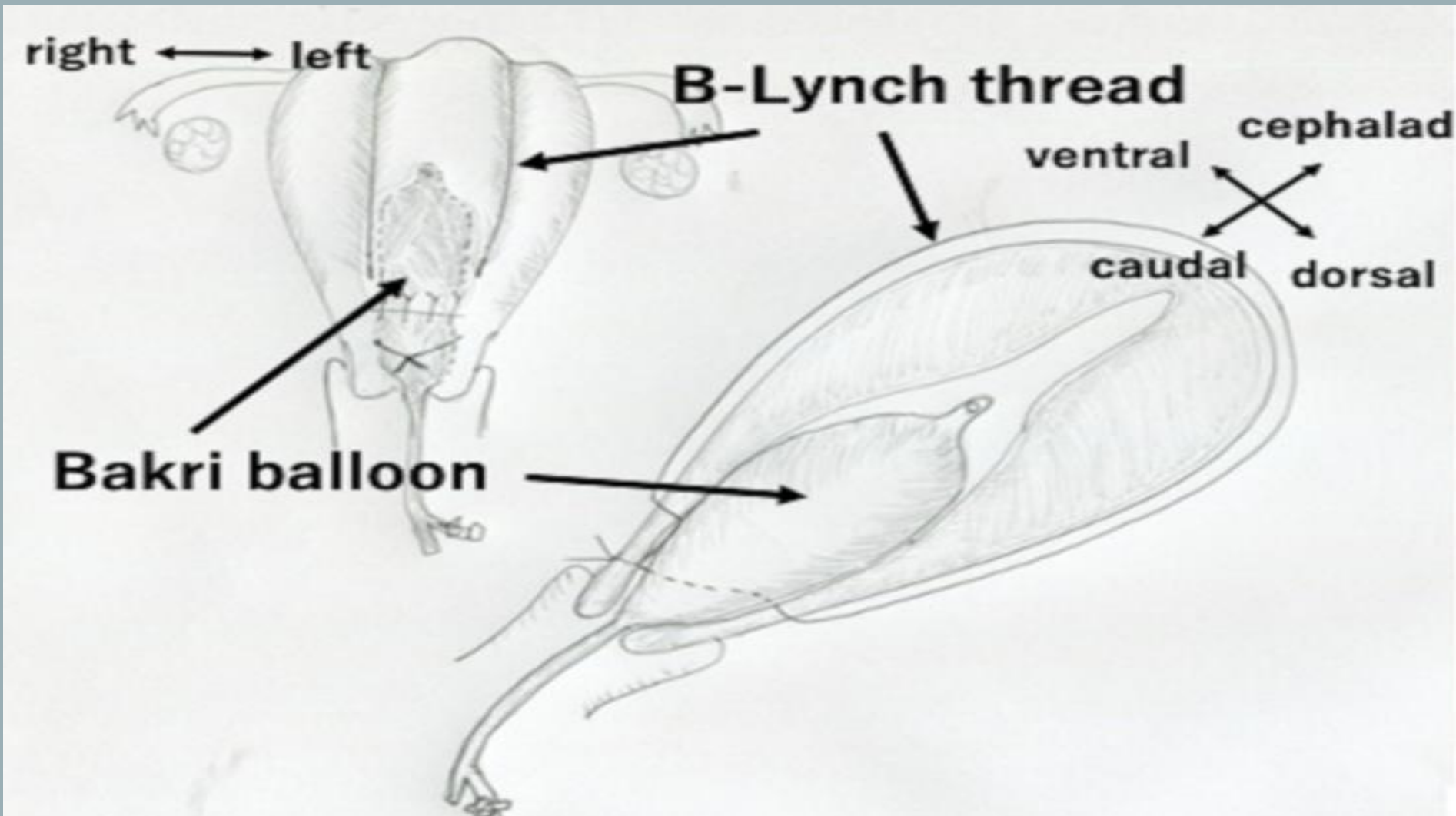


Figure 1. systemic explanation of uterus sandwich.
Retrieved from: [Cureus. 2020 Nov; 12\(11\): e11492.](https://doi.org/10.11492)

Effectiveness of the uterine sandwich

In a study done by Nelson and O'Brien, (2007), 5 patients presenting with PPH after a caesarian section reported a complete recovery when treated with the uterine sandwich technique. In all these patients, the PPH was first treated with B-Lynch suture without success. However, on introduction of an intrauterine Bakri balloon, positive results were reported. The study concluded that the uterine sandwich technique was more effective than an individual technique. Similarly, Dhillon and Dhillon, came to a similar conclusion in their study in 2018. They concluded that the uterine sandwich technique was more simpler, safer, and efficient than internal iliac ligation in the management of PPH. In addition to this, Seidel et al., (2018), also came to a conclusion that uterine sandwich technique treated PPH haemorrhage without compromising a patient's fertility. James et al., (2012), Diemer et al., (2012), and Price et al., (2006), came to a similar conclusion.

Indications of uterine sandwich

- Persistent uterine atony with uterotonics
- Persistent PPH after uterine compression suture intervention.
- Persistent PPH after insertion of intrauterine balloon tamponade
- Severe PPH due to placental adhesion anomalies

A graph showing the use of different surgical techniques in management of PPH in different world populations

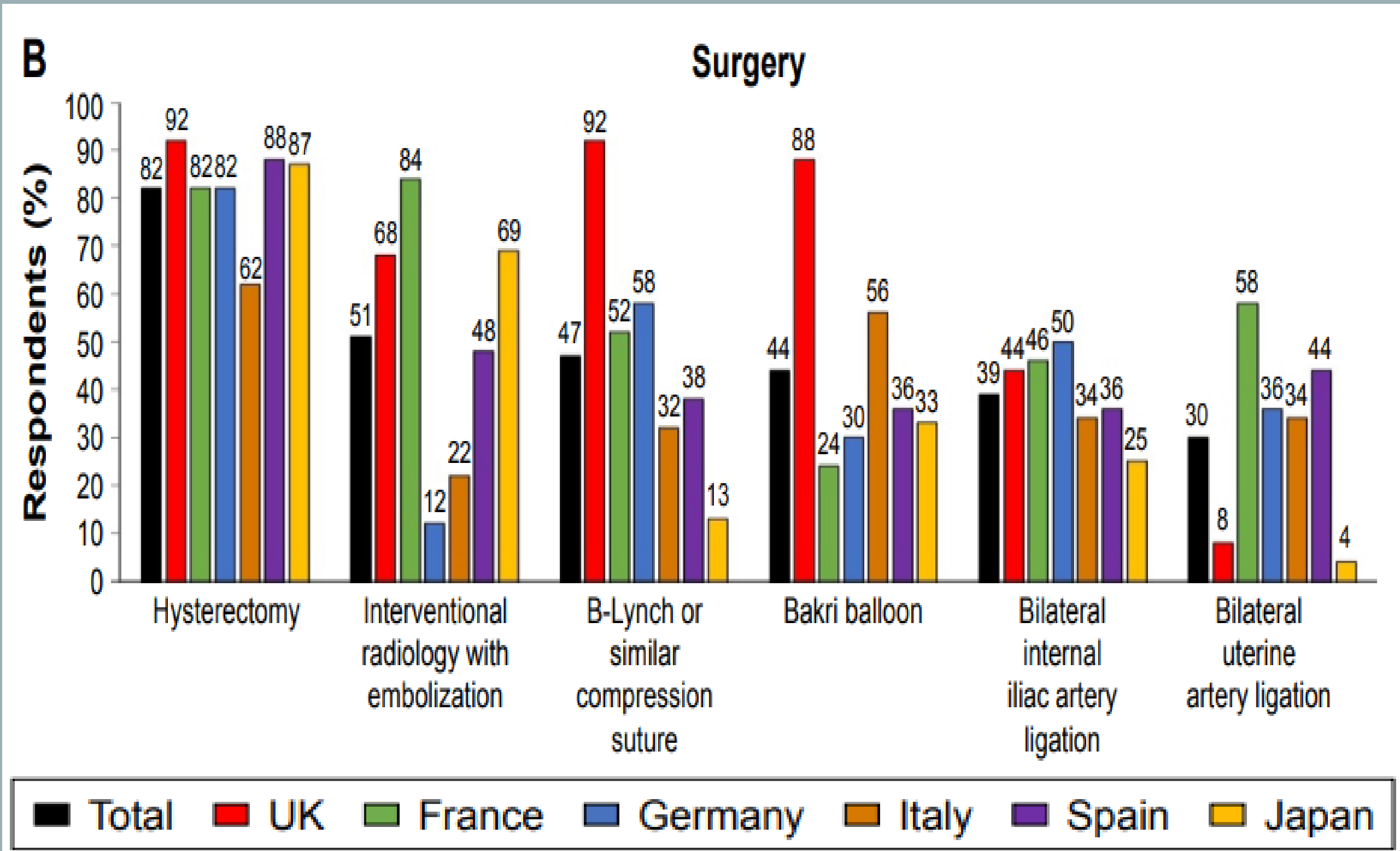


Figure 1. strategies used for the management of postpartum haemorrhage. Retrieved from: <https://doi.org/10.2147/IJWH.S132135>

An image showing a Bakri balloon

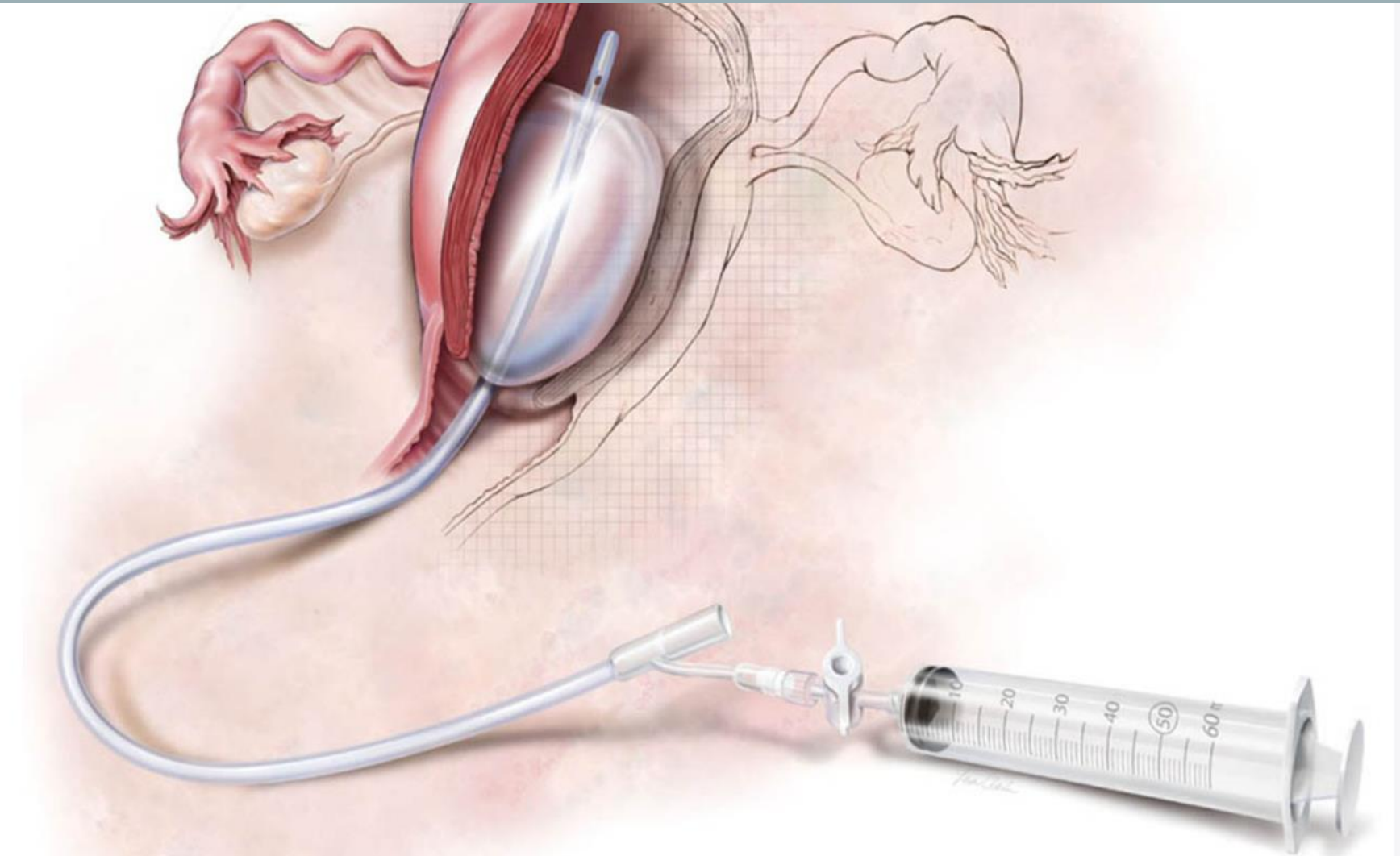


Figure 1. Bakri balloon. Retrieved from: <https://doi.org/10.1515/med-2021-0392>

Conclusion

From the various results evidenced in a number of studies, uterine sandwich technique is the best approach for the management of severe PPH. Uterine sandwich approach is associated with high patient success rates but with little complications. Uterine sandwich approach could be an alternative to an obstetrics hysterectomy in selected cases of massive PPH to prevent surgical morbidity and preserve fertility.