

Bakri Balloon, Brace Suture and “Sandwich Technique” for the Management of Severe Post-Partum Haemorrhage

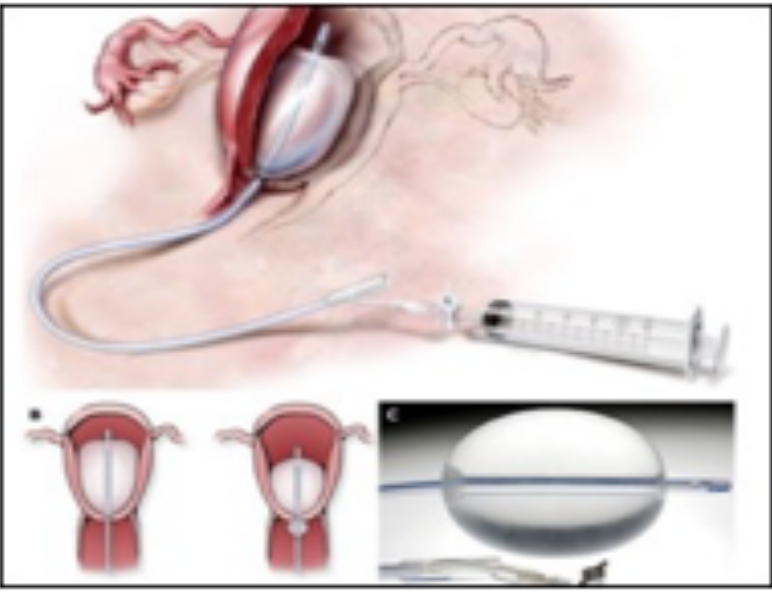
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INTRODUCTION

- Post-Partum Haemorrhage (PPH): leading cause of maternal mortality and morbidity
- Severe PPH: $\geq 2000\text{mL}$ blood loss in the postnatal period
- 75-90% of PPHs is contributed to uterine atony, which is usually managed with pharmacological agents (uterotonics)
- Uterine-sparing PPH management: 1) Bakri Balloon (BB) 2) Brace Suture (BS) 3) Combination of Two (Sandwich Technique – BB&BS)
- Aim of study: Determine possible difference in effectiveness of BB, BS or BB&BS in severe PPH management when pharmacological intervention has failed (study conducted in Basildon University Hospital)

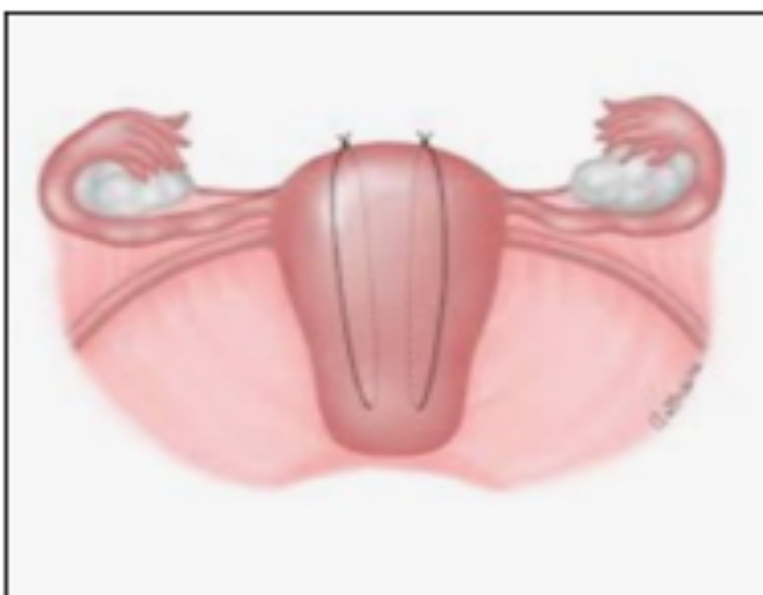
SURGICAL TECHNIQUE DESCRIPTION, AIM AND METHODOLOGY OF STUDY

Figure 1. Bakri Balloon



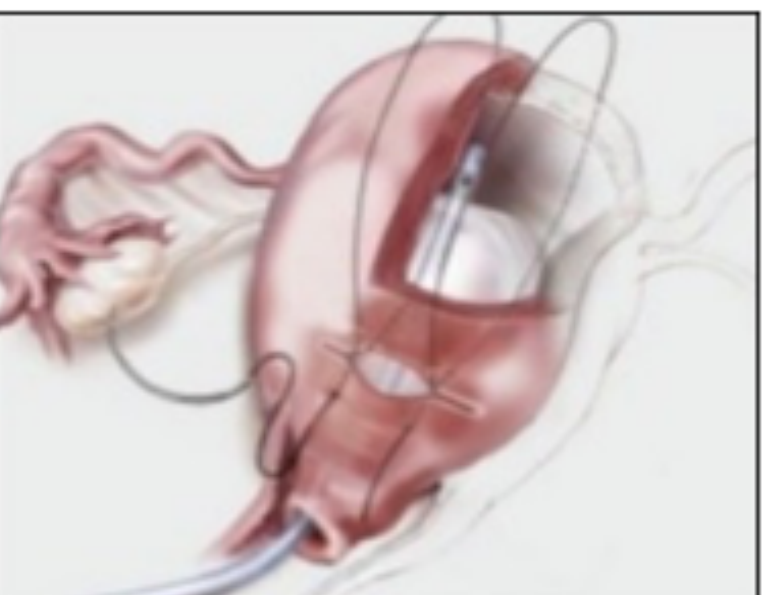
- BB inserted via incision to uterine cavity
- Tamponade effect manages bleeding

Figure 2. Brace Suture



- 2-4 vertical sutures from lower to upper uterine segment and tied at the top
- Compression of uterus improves tone

Figure 3. Sandwich Technique



- Insertion of BB through incision
- Application of BS
- Inflation of BB in the end

- Retrospective review of 37 case notes where pharmacological treatment failed to control PPH
- Effectiveness of management measured through blood tests (Haemoglobin Hb, Haematocrit Hct, Hemocue Hc), units of Red Blood Cells (RBC) transfused, patient observations (translated into Shock Index SI) and Days of Hospital Stay
- Inclusion criteria: 1) Caesarean Section, 2) Severe PPH, 3) Atony the primary cause of PPH, 4) No return to theatre for complications or hysterectomy

OVERVIEW OF STUDY RESULTS						
		P-value	Std. Deviation	Lower 95% CI	Upper 95% CI	Mean
Difference of pre and post-intervention Hb	Bakri	.8406	15.11	-28.23	-13.67	-20.95
	Brace		16.54	-34.84	-13.83	-24.33
	Bakri & Brace		14.81	-37.88	-6.79	-22.33
Difference of pre and post-intervention Hct	Bakri	.5348	0.05	-0.08	-0.11	-0.06
	Brace		0.05	-0.10	-0.04	-0.07
	Bakri & Brace		0.04	-0.11	0.03	-0.07
Blood loss (%)	Bakri	.4377	11.03	31	41.63	36.32
	Brace		19.51	28.27	53.07	40.67
	Bakri & Brace		50.46	7.712	113.6	60.67
Hemacue in theatre	Bakri	.7865	15.97	83.78	99.17	91.47
	Brace		12.46	84.42	100.20	92.33
	Bakri & Brace		23.75	61.91	111.80	86.83
Units of RBC transfused	Bakri	.4810	1.57	1.87	3.89	2.63
	Brace		1.97	1.08	3.59	2.33
	Bakri & Brace		1.34	1.73	5.07	1.21
Shock index (30min)	Bakri	.2791	0.19	0.94	1.12	1.03
	Brace		0.25	0.90	1.22	1.06
	Bakri & Brace		0.33	0.86	1.56	1.21
Shock index (60min)	Bakri	.8508	0.24	0.90	1.10	1.00
	Brace		0.34	0.86	1.30	1.10
	Bakri & Brace		0.20	0.58	1.00	0.79
Days of hospital stay	Bakri	.6620	1.50	2.70	4.15	3.67
	Brace		1.30	2.84	1.27	3.67
	Bakri & Brace		1.97	1.27	5.40	3.33

Table 1. Variables measured and comparison of results between surgical methods

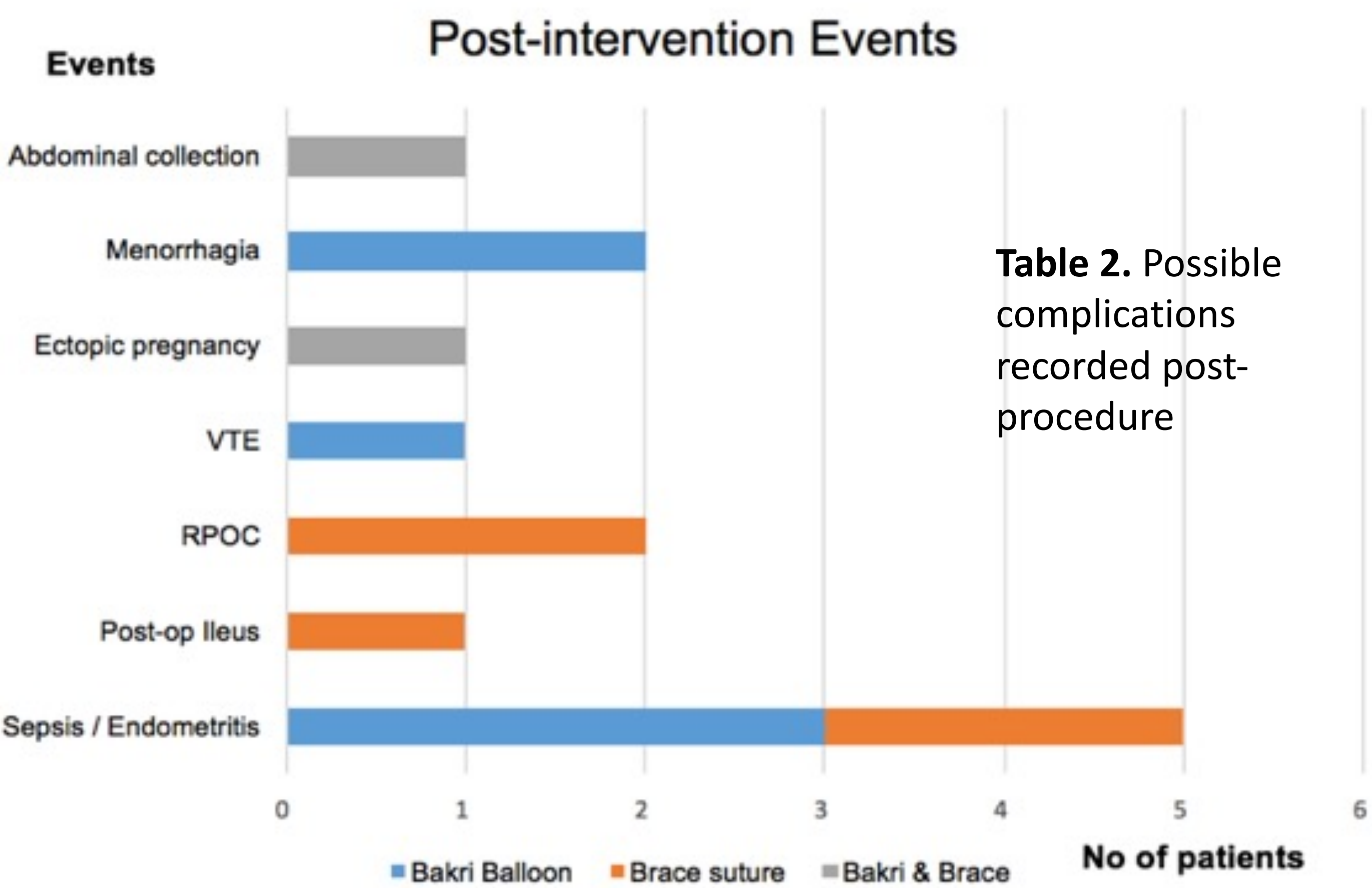


Table 2. Possible complications recorded post-procedure

SUMMARY OF RESULTS

- **ALL surgical methods equal** (p-values $> .05$) (see Table 1)
- **Shock Index (60 minutes) for BB&BS significantly lower** ($p = .0506$)
- **RBC in BB&BS 50% less** ($p = .4810$)
- **Blood loss (%) higher** for the **BB&BS** group ($p = .4377$)
- **BB&BS: least number of “events”** with 1 case of abdominal collection and a future presentation of ectopic pregnancy (see Table 2)

DISCUSSION

- **Potential superiority of BB&BS;** less complications, blood transfusion, haemodynamic instability despite higher blood loss
- Non-randomised retrospective study: **BB and BS of equal effectiveness** ($p = 0.01$) (Kong *et al.*, 2021)
- Systematic review: **BB, BS of no statistically significant difference** ($p = 0.06$) (Doumouchtsis *et al.*, 2006)
- Study’s unique features: 1) SI (Heart rate/Systolic Blood pressure) incorporated; better reflexion of haemodynamic stability 2) Blood loss adjusted to patient’s weight

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