

## ACQUIRED UTERINE HYPOPLASIA AFTER POSTPARTUM HAEMORRHAGE WITH WORST PROGNOSIS – A CASE REPORT

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### ABSTRACT

#### INTRODUCTION

Postpartum haemorrhage is defined as a loss of more than 500 mL of blood after delivery.<sup>1</sup> Postpartum haemorrhage is responsible for around 25% of maternal morbidity worldwide (WHO, 2007). Postpartum haemorrhage can also be a cause of long term severe morbidity with approximately 12% of women who survive postpartum haemorrhage will have severe anaemia.<sup>2</sup> This is a case report of a patient who has come with complaints of secondary amenorrhoea three years since last child birth. The patient has a history of atonic postpartum haemorrhage. On examination by USG & MRI, the uterus was hypoplastic.

#### KEYWORDS

Atonic, Ultrasound, Magnetic resonance imaging, Haemorrhage.

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**INTRODUCTION:** PPH is the leading cause of maternal mortality in low-income countries and the primary cause of nearly one quarter of all maternal deaths globally.<sup>3</sup> It can be classified into primary and secondary depending on the time of bleeding after the delivery.<sup>4</sup> Uterine atony is the most common cause of postpartum haemorrhage. (Table 1) The maternal mortality rate in India currently is estimated at 200/100,000 live births, with PPH being responsible for 30% of the deaths.<sup>5</sup>

**CASE REPORT:** A female patient of age 26 years presented with complaints of secondary amenorrhoea three years since last child birth. The patient's history revealed she had atonic postpartum haemorrhage during last child birth for which she had undergone bilateral ligation of internal iliac arteries, uterine arteries and utero-ovarian anastomosis. Initially medical management with prostaglandins failed to control the bleeding following which a surgical approach has been adopted with Hayman's and multiple uterine compression sutures and later stepwise devascularisation of uterus. She developed puerperal sepsis following the procedure. She has undergone treatment with medroxyprogesterone for the secondary amenorrhoea. But the results were not fruitful.

Past obstetric history revealed premature rupture of membranes.

Systemic examination of cardiovascular system, respiratory system, per abdomen and central nervous system revealed no abnormality. Laboratory findings were also normal.

Per vaginal and per speculum examination revealed no forniceal tenderness or mass lesion.

**Imaging Findings:** On examination of the patient by ultrasound reveals no significant abnormality of visualized solid organs. Uterus is hypoplastic which is small for age and reproductive status of the patient and measures 3.5 x 1.5 cm. Thin strip of endometrium noted with few myometrial cysts. Ovaries (RO-3 x 2 cm, LO-2.8 x 1.2 cm) on both sides shows normal size and echotexture. No free fluid noted in pelvis. The diagnosis was made as hypoplastic uterus possibly due to systemic pelvic devascularisation and advised magnetic resonance imaging for further evaluation (Fig. 2-5). Magnetic resonance imaging of the pelvis was performed to confirm our findings on ultrasound and also to have a better depiction of pelvic structures.

MRI showed normal urinary bladder. Uterus is smaller in size (3.5x1.5 cm) with normal signal intensities. Endometrium is thinned out. No junctional zone could be made out. Myometrium is grossly reduced in size and measures 0.4 mm in maximum thickness. Ovaries show normal size (right ovary-3.3 x 1.5 cm, left ovary-2.6 x 1.4 cm), architecture and signal intensities. Visualized bowel loops are normal. Both hip joints and sacroiliac joints are normal. Visualized pelvic girdle muscles are normal. No free fluid noted in pelvis. (Fig. 6-9). So the final diagnosis was made as hypoplastic uterus in this patient with previous atonic postpartum haemorrhage managed with bilateral internal iliac artery and uterine artery ligation.

**DISCUSSION:** Postpartum period is defined as a period of 6 weeks after the delivery of the infant. Postpartum haemorrhage may occur immediately or several hours or days after the delivery.<sup>5</sup> Primary postpartum haemorrhage/early postpartum haemorrhage occurs within 24 hours after the delivery. Secondary postpartum

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haemorrhage/delayed postpartum haemorrhage occurs from 24 hours after the delivery till the 6<sup>th</sup> week of puerperium. Uterine atony accounts for 75% cases of primary postpartum haemorrhage and retained placental products is the common cause for delayed postpartum haemorrhage.<sup>5</sup> Loss of tonicity of uterine myometrium results in haemorrhage as myometrial contraction is responsible for hemostasis.<sup>6</sup>

Medical management is the first line of treatment for atonic PPH which involves use of oxytocic drugs like oxytocin, ergometrine, prostaglandin F2 $\alpha$  and misoprostol. If medical management fails, surgical intervention is the only lifesaving option.<sup>6</sup>

Different ways to intervene surgically are uterine artery ligation, ovarian artery ligation, internal iliac ligation, uterine packing, compression sutures like B-Lynch sutures or hysterectomy.<sup>6</sup> The surgical procedure of arterial ligation carries the risk of loss of fertility and menstruation. Vascular ligation often fails to stop the bleeding as the ligation is more proximal, so collateral vessels like last lumbar, middle sacral and inferior epigastric can provide an alternative blood supply to the uterus.<sup>6</sup>

The most common cause of postpartum haemorrhage occurs if the uterus does not contract strongly enough and these blood vessels bleed freely. Such excessive and rapid blood loss can cause a severe drop in the mother's blood pressure and, if left untreated, may lead to shock and death.<sup>7</sup>

Pelvic arterial embolization or PAE, a minimally invasive lifesaving therapy, is a safe and effective treatment for postpartum haemorrhage. Pelvic arterial embolization preserves the uterus, allowing resumption of menstruation and preserving fertility and also performed without the risk of general anaesthesia.

With pelvic arterial embolization, an interventional radiologist makes a tiny nick in the skin in the groin and, using real-time imaging, guides a catheter into the arteries supplying the uterus and injects small particles that block the blood flow to the uterus and stop the bleeding.<sup>7</sup>

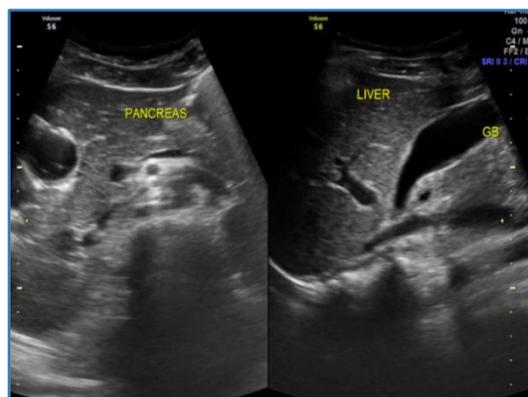
Embolisation was performed under local anaesthesia via the right femoral artery to allow the selective study of and access to both internal iliac arteries and branches and to ideally perform a selective embolisation of both uterine arteries.<sup>8</sup> High proportion of fertility following pelvic arterial embolisation is possible because the mechanism of embolisation itself favours rapidly reversible decrease in arterial flow. Also the resorbable gelation pledgets allow revascularization of uterine artery.<sup>8</sup>

**CONCLUSION:** Bilateral internal iliac artery and uterine artery ligation along with ligation of utero-ovarian anastomosis has the worst prognosis in a case of postpartum haemorrhage resulting in development of hypoplastic uterus which will cause secondary infertility and secondary amenorrhoea. This will also have psychological and social impact on the health of the women. Hence alternative procedure should be sought out for. Finally, we want to convey that uterine artery embolisation procedure other

than optimally treating postpartum haemorrhage, preserve the fertility and menstruation of the patient.

Thrombin	Pre-eclampsia, Placental abruption Pyrexia in labour Bleeding disorders-haemophilia, anticoagulation, von Willebrand disease
Tissue	Retained placenta Retained products of conception Placenta accreta
Tone	Placenta praevia Uterine relaxants Previous PPH Over distension of uterus-multiple pregnancy, polyhydramnios, macrosomia
Trauma	Caesarean section Episiotomy Macrosomia (>4 kg)
Other	Asian ethnicity Anaemia Induction BMI>35 Prolonged labour Age

**Table 1: Causes of postpartum haemorrhage**



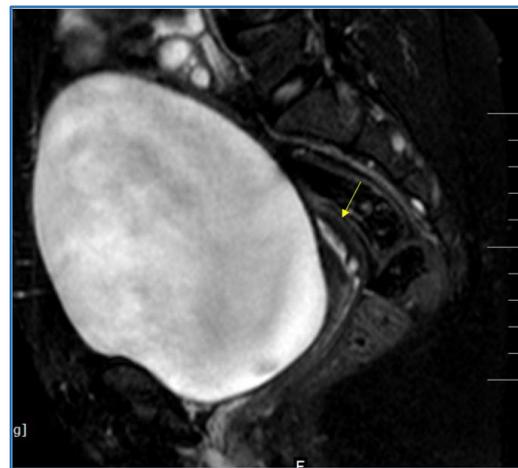
**Fig. 2: USG image shows normal liver size and echogenicity. Visualized pancreas is normal. Rest of the solid organs shows normal size and echogenicity**



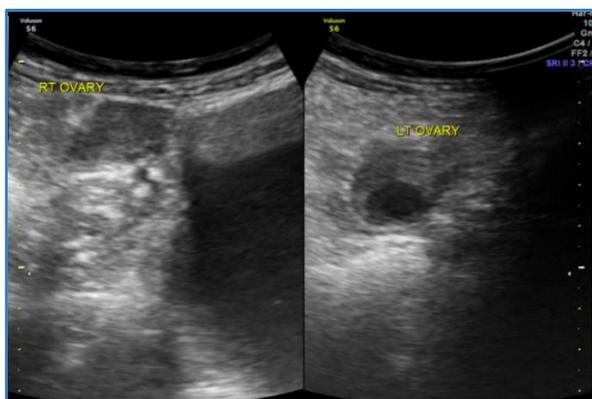
**Fig. 3: USG sagittal image shows small size of uterus (arrow). It measures 3.5 x 1.5 cm. Thin strip of endometrium noted. Myometrium is also thinned out**



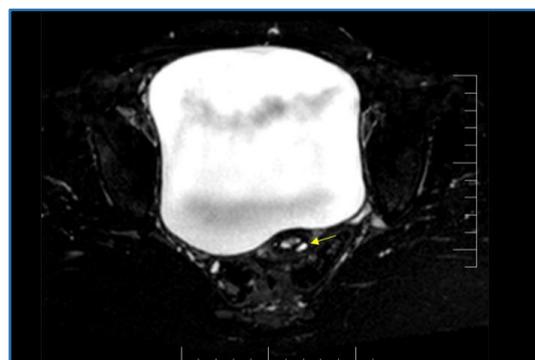
**Fig. 4: USG axial image shows simple myometrial cysts (arrow) and decreased anteroposterior diameter and width of the uterus**



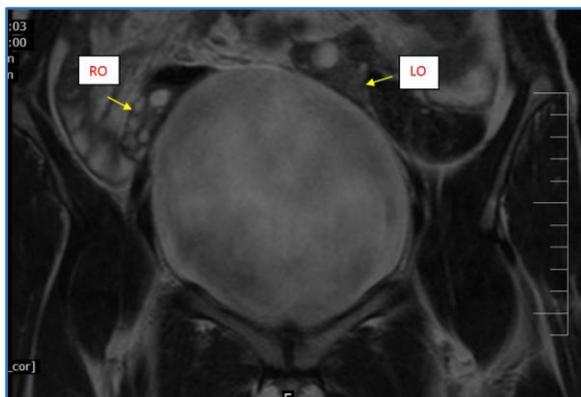
**Fig. 7: This T2W sagittal section shows uterus small in size with endometrium irregular and thin, myometrium also shows decreased thickness**



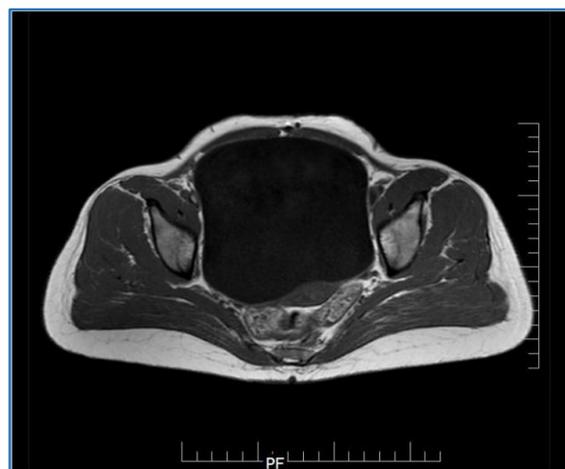
**Fig. 5: USG axial image shows normal size and echogenicity of the ovaries. Small dominant follicle noted in left ovary**



**Fig. 8: This SPAIR axial section shows distended bladder with small uterus with hyperintense endometrium with multiple myometrial cysts (arrow)**



**Fig. 6: This T2W coronal section shows distended bladder with ovaries of normal size and signal intensities**



**Fig. 9: This T1W axial section reveals decreased anteroposterior diameter and width of the uterus**

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