

Increased endometrial vascularity and intraoperative haemorrhage among women undergoing surgical evacuation for retained product of conception

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Abstract

The aim of this study was to ascertain the incidence of “increased endometrial vascularity” recorded in the ultrasound scan reports, in the context of RPOC and correlate this finding with the incidence of life threatening intra-operative bleeding.

Ultrasound scan reports sometimes mention the presence of increased endometrial / sub-endometrial vascularity in the context of retained products of conception or secondary post partum haemorrhage. This raises the possibility of serious intra-operative haemorrhage in the minds of the junior doctors because of the possibility of arterio-venous malformation. This retrospective case series was designed to find the incidences of increased endometrial vascularity and severe intra-operative haemorrhage in the patients with RPOC in the south eastern part of Melbourne population. The study found that the incidence of increased endometrial vascularity was 7.57% and none of these patients suffered severe intra-operative haemorrhage. A literature survey revealed that there were few studies on this topic.

Keywords: endometrial vascularity, Doppler, secondary postpartum haemorrhage.

Introduction

Surgical evacuation of retained products of conception (RPOC) is one of the most commonly performed gynaecological surgeries. In Australasian public hospitals, this surgery is often performed by the registrars without the supervision of a specialist. The gold standard for the clinical diagnosis of a RPOC is ultrasound which shows the presence of retained products within the endometrial cavity with or without the evidence of increased endometrial / subendometrial vascularity (IEV). The mention of the words “increased endometrial vascularity” raises the possibility of increased risk of life threatening intra-operative bleeding due to vascular malformation, in the minds of the junior doctors which makes them hesitant to do this surgery on their own especially after-hours.

The aim of this study was to ascertain the incidence of “increased endometrial vascularity” as recorded in the ultrasound scan reports, in the context of RPOC and correlate this finding with the incidence of life threatening intra-operative bleeding.

Materials and methods

The names of all patients referred to Peninsula Health (Frankston Hospital) for pelvic ultrasound

examination for symptoms of miscarriage, such as pain, vaginal bleeding, RPOC and Secondary post-partum haemorrhage (SPPH) between 1st January 2008 and 31st January 2010 were collected from the radiology department data base. Medical records of all these patients were obtained from the Health Information Service of the hospital and data were collected regarding demographics, ultrasound scan findings, drops in Haemoglobin (Hb) due to surgery (change in Haemoglobin pre and post surgery) and histology of the endometrial curetting.

The ultrasound scans were performed at the radiology department of this hospital by different sonographers/radiologists. The departmental clinical practice guideline on pelvic ultrasound scans was followed and transabdominal and transvaginal scans were performed in all cases. At that time, expectant or medical management of miscarriage was not a common practice at this hospital. So, all such patients requiring treatment were treated surgically. The surgical procedures were carried out by registrars in the operating theatre of this hospital. The haematological and histological examinations were carried out at the hospital pathology laboratory.

For the purpose of this study, IEV was defined as Colour Doppler uptake at more than one spot

Table 1

Patient	Age	Presentation	USS	Histopathology	Haemoglobin drop
1	26	Missed miscarriage	IEV	POC	<1 gr
2	31	Missed miscarriage	IEV	POC	<1 gr
3	38	Missed miscarriage	IEV	Placental site nodule	<1 gr
4	40	Missed miscarriage	IEV	POC	<1 gr
5	35	SPPH	IEV	RPOC	<1 gr
6	31	Missed miscarriage	IEV	POC	1.5 gr
7	34	Missed miscarriage	IEV	POC	<1 gr
8	35	SPPH	IEV	RPOC	<1 gr
9	33	Missed miscarriage	IEV	POC	<1 gr
10	22	TOP	IEV	POC	<1 gr
11	20	Missed miscarriage	IEV	POC	4.5 gr
12	33	Missed miscarriage	IEV	POC	<1 gr
13	22	SPPH	IEV	RPOC	<1gr
14	26	SPPH	IEV	RPOC	<1 gr
15	28	Missed miscarriage	IEV	POC	<1 gr

SPPH, secondary post partum haemorrhage; TOP, termination of pregnancy; IEV, increased endometrial vascularity; POC, product of conception; RPOC, retained product of conception; HB, haemoglobin.

in the endometrium or a large contiguous area showing Colour Doppler uptake. Subendometrial vascularity was defined as colour Doppler uptake within 1 mm of the endometrium. The sonograms of all 15 patients with IEV were reviewed.

Results

198 such patients were found on the radiology department data-base. The average patient age was 33.8 years (17–45). 15 (7.57%) patients were reported to have increased endometrial / subendometrial vascularity. The average age of this group of patients was 27 years (22–40). Out of these 15, 4 patients had SPPH and 11 had miscarriage. Of the total number of patients who had ultrasound for suspected RPOC (198), 184 (92.9%) underwent surgical evacuation and 16 (8.69%) had more than 2 gm/dL drop in Hb post surgery. None of these 16 patients had increased endometrial/subendometrial vascularity on pre-operative ultrasound examination.

All 15 patients with IEV had surgical evacuation. Out of these 15, the histology of the endometrial curettage of one patient showed a placental site nodule and the remaining 14, showed degenerating decidua and chorionic villi. None showed arteriovenous malformation (AVM). Only one patient had intraoperative blood loss of 4.5 gm/dL (Table 1).

Discussion

In this study, the incidence of IEV in the contexts of RPOC and SPPH was 7.57%. In the study of Kamaya, *et al.*,¹ the incidence was much higher and the degree of vascularity was graded from 0 to 3. All patients in this study, who had IEV, had RPOC which is consistent with the study of Durfee, *et al.*² Endometrial vascularity was significantly higher in pregnant patients with live births than in those who miscarried.³

IEV may indicate AVM which puts the patient at increased risk of life threatening intra-operative haemorrhage. A

congenital AVM is extremely rare, but can grow as pregnancy progresses whereas an acquired AVM is uncommon and results from uterine damage as a result of previous uterine surgery, pelvic trauma, normal and molar pregnancy, endometriosis and endometrial cancer.^{4,5} Surgical curettage can result into heavy and life threatening haemorrhage as a result of the damage to the endothelial lining of the AVM.

Angiography used to be the gold standard for the diagnosis of AVM⁶ but transvaginal ultrasound with colour Doppler imaging seems to have replaced angiography.⁷ In this study, 1 of the 15 patients who had IEV, had a drop of more than 2 gm/dL of Haemoglobin. The authors believe that as congenital AVMs are rare and acquired AVMs uncommon, performing a surgical curettage for RPOC is safe, unless spectral Doppler studies on the IEV suggest AVM or prominent vessels have been visualised. It should be mandatory to perform spectral Doppler studies if colour Doppler uptake has been shown on the ultrasound examination. Spectral analysis of the colour Doppler insonated area of the endometrium, in patients with AVMs, shows high flow velocities and systolic velocity peaks, similar to an arterial pattern, which suggests arteriovenous shunting.⁸ However very high velocities have also been documented with retained products without AVM(1).

The endometrial vascularity was seen in all 15 cases of retained product of conception in this study, which was consistent with the studies of Kamaya, *et al.*¹ and Durfee, *et al.*² 8.08% patients dropped their Hb by at least 2 gr/dL but only 1 of these had IEV. The authors hypothesised that the vascularity of the endometrium in the contexts of RPOC and SPPH may be explained on the basis of neoangiogenesis in that area. Further, there was lack of research as to when this neoangiogenesis started and how long it lasted with or without surgical intervention. This may be the subject of a prospective study. Another school of thought is that the presence of endometrial vascularity in

the presence of retained product of conception may be due to delay in involution of the placental implantation site vessels.^{9,10} The implantation site may remain vascular during the time of the involution causing vascularity of the endometrium on ultrasound scan. Some retained product may have minimal or very slow blood flow despite failure of complete separation at delivery. This blood flow may be difficult to detect with current Doppler technology and expertise.²

The limitations of this study were its descriptive and retrospective design. Although, the ultrasound scans were performed by different personnel as happens in a real situation, the departmental guideline on RPOC was followed. The small numbers also detract from the statistical power of the study.

Conclusion

The authors conclude that the incidence of IEV in this population was 7.57% which was not high and was consistent with other studies. Only one of the patients with IEV had intra-operative drop in Hb of > 2 g/dL in the total study group and hence doing an evacuation of the RPOC on patients with the ultrasound finding of IEV did not carry the risk of life threatening intraoperative haemorrhage beyond the background risk of haemorrhage from this procedure.

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