

# NOVEL METHOD OF PERCUTANEOUS EMBOLIZATION OF INTRAUTERINE PSEUDOANEURYSM USING ONYX EMBOLIC SYSTEM

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## INTRODUCTION:

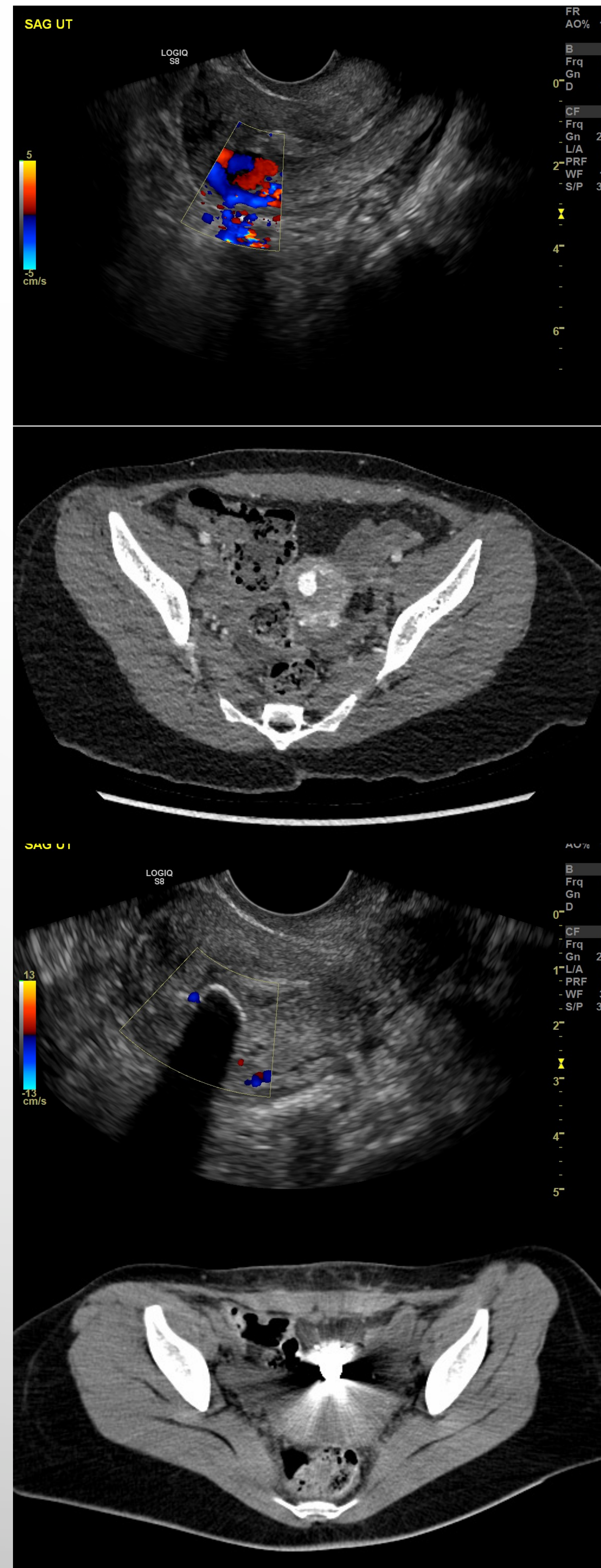
AN INTRAUTERINE PSEUDOANEURYSM CAN OCCUR WHEN THERE IS TRAUMATIC INJURY TO THE ARTERIAL WALL WITH SUBSEQUENT FORMATION OF PERIARTERIAL HEMATOMA RESULTING FROM INADEQUATE SEALING OF THE UTERINE ARTERY WALL.<sup>1</sup> THE HEMATOMA LIQUEFIES OVER TIME AND SUBSEQUENTLY LEADS TO THE FORMATION OF A THIN-WALLED CAVITY THAT COMMUNICATES THROUGH A NARROW NECK WITH THE ARTERIAL LUMEN.<sup>2</sup> UTERINE ARTERY PSEUDOANEURYSM IS RARELY OBSERVED; HOWEVER, IT CAN OCCUR AFTER CESAREAN SECTION, UTERINE MYOMECTOMY, OR AFTER UTERINE CURETTAGE. IT ACCOUNTS FOR APPROXIMATELY 3% OF CASES OF POSTPARTUM HEMORRHAGE.<sup>3</sup> IMMEDIATE TREATMENT IS OFTEN REQUIRED GIVEN THE RISK OF LIFE-THREATENING HEMORRHAGE IF THESE PSEUDOANEURYSMS RUPTURE. THE STANDARD OF CARE IS EMBOLIZATION USING AN ENDOVASCULAR APPROACH; HOWEVER, AT TIMES THIS CAN BE EXTREMELY CHALLENGING ESPECIALLY IF THERE IS VASCULAR TORTUOSITY OR DISTAL LOCATION OF THE LESION. WE WOULD LIKE TO PRESENT A NOVEL PERCUTANEOUS APPROACH TO EMBOLIZE AN INTRAUTERINE PSEUDOANEURYSM USING ONYX LIQUID EMBOLIC SYSTEM (LESTM).

## CLINICAL HISTORY:

A 34-YEAR-OLD FEMALE PRESENTED TO THE ED AFTER EXPERIENCING A SYNCOPAL EPISODE WITH ASSOCIATED HEAVY VAGINAL BLEEDING. SHE HAD UNDERGONE A HYSTEROSCOPIC POLYPECTOMY WHICH WAS COMPLICATED BY UTERINE RUPTURE APPROXIMATELY 1 MONTH PRIOR. PATIENT REPORTED PROGRESSIVELY WORSENING EPISODES OF PALPITATIONS, LIGHTHEADEDNESS, LOWER ABDOMINAL CRAMPING, AND DIAPHORESIS. A PELVIC ULTRASOUND AND AN ABDOMINOPELVIC CT-ANGIOGRAPHY WERE PERFORMED WHICH DEMONSTRATED AN INTRAUTERINE PSEUDOANEURYSM.

## METHOD:

A PERCUTANEOUS APPROACH OF EMBOLIZATION OF THE PSEUDOANEURYSM WAS ATTEMPTED FOLLOWING MULTIPLE UNSUCCESSFUL ENDOVASCULAR ATTEMPTS OWING TO TORTUOUS VASCULAR ANATOMY. THE URINARY BLADDER WAS DECOMPRESSED WITH A FOLEY CATHETER TO ALLOW BETTER ACCESS TO THE UTERUS. A 21G GUIDING NEEDLE WAS ADVANCED PERCUTANEOUSLY THROUGH THE LOWER ABDOMINAL WALL, INTO THE MYOMETRIUM AND ULTIMATELY INTO THE PSEUDOANEURYSM USING A COMBINATION OF CT AND FLUOROSCOPY. A TOTAL OF 1.5 CC OF ONYX 34 (LESTM) WAS INJECTED DIRECTLY INTO THE PSEUDOANEURYSM UNDER SIMULTANEOUS USE OF TRANSABDOMINAL AND TRANSVAGINAL ULTRASOUND. IMMEDIATE OCCLUSION OF THE PSEUDOANEURYSM WAS ACHIEVED WHICH WAS CONFIRMED UNDER FLUOROSCOPY AND BY LACK OF DOPPLER FLOW ON ULTRASOUND.



Transvaginal ultrasound image demonstrates a pseudoaneurysm in the posterosuperior wall of the uterus. The yin-yang or pepsi-cola sign is well demonstrated here.

CT Angiography of the abdomen and pelvis demonstrates a hyperdense region within the uterus during the arterial phase indicating the location of the intrauterine pseudoaneurysm.

Transvaginal ultrasound image demonstrates posterior acoustic shadowing after the embolic material (Onyx LESTM) was injected. Absence of color doppler is suggestive of occlusion of the pseudoaneurysm.

Post-embolization CT image demonstrates hyperdense embolic material within the myometrium corresponding to the location of the previously seen pseudoaneurysm.

## RESULTS:

INJECTION OF ONYX 34 (LESTM) RESULTED IN SUCCESSFUL OCCLUSION OF THE PSEUDOANEURYSM WHICH WAS CONFIRMED AT THE TIME OF THE PROCEDURE UNDER FLUOROSCOPY AND ULTRASOUND. THE PATIENT TOLERATED THE PROCEDURE WELL AND HER DISCHARGE WAS UNEVENTFUL. CTA OBTAINED 12 WEEKS POST-PROCEDURE DEMONSTRATED STABLE EMBOLIZATION OF THE PSEUDOANEURYSM.

## CONCLUSION:

INTRAUTERINE PSEUDOANEURYSMS CAN OCCUR FROM DIFFERENT SURGICAL PROCEDURES AND REQUIRE PROMPT MANAGEMENT. THE STANDARD OF CARE IS AN ENDOVASCULAR APPROACH; HOWEVER, IF THERE IS FAVORABLE ANATOMY THEN A PERCUTANEOUS APPROACH CAN BE UNDERTAKEN. THIS METHOD SUBSTANTIALLY REDUCES PROCEDURE AND RADIATION TIMES. ONYX LIQUID EMBOLIC SYSTEM (LESTM) CAN BE SAFELY USED IN SUCH CASES ESPECIALLY IF THERE IS EARLY VENOUS FILLING AS WAS THE CASE WITH OUR PATIENT. ONYX 34 BEING A VISCOUS AGENT CAN BE INJECTED SLOWLY IN A CONTROLLED MANNER WITH LITTLE TO NO RISK OF NON-TARGET EMBOLIZATION.

## REFERENCES:

1. BOI, LUCA ET AL. "EMBOLIZATION OF IATROGENIC UTERINE PSEUDOANEURYSM." *GYNECOLOGY AND MINIMALLY INVASIVE THERAPY* VOL. 6,2 (2017): 85-88. DOI:10.1016/J.GMIT.2017.02.004
2. YOUSSEF, ASHRAF TALAAT. "INTRAUTERINE ARTERIAL PSEUDOANEURYSM, A RARE CAUSE OF PER VAGINAL BLEEDING." *JOURNAL OF ULTRASOUND*21, NO. 4 (2018): 333-337.
3. DOHAN, ANTHONY, PHILIPPE SOYER, AQEEL SUBHANI, DELPHINE HEQUET, YANN FARGEAUDOU, OLIVIER MOREL, MOURAD BOUDIAF ET AL. "POSTPARTUM HEMORRHAGE RESULTING FROM PELVIC PSEUDOANEURYSM: A RETROSPECTIVE ANALYSIS OF 588 CONSECUTIVE CASES TREATED BY ARTERIAL EMBOLIZATION." *CARDIOVASCULAR AND INTERVENTIONAL RADIOLOGY* 36, NO. 5 (2013): 1247-1255.