

# PELVIC ARTERIOGRAPHY IN OBSTETRICS AND GYNAECOLOGY

by

SUMANT G. DAFTARY, M.B.B.S., D.M.R.D. (Lond.)

NARENDRA S. DOSHI, M.B.B.S., D.G.O.

SHIRISH N. DAFTARY, M.D., D.G.O.

VITHAL N. PURANDARE, M.D., F.R.C.S.E.

B. N. PURANDARE, M.D., F.C.P.S., F.R.C.S.E., F.I.C.S., F.R.C.O.G.

Interest in the visualization of the pelvic arteries dates back to 1863, when Luschke injected dye into the pelvic vessels to study pelvic pathology. Sampson, in 1912, injected dye into normal and myomatous uteri for studying its vasculature. Saito and Kamikawa, from Japan, were the first to visualize pelvic arteries in the living, using the femoral artery approach. Dos Santos, in 1931, used the translumbar approach for visualization of pelvic arteries. Coutts (1935), Farinas (1941), and Hartnett (1947) employed pelvic angiography, culminating in the classic treatise of Borell and Fernstrom from Sweden, in 1955, using the Seldinger technique of percutaneous retrograde femoral artery catheterization.

## *Material and Method*

The retrograde method of pelvic angiography has been used by the above authors for visualization of pelvic vasculature in 39 cases of interesting gynaecological pathology and 21 obstetric cases of placenta praevia and vesicular mole for

*From K.E.M. Hospital, Bombay.*

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visualization of the sinuses. This study provided some useful diagnostic criteria of academic and practical importance. The results of the study are presented.

## *Technique*

In the selected patient drug idiosyncrasy to intravenous iodine, and peripheral vascular disease were meticulously excluded. The patient was prepared as for a surgical operation. The skin of both groins was suitably prepared. Premedication using injection pethidine 100 mg. and Phenergan 25 mg. was administered half an hour prior to the procedure. The femoral artery was localised in the groin half an inch below Poupart's ligament. The skin over it was nicked. The artery was transfixed with Seldinger's triple needle and the inner needle and the stilette were removed. The blunt cannula was withdrawn and its base depressed at the same time. As the tip of the cannula slipped into the lumen of the artery a spurt of arterial blood was seen. The guide wire was advanced into the arterial lumen through the cannula which was now removed. The polythelene tube was passed over the guide wire up to the skin, both these were then



simultaneously advanced until about 8-9 inches of the polythelene tube had entered the arterial tree. The guide wire was then withdrawn. The tip of the polythelene tube was at the aortic bifurcation.

Clotting in the polythelene tube was prevented by periodic injections of normal saline. Twenty ml. of previously warmed 76% urografin was rapidly injected through the polythelene tube whilst bilateral femoral artery compression was given. A film was taken simultaneously on finishing the injection of the dye in gynaecological cases, and 2 to 3 seconds after finishing the injection in obstetric cases. After completion of the procedure the polythelene tube was withdrawn, and the site of arterial puncture compressed for 5 minutes to avoid local haematoma formation. The patient was observed in the wards for 24 hours for any local or systemic untoward effects.

#### *Analysis of material*

The pelvic vasculature was studied in 39 gynaecological cases and 21 obstetric cases.

#### *Gynaecological cases*

Diagnosis	No. of cases
1. Fibroids of uterus .. ..	20
2. Chronic tubo-ovarian masses .. ..	6
3. Adenomyosis .. ..	3
4. Prolapse of uterus .. ..	3
5. Ovarian tumours .. ..	3
6. Carcinoma cervix .. ..	2
7. Choriocarcinoma .. ..	1
8. Chronic inversion .. ..	1

#### *Obstetric cases*

1. Antepartum haemorrhage .. ..	16
2. Vesicular mole .. ..	5

#### *Angiographic Patterns*

##### (1) *Fibroids; tubo-ovarian masses and ovarian tumours*

Pelvic masses including subserous fibromyomas, chronic tubo-ovarian masses and ovarian tumours enter the arena of clinical differential diagnosis. Angiography reveals fibroid swellings within the substance of the uterus. In these cases the uterine arteries are enlarged, they are often separated, there is uncoiling of the blood vessels, and often large vessels supplying the neoplasms are visualised. In chronic tubo-ovarian masses the uterine artery usually appears normal, but large adnexal branches generally following a straight course are seen to be deviating in the direction of the masses. Ovarian tumours derive the blood supply essentially from the ovarian artery. Pelvic angiography fails to reveal any tumour circulation, and the uterus may be bodily pushed to one side. Translumbar arteriography clearly brings out the tumour circulation.

In the present study we had seven cases of large pelvic masses where pelvic angiography helped to differentiate between malignant tumours and vascular fibroids.

(2) *Adenomyosis*: In these cases the uterine arteries are hypertrophied, coiled, and the enlarged hypertrophied cork-screw shaped endometrial vessels indicate myohypertrophy.

(3) *Prolapse of the uterus and inversion of the uterus*: The uterine arterial studies were mainly of academic interest.

(4) *Tumours*: Tumour circulation was visualized in angiography in 2

cases of cancer of cervix; the cervical branch of uterine artery was enlarged and showed numerous ramifications. In the single case of chorio-carcinoma a large vascular uterus with metastatic tumour circulation was visualized.

*Obstetric cases*

(1) *Antepartum haemorrhage:* Twenty-one cases of antepartum haemorrhage were referred for placental localization. The placental shadow was well localized in 16 cases. Of these, 8 cases showed placental sinuses in the lower uterine segment. In 3 of them major degree of praevia was suspected and proved at caesarean section. In the other 5 cases lower segment exploration confirmed the diagnosis.

(2) *Vesicular mole:* In 5 cases of vesicular mole angiography produced a uniform blush of the uterine shadow with a fine soap bubble appearance which was characteristic in all the cases.

*Conclusions*

Retrograde femoral angiography finds its greatest use in diagnostic radiography in cases of adnexal swellings to determine whether they are uterine, tubal or ovarian in origin. It is also useful in cases of antepartum haemorrhage for placental localization and an excellent aid in differentiating between cases of molar preg-

nancy, missed abortion and a normal pregnancy. The only limitation is the highly expert technical skill involved, the cost of the dye and x-ray plates involved, and lastly the desirability of avoiding irradiation to pregnant women in general.

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*Figs. on Art Paper II*