

Congenital and Acquired Deformities of the Uterine Cavity: A Hysterosalpingographic Study

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Abstract:

Introduction: Hysterosalpingography is an old but an important diagnostic procedure in infertile women. It is helpful to locate intrauterine congenital and acquired abnormalities and to evaluate the tubal patency. It is safe, inexpensive, simple and rapid diagnostic test which can reveal the shape of uterine cavity. Therefore the present study was done to see the congenital and acquired deformities of uterus.

Material & Methods: The present study was carried out in the Department of Anatomy, Department of Obstetrics and Gynaecology and Department of Radiodiagnosis of S.N. Medical College, Agra. Out of 100 cases, 30 cases were of primary sterility, 50 cases of secondary sterility and 20 cases of normal parous women who served as control group. Patients were divided into 3 groups according to their age. The study group comprised of women who complained of inability to conceive after twelve months of normal sexual practice without contraception.

Results: In primary sterility group, 21 cases were present in age group 20-25 years, 6 cases in age group 15-20 years and 3 cases in age group 25-30 years. Out of these we found 1 case of congenital hypoplasia, 7 cases of bicornuate uterus, 4 cases of retroverted uterus, 8 cases of lateral deviation of uterus and 10 cases of genital tuberculosis. In secondary sterility group, maximum 26 cases were found in age group 25-30 years, 15 cases in age group 30-35 years, 9 cases in age group 20-25 years. Out of these 4 cases of retroverted uterus, 6 cases of lateral deviation, 13 cases of unilateral cornual blockage, 11 cases of bilateral cornual blockage, 8 cases of genital tuberculosis and 2 cases each of small adult uterus, acute anteversion, submucous fibroid, Asherman's syndrome were noted.

Keywords: acquired, congenital, deformities, hystero-salpingography, uterus.

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I. Introduction

Uterus is a pyriform shaped, hollow and thickwalled muscular organ located in lesser pelvis between urinary bladder and rectum. It measures about 7.5cm x 5.0cm x 2.5cm and weighs 30-40gm. The cavity of uterus is slit like in sagittal section and triangular in coronal section. Hysterosalpingography (HSG) accurately outlines the anatomical structure of uterine cavity as well as congenital and acquired distortion of uterus. In 1943, Green Armytage described the technique for hysterosalpingography. It is an important, specific, preliminary outpatient investigation and very helpful to correlate the effect of congenital and acquired deformities on the subsequent reproductive career of an individual [1]. So it was relevant to carry out the study in normal parous women and in patients presenting with primary and secondary sterility. Winfield et al. (1984) used hexabrix (monoacidic) dimeric iodinated compound as a contrast material on 52 patients [2]. Ansari (1977) described a simple method of hysterosalpingography using a Foley's catheter to inject contrast media and emphasized the importance of diagnostic procedure to evaluate tubal patency and other intrauterine defects [3]. Previously, they were using metallic connecting cannula and plain rubber catheter. Contrasts used in HSG were conray - 420, lipoidal and urograffin. An abnormal hysterosalpingogram seen in varying degree of failure of fusion of müllerian duct leads to congenital anomalies as uterus didelphys, uterus bicornis bicollis, bicornuate uterus, septate uterus and some functional and structural abnormalities as uterine synechiae, scar, fistula, genital tuberculosis, fibroma, adenoma, cancer body of uterus, hypotonic and hypertonic uterus, dysfunctional uterine bleeding and molar pregnancy etc.

II. Material And Method

The present study was carried out in the Department of Anatomy, Department of Obstetrics and Gynaecology and Department of Radiodiagnosis of S.N. Medical College, Agra. The patients for the study were selected from out-patient department of Gynaecology at S.N. Hospital, Agra. This study group comprised of women who complained of inability to conceive after twelve months of normal sexual practice without

contraception. Cases of both primary and secondary infertility were included. The study involved a total of 100 cases divided into 3 groups like control group, primary sterility group and secondary sterility group. A detailed history of patients was taken inquiring specially about any history of fever, STDs, pulmonary tuberculosis, appendicitis, peritonitis and pelvic abscess followed by thorough general physical and pelvic examination. Investigations were carried out like complete haemogram, ESR, urine routine and microscopic, blood sugar, VDRL, X-ray chest, premenstrual endometrial biopsy and husband's semen analysis. Hysterosalpingography was done during the proliferative phase of cycle (not later than 10th day of menstrual cycle). Equipments used were fluoroscopy machine and x-ray films, Sim's speculum, Vulsellum forceps, Rubin's cannula, 20cc syringe, contrast (sodium and megluminediatrizoate), antiseptic solution and sterile drape. No premedication is required to perform HSG. The bladder was emptied before investigation. Patient was put in lithotomy position and brought down to the edge of table. Prevaginal examination was done to find out the direction of cervix and the size and position of uterus. Sim's speculum was introduced into the vagina and anterior lip of cervix was grasped with a vulsellum. Excess of vaginal and cervical secretions were removed with a cotton swab. The uterine sound was inserted into the uterus to confirm the length of uterine cavity. Tip of cannula was introduced just beyond the internal os and position was checked on the screen. The contrast was introduced into the uterine cavity by using different type of cannula like metal cannula, Malmstrom – Westerman vacuum uterine cannula and Pediatric Foley's catheter.

The radio-opaque medium was injected and radiographs were taken under fluoroscopic control. As the peritoneal spill was seen, injection of the medium was discontinued. X-ray film of the size of 10'' x 8'' with 80 KV was exposed. Each film of HSG was examined for bony pelvis, vaginal spillage of medium, length of cervix, filling defects for cervical polyp, cervical incompetence, size, shape, surface and position of uterus, septate uterus, any abnormality of tube and peritoneal spillage of both tubes.

III. Observations And Results

The present study consisted of total 100 cases, in which hysterosalpingography was carried out. The patients were studied under following groups; Group 1-normal parous women i.e. control group, Group 2-primary sterility group, Group 3-secondary sterility group. Among normal parous women and secondary sterility group, majority of cases were of age group 25-30yrs while in primary sterility group majority of cases were of age group 20-25 yrs. The mean age of secondary sterility group was 32.4 yrs, in normal group 27.05yrs and in primary sterility group 21.67yrs (Table 1).

Table 1: Distribution of cases according to age in different groups

Age (years)	GROUP I (Normal)		GROUP II (Primary Sterility)		GROUP III (Secondary Sterility)	
	No. of cases	%	No. of cases	%	No. of cases	%
15-20	-	-	6	20.00	-	-
20-25	3	15.00	21	70.00	9	18.00
25-30	12	60.00	3	10.00	26	52.00
30-35	5	25.00	-	-	15	30.00
Total	20		30		50	
Mean	27.05		21.67		32.46	

In this study, 10 cases of genital tuberculosis were seen in primary sterility group (30), 5 cases in normal group (20) and 8 cases in secondary sterility group (50) (Table 2).

Table 2: The prevalence of genital tuberculosis in total no. of cases of different groups

Group	Total number of cases	No. of cases having genital tuberculosis	No. of cases not having genital tuberculosis
Normal	20	5	15
Primary sterility	30	10	20
Secondary sterility	50	8	42
Total	100	23	77

A higher prevalence of puerperal sepsis was observed in secondary sterility group (Table 3).

Table 3: The prevalence of puerperal sepsis in different groups

Group	Total number of cases	No. of cases having puerperal sepsis	No. of cases not having puerperal sepsis
Normal	20	2	18
Secondary sterility	50	11	39
Total	70	13	57

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Distribution of cases according to the prevalence of abnormality on HSG in primary sterility were reported as 7 cases(23.30%)of bicornuate uterus, arcuate deformity in 6cases(20.00%),5cases(16.66%) each of unicornuate uterus and unilateral cornual blockage,4cases (13.32%)of unilateral fimbrial blockage, 3 cases (10.00%)each of subseptate uterus,uterus bicornisbicolis and bilateralfimbrial blockage,2 cases (6.66%)each of T shaped uterus,uterus didelphus,unilateral hydrosalpinx,unilateral midtubal blockage. Of the remaining cases, 1 case (3.33%) of hypoplastic uterus,septate deformity,intracavitary fibroid,bilateral hydrosalpinx and unilateral midtubal dilatation (Table 4, Fig. 1-12).

Table 4: Distribution of cases according to the prevalence of abnormality on HSG in cases of primary sterility

S. No.	Name of disease	Frequency	%
1.	Hypoplastic uterus	1	3.33
2.	Arcuate deformity	6	20.00
3.	Bicornuate uterus	7	23.30
4.	Unicornuate uterus	5	16.66
5.	Subseptate uterus	3	10.00
6.	T-shaped uterus	2	6.66
7.	Uterus didelphus	2	6.66
8.	Uterus bicornisbicolis	3	10.00
9.	Septate uterus	1	3.33
10.	Intracavitary fibroid	1	3.33
11.	Acute anteversion	9	30.00
12.	Third degree retroversion	4	13.32
13.	Unilateral hydrosalpinx	2	6.66
14.	Bilateral hydrosalpingx	1	3.33
15.	Unilateral fimbrial blockage	4	13.32
16.	Bilateral fimbrial blockage	3	10.00
17.	Unilateral midtubal blockage	2	6.66
18.	Unilateral midtubal dilatation	1	3.33
19.	Unilateral cornual blockage	5	16.66
20.	Lateral deviation	8	26.64
21.	Erect	9	30
Total		79	

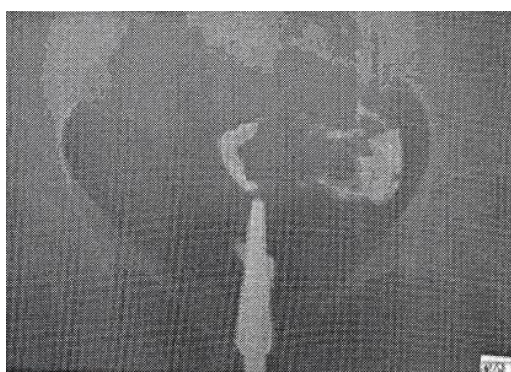


Fig. 1: HSG showing unicornuate uterus with right sided peritoneal spill



Fig. 2: HSG showing arcuate uterus with bilateral fimbrial blockage

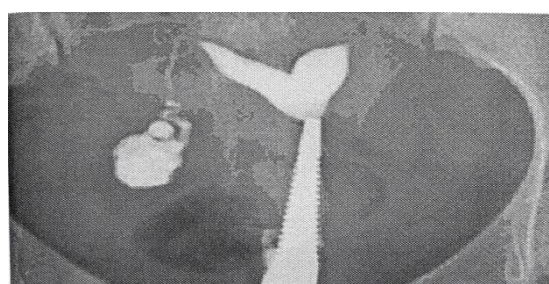


Fig. 3: HSG showing bicornuate +uterus with cornual block on left side and hydrosalpinx on right side



Fig. 4: HSG showing uterine hypoplasia of small adult uterus

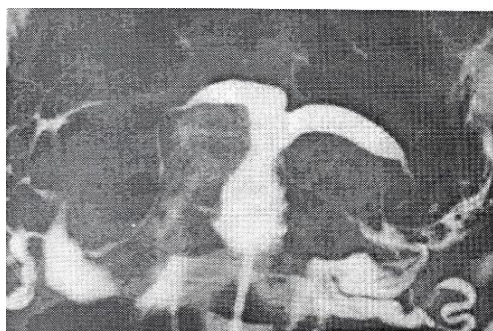


Fig. 5: HSG showing a subseptate uterus

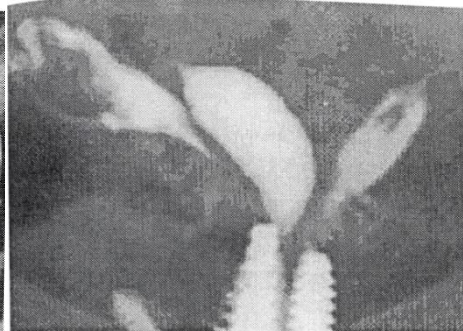


Fig. 6: HSG showing uterus bicornis bicollis(uterus didelphus)



Fig. 7: HSG showing a double uterus of septate variety

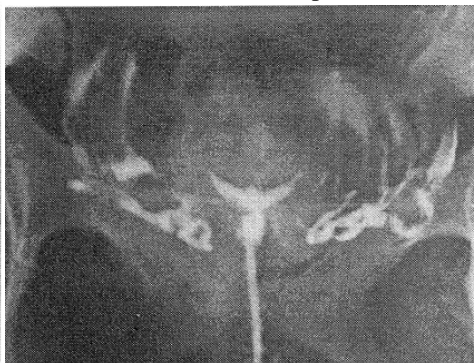


Fig. 8: HSG showing T-shaped irregular cavity and constriction



Fig. 9: HSG showing an arcuate uterus with left sided cornual blockage and midtubal blockage of right tube

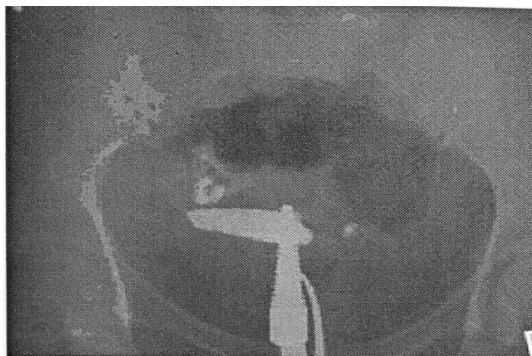


Fig. 10: HSG showing anteverted uterus deviated to right side



Fig. 11: HSG showing bilateral fimbrial block

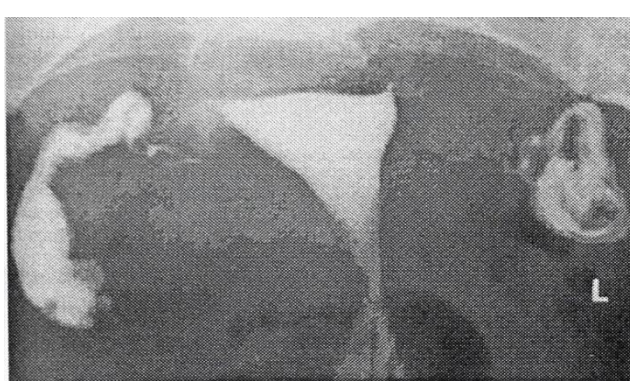


Fig. 12: HSG showing bilateral hydrosalpinx

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The distribution of cases according to the prevalence of abnormality on HSG in case of secondary sterility was reported in which unilateral cornual blockage was the commonest abnormality found in 13 cases (26.00%), 11 cases (22.00%) each showed the presence of bilateral fimbrial blockage and bilateral conual blockage, 7 cases (14.00%) of bilateral salpingitis, 6 cases (12.00%) of unilateral fimbrial blockage, 5 cases (10.00%) of unilateral midtubal blockage, 3 cases (6.00%) of salpingitis isthmic nodosa, 2 cases (4.00%) of each small adult uterus, submucousmyoma, acute anteversion, unilateral salpingitis, perisalpingitis and tubercular salpingitis, 1 case (2.00%) of each incompetent os, Asherman’s syndrome, retroversion, previous caesarean scar, endometrial polyp, intertubal adhesion and a tubal defect (Table 5, Fig. 13-17)).

Table 5: Distribution of cases according to the prevalence of abnormality on HSG in cases of secondary sterility

S.No.	Name of disease	Frequency	%
1.	Small adult uterus	2	4.00
2.	Incompetent cervix	1	2.00
3.	Asherman syndrome (grade 3)	1	2.00
4.	Asherman syndrome (grade 4)	1	2.00
5.	Submucousmyoma	2	4.00
6.	Acute anteversion	24	48.00
7.	Retroversion	8	16.00
8.	Caesarean scar	1	2.00
9.	Endometrial polyp	1	2.00
10.	Intertubal adhesion	1	2.00
11.	Unilateral salpingitis	2	4.00
12.	Bilateral salpingitis	7	14.00
13.	Perisalpingitis	2	4.00
14.	Salpingitisisthmicanodosa	3	6.00
15.	Unilateral fimbrial blockage	6	12.00
16.	Bilateral fimbrial blockage	11	22.00
17.	Tuberculoussalpingitis	2	4.00
18.	Unilateral midtubal blockage	5	10.00
19.	Bilateral cornual blockage	11	22.00
20.	Tubal defect due to ectopic pregnancy	1	2.00
21.	Unilateral cornual blockage	13	26.00
22.	Lateral deviation	6	12.00
23.	Erect	16	32.00
Total		125	

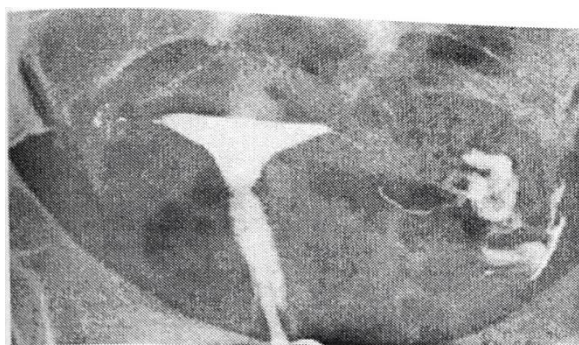


Fig. 13: HSG showing salpingitis isthmicanodosa



Fig. 14: HSG showing intertubal adhesion

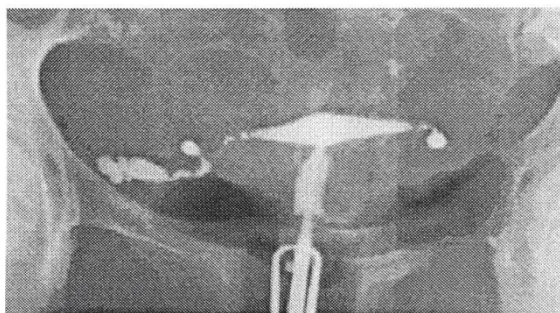


Fig. 15: HSG showing tuberculous salpingitis

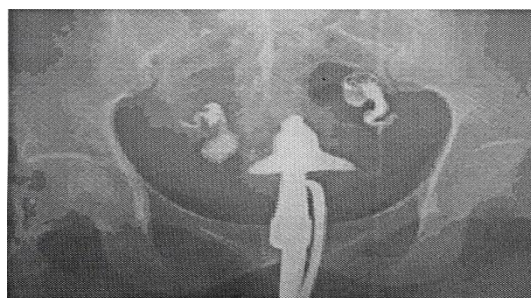


Fig. 16: HSG showing acute anteversion of uterus with bilateral hydrosalpinx

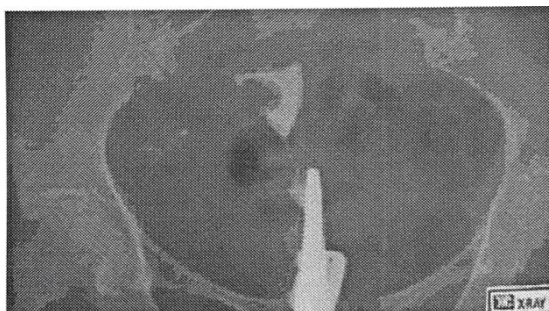


Fig. 17: HSG showing fibroid polyp arising from right wall of the uterus

IV. Discussion

The maximum incidence of patients of primary and secondary sterility were in early half of 4th decade, 6% of patients were below 20 yrs and similar finding has been reported by Jankharia et al. (1981) [4]. In early part of third decade of life, incidence was 24% that almost corresponds with that reported by Tiwari and Tiwari (1977) [5].

In case of uterine size, Porwal (1986) reported normal size uterus in 80% [6] which is very close to that noted in present study (81%), whereas Jhaveri (1978) observed in 97% cases [7] and Sharma et al. in 83.7% cases [8].

Higher incidences of congenital hypoplastic uterus were reported by Porwal (1986) as 14.6% [6] and Sharma et al. (1979) as 14.4 % [8]. Whereas Dadia and Parandekar (1974) and Zanetti et al. (1978) reported 2.6% and 2.8% respectively [9,10]. The incidences of bicornuate uterus as reported by Zanetti et al. (1978), Pontifex et al. (1972) and Sanfilippo et al. (1978) was 1.2%, 2.9% and 1.3% respectively which is lower than the present study [10-12].

Abnormal position of uterus particularly retroversion are responsible for sterility. True incidence of normally positioned uterus in present study was 74% which is nearly same with that mentioned in a study by Porwal (1986) i.e. 70.6% [6] and by Mukherjee (1978) i.e. 67.8% [13] whereas higher incidence of 90.4% were reported by Sharma et al. (1979) [8].

The filling defect of uterine cavity in HSG study was seen in submucous fibroid, endometrial polyp and synechia. Maximum cases of submucous fibroid reported 3% in present study which is approximately same as as reported by Pontifex et al. i.e. 2.1% (1972) [11].

Incidence of tubal blockage was more in cases of secondary sterility i.e. unilateral blockage in 48% and bilateral blockage in 44% cases, in comparison to cases of primary sterility i.e. unilateral blockage in 36.6% and bilateral tubal blockage in 10% cases. Porwal (1986) observed 30% cases of bilateral tubal blockage [6] while Parekh and Arronet (1972) observed 10% cases of bilateral tubal blockage [14]. Rajan (1980) observed that unilateral blockage was the commonest abnormality in 9.9% as compared to bilateral tubal blockage i.e. 4.5% [15] but in our study bilateral blockage was more common.

V. Conclusion

It was concluded that hysterosalpingography remains an important diagnostic procedure in searching for causes of infertility and other gynaecological disorders. An accurate impression of mechanical impairment of the uterus and tubes can usually be provided by hysterosalpingography alone.

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