

PNEUMOGRAPHY—FEW OBSERVATIONS

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SUMMARY

Visualization of pelvic organs by pneumoperitoneum is well known entity. In present study, pneumography was performed in 58 cases attending the G.O.P.D. of Associated Group of Hospitals, Bikaner, Rajasthan. In 20 cases, pneumohysterography was done. Pneumoperitoneum was obtained by using a needle with AP apparatus used to induce pneumoperitoneum in T.B. Chest. 1000 cc to 1500 cc of atmospheric air was introduced to distend the abdomen, under local anaesthesia. Minor side effects like nausea, vomiting were observed. Results were analysed with clinical/surgical findings and found that this simple and safe method is a valuable diagnostic aid in gynaecology in developing countries. Ten interesting case records are presented.

Introduction

Visualization of pelvic organs by pneumoperitoneum is well known entity. In 1912, according to Lorey (1922), Jakobaus performed laparoscopy on cadavers and in doing so was the first to produce pneumoperitoneum. Goetze (1918) detected various abnormalities by injecting 2 to 3 L of oxygen into the abdomen of living subject. Alvarez (1921) reported use of carbon-di-oxide instead of oxygen. Pneumoperitoneum has been induced by transabdominal, transuterine and posterior vaginal fornix approaches (Ansari and Arronet, 1966).

It is the purpose of this report to describe out technique for pelvic pneumography and to present a series of interesting case records, in which this method was used.

Material and Methods

The present study was conducted at Associated Group of Hospitals, Bikaner in 58 cases, having gynaecological disease. In 38 cases, pneumoperitoneum was made, while in 20 cases, pneumoperitoneum with hysterosalpingography was done.

Preparation of Patient

Patient was allowed light diet the previous evening and nothing by mouth in morning of examination. Large bowel was prepared by means of enema. Injection Pathidine 100 mg intramuscularly was given half an hour before the examination. Patient was asked to empty the bladder, and after local infiltration, about 3½" below the umbilicus, at the lateral border of rectus muscle, pneumoperitoneum needle was inserted into the abdomen and 1000 to 1500 cc of atmospheric air was injected with the help of apparatus (used to produce pneumo-

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thorax in tubercular patient). Needle was withdrawn and puncture was sealed.

The patient was made to lie in prone position and head end lowered by giving tilt to x-ray table to 40°C. X-ray tube was angled such that 20 pelvic inlet projection could be obtained. The tube distance was kept at 40". After x-ray exposure, patient was placed in supine position. In 20 cases, hysterosalpingography was also done using "Conray 280". Patient was sent to Ward with the instructions not to sit for about 2 hours.

Roentgen Evaluation

The uterus was seen as a biconvex shadow and both tubes ovaries and round ligaments were seen on lateral side. The uterine area was measured as the product of intercornual and antero-posterior diameter and expressed as the uterine index. We found the mean normal uterine index to be 28 sq cm \pm 3 cm seen on the postero-anterior projection.

Ovarian area was measured as the product of the greatest length and width and expressed as the ovarian index as seen on postero-anterior projection without applying the magnifications correction

and have considered 12 sq cm \pm 3 as normal ovarian index. Narula *et al* (1973) observed ovarian index as 6.13 sq cm.

The ovarian-uterine relation appeared to be an unreliable diagnostic criterion for the individual case though the reported 1:2 ratio hold good in normal cases in present series. Stein (1935) felt that normal ovary is $\frac{1}{4}$ of uterine body.

The parametrium appeared as fine line splitting laterally to form a tringle with the pelvic wall. Flattened bladder behind the public bone and sigmoid colon near the sacrum were seen.

Results

This study included 34 cases of primary or secondary sterility, 6 cases of primary or secondary amenorrhoea, 5 cases of polycystic ovaries, 5 cases of fibroid uterus, 3 cases of pelvic tumour of ? ? nature, 4 cases of cancer cervix and one case of haematometra. In 28 cases, abnormalities were detected (Table 1). Side effects were minimum, 38 cases had mild abdominal discomfort, 14 cases had mild shoulder pain, 4 had

TABLE I
Distribution of Abnormalities

Abnormalities	No. of cases	Confirmation		Comments
		Surgi- cal	Clini- cal	
1. Uterine myoma	5	2	1	Two small myomas not palpable on pelvic examination
2. Uterine hypoplasia	4	2	—	Not diagnosed on clinical examination
3. Absence of uterus	2	—	1	1. Detected with pneumogram
4. Ovarian tumour	5	3	—	2. Not diagnosed on clinical examination
5. Tubal	5	1	—	Chronic inflammatory changes
6. Ovarian agenesis	2	—	—	Small ovaries not detected
7. Pelvic masses	3	2	—	Ectopic pregnancy 1 case, T.O. 2 cases. Pelvic mass? nature.

TABLE II Summary of Some Interesting Cases

S. No.	Age (Yrs.)	Menstrual history	Obstetrical history	NAD	Per vaginal examination	Pneumography finding	Photograph
1.	18	Primary amenorrhoea	—	S.E.	Normal vagina	Small uterus and small ovaries	
2.	30	Normal 3-4/30	Para 9 years back FTN	NAD	Uterus N.S. Right ovary palpable	Fibroid on the posterior wall of uterus	Figure 3 Confirmed after surgery D & C
3.	20	Scanty irregular from menarche 1-2/45-60 days	Nil	NAD	NAD	Small uterus with small ovaries	
4.	21	Secondary amenorrhoea Previous M. H. normal	Nil	NAD	NAD	Uterus and ovaries normal size chronic inflammatory changes in Lt. parametrium	
5.	19	Primary amenorrhoea	Nil	NAD	No cervix and uterus	Absence of uterus both ovaries, smaller than normal size. Bladder shadow visible	Figure 5
6.	28	Irrregular and scanty since 1-2 menarche/15-0 days	Nil	NAD	NAD	Normal uterus and adnexa with inflammatory pathology on left side	
7.	19	Dysmenorrhoea irregular, scanty periods. 1-2/60-90	Nil	NAD	NAD	Uterus smaller than normal size. Right ovary normal, left ovary small, Right parametrium shows thickening. A loop of bowel seen	Figure 8
8.	21	3-4/28 days	Nil	NAD	NAD	Bilateral enlarged polycystic ovaries	Figure 9
9.	40	3-4/28 days	5 FTND	NAD	Uterus 16 weeks firm, regular, enlarged, free	Calcified fibroid	
10.	45	3-4/28 days	10 FTND	NAD	Cancer cervix Stage I		A.P. View—Right parametrium thickened half way left parametrium free Uterus N.S. Lateral view—same

nausea, 2 vomiting, 1 developed surgical emphysema.

Comments

In present series, pneumography was done primarily in cases of sterility. Later on, it was extended to other gynaecological diseases. In cases of developmental abnormalities (Figs. 1 and 2), we observed 100% pneumographic efficiency (Table I). Lippe *et al* (1975) and Katiyar *et al* (1978) also found the same.

In 5 cases, we observed the thickening of parametrium and triangle was not visible. This inflammation was not detected on clinical examination. In 5 cases of fibroid uterus (Fig. 3), 2 were detected on pneumography missed on clinical examination, while 2 were surgically confirmed. Deves *et al* (1964) reported 74% efficiency of pneumographic observation, while in present study, we found it 100% efficient.

We had 5 cases of polycystic ovarian syndrome (Fig. 4). Three cases had surgical confirmation. Diagnosis of polycystic ovarian disease was given when ovarian-uterine ratio of 1:2 was changed. We observed the oval shaped ovaries in polycystic ovarian syndrome, while rounded in ovarian cyst. Weigen and Stevens (1967) found when ovarian

uterine ratio 0.5 or more it is suggestive of ovarian tumour.

In 4 cases of clinical diagnosed cancer cervix, we correlated the clinical staging/pneumographical staging. Surprisingly, there was no difference in staging observed. Ten interesting case records with photograph are presented (Table II).

It can be stated that pneumography is a safe and simple method. It is reliable diagnostic aid in various gynaecological diseases. It avoids/confirms the need of laparotomy/laparoscopy in cases. Still it can be taken as valuable diagnostic guide in developing countries where modern methods are not available.

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See Figs. on Art Paper V