MATERIAL & METHODS
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The patients for the present study were selected from gynaecological out patients department & admitted in indoor of the department of obstetrics & gynaecology of Maharani Laxmi Bai Medical College, Hospital Jhansi.

Patients selected with age group 20 – 40 years.

Patients were divided in two major groups.

- Primary Infertility

- Primary Amenorrhoea

Patients detailed history was taken & general systemic & local gynaecological examination of all the patients who were selected for this study was carried out. The necessary investigations were done to ascertain the fitness for operation.

Patient is prepared for general Anaesthesia and necessary premedication is given after thorough pre-anaesthetic check-up. Patients will be subjected to routine & special investigations as and when required. Patients contraindicated for laparoscopy shall be excluded.

*Essential investigations before diagnostic laparoscopy-

Diagnostic laparoscopy is performed under general Anaesthesia though there are few advocate of spinal & epidural Anaesthesia for this procedures but general Anaesthesia is best for diagnostic laparoscopy. All the
patients undergoing diagnostic laparoscopy should be investigated properly.

- Haemoglobin
- TLC
- DLC
- ESR
- Blood urea
- Random Blood Sugar
- Urine routine, microscopic examination
- ECG
- Chest x-ray
- Husband seminogram
- Ovulation profile:

- Basal body temperature
- Midluctal Serum
- Luteinizing Hormone monitoring
- Endometrial biopsy
- Ultrasound

**Time of laparoscopy** –

Laparoscopy was performed in post menstrual phase under general anaesthesia.

**Procedure of diagnostic laparoscopy** –

In the infertile couple a good history, physical examination basic endocrinological Investigations & semen analysis initially done.
Ovulation is determined by BBT chart, cervical mucus studies, ultrasound & plasma progesterone level. If conception does not occur after 3-4 ovulatory cycles & a positive post coital test laparoscopy is scheduled laparoscopy evaluates the uterus, tubes & ovaries, peritoneum. Most gynaecologists will schedule the diagnostic laparoscopy on appropriate time.

**Equipment –**

1. *Telescopes –*

   Laparoscopes have a special rod lens. Optic system with built in fibroglass bundles for light transmission. These bundles pass light along the laparoscope to the distal lens. This gives a very bright light. The laparoscopes are usually 5 – 10 mm in diameter, wide viewing angle of 0° to 50° or (180° to 130°) giving a field to view from 65° to 90°. Operating laparoscopes are 10-12 mm with an operative channel of 5 to 7 mm.

*Verres Needle :-*

This is a double cannula needle with a blunt cannula movable within an outer sharp cannula. The blunt cannula protudes beyond the sharp outer cannula to reduce the chance of laceration of the abdominal viscera. During insertion through the tough abdominal fascia the inner cannula retracts.
**Trocar Cannula –**

Pyramidal tipped trocar with trocar cannula sleeve having trumpet valve was used.

Short self retaining, trocar sleeves with a screw grid to prevent retraction has been developed by Harry Reich & Fran NC Glynn. It is not presently available, but should be in the future. They are of different size for different telescope trumpet valve, flap valve, magnetic ball valve etc. Trocar tip may be conical or pyramidal. Metal cannula are preferred.

**Accessory Instruments –**

Several accessories are used; grasping forceps, biopsy forceps, scissors, probe suction, cannula ring & clip applicators, bipolar Instruments Etc. They may be passed through a second puncture or through the operating channel of the operating laparoscope.

**Light Source & cable –**

This is combined system providing gas & illumination output suitable for laparoscopy. Each unit consists of a gas insufflator for establishing & maintaining pneumoperitoneum & a dual fibre optic light source for intra abdominal illumination.

A technique for inducing pneumoperitoneum with room air by means of an adapted Laerdal resuscitation bag has been devised. Cable helped to transmit the light from light source to telescope.
Pneumoperitoneum –

Pneumoperitoneum is necessary to allow visualization of pelvic organs this can be achieved by following:

- Carbon dioxide apparatus which delivers carbon dioxide @ 1 liter per minute at a pressure not exceeding 15 m.m. Hg.
- Nitrous oxide through Boyle's machine
- Air using a sigmoidoscopy bulb or electrically operated pneumoapparatus.
- Electronic CO2 pneumo apparatus with high flow for operative laparoscopy

Uterine manipulators –

A Uterine manipulator was used which allowed the manipulation of uterus manually during procedure.

Video Camera –

This is necessary for operative laparoscopy.

Sterilization of the laparoscope –

Though the safest & most effective method for sterilizing endoscopic equipment is that of gas autoclave but for rapid sterilization instruments are soaked in a solution of activated dialdehyde (cidex) for 10-20 minutes.

After disinfection the instruments are thoroughly rinsed in sterile water & air dried.
Procedure of diagnostic laparoscopy -

The patient was brought to the operation theatre empty stomach & asked to void urine just before coming to operation table. Patient was laid on the operation table and intra venous line was started. General anaesthesia was given, after that lithotomy position made, abdomen & perineum scrubbed with iodine and spirit and draped so that both the areas were in same field.

Bimanual examination performed & sim’s speculum placed gently in the vagina, anterior lip of cervix was held with volsellum, uterine manipulator was inserted into uterine cavity.

On abdomen 2mm nick infraumbically was given, after confirming that verres needle is patent, the needle was then inserted into peritoneal cavity with axis of pressure directed toward sacral hollow. Keeping the skin lifted the tubing from insufflator was then attached to the verres needle. The Insufflator used carbon dioxide gas from external supply, the high select regulator output pressure was set at 30-32 mm Hg which permitted a flow rate of 1 liter of gas in 50 – 60 seconds. The low select regulator maintained intra abdominal pressure at about 12 m.m. Hg. Insufflation flow rate was kept 1 lit/min. The thin, nulliparous, atheletic patient with strong abdominal musculature required 1-2 liters of gas. While moderately obese parous patient with relaxed
abdominal wall required 5-6 liter to distend to an elevated pressure. Intra abdominal pressure was kept between 15 to 20 mm Hg.

The gas was stopped and the needle removed after sufficient pneumoperitoneum was obtained. Trendelenburg position of 30° was given. The 2 mm incision was extended to 1 cm and the laparoscopic trocar and cannula was then inserted into the peritoneal cavity. Keeping the abdominal skin lifted. The traocar with cannula was first tunnelled in the skin & then advanced in the peritoneal cavity with a steady & firm pressure.

After removing the trocar the laparoscope was introduced through the same cannula. Light source was connected to the laparoscope. Each light source lamp is an EJM Tungsten Halogen 1 amp 21 vac, 150 Watts. The gas tubing is also connected to the sleeve for automatic/intermittent insufflation.

Now inspection of pelvic organs was done. To overcome the difficulty of lateral distortion, the inspection of the pelvic organs was carried out keeping the laparoscope in central position as far as possible. Uterus is moved with help of uterine manipulators to inspect pelvic organs properly.
Chromotubation -

The procedure was carried out in all cases of infertility to test the patency of tubes under laparoscopic vision. For this 10-15 ml of 0.5% autoclaved methylene blue solution was injected through a cannula in the uterine cavity and the patency of the tubes was tested by observing the dye spill through the fimbrial ends of tubes under direct vision of laparoscope. By seeing spill of dye we can test patency of tubes.

Termination of laparoscopy -

After examination was completed the laparoscope was withdrawn, gas was allowed to escape from the peritoneal cavity through the cannula, as much as possible, by pressing on the abdominal wall. When the abdomen was flat & the patient was out of the trendelenburg position the outer sleeve was removed after inserting the trocar. Catgut stitch was applied to close the skin wound & dressing done.

Post-operative care -

The patient was given appropriate antibiotic for 5 days prophylactically after the laparoscopic procedure she was discharged after 24 hrs. of the procedure.

Follow up-

The patient was asked to report after 7 days for follow up & for any other complaints.