REVIEW OF LITERATURE
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The birth of modern endoscopy came with Bozzani (1805) who invented a very complex apparatus which he called "Licht Leiter". For the first time the human urethra was visualized in a living subject using a candle as the light source.

Desormeaux (1953) made the first serviceable endoscope.

Ott (1901, 1902, 1903) was the first to observe peritoneal pelvic organs endoscopically. In this "Ventscopic" procedure he inspected the abdominal cavity with the help of a head mirror and a speculum introduced through a small anterior abdominal wall incision.

Kelling (1901) produced preliminary pneumoperitoneum in living dogs through a small needle in the anterior abdominal wall to facilitate the performance of coelioscopy with a Nitze cystoscope.

Jacobeus (1910, 1912) made the first clinical application of the method, exploring both the thorax and the abdomen, naming the procedures 'thoracoscopy' and 'Laparoscopy' respectively.

Jacobeus and Kelling are known as father of laparoscopy.
Bernheim (1911) described a method of abdominal exploration by means of proctoscope inserted through a short incision in the epigastrium.

Nordentoeft, C. (1912) was the first to observe the female genital organs after gaseous distension of the abdomen and adoption of the Trendelenburg position.

Renon (1913) in Paris published a paper on the technique and indication for laparoscopy. First English paper, appeared in 1925, published by Rendle Short on his work using a cystoscope to visualize the abdominal viscera, through a small abdominal incision.

Kalk (1928) started working with the laparoscope and produced a brilliant instrument. He made possible to study and recognize the pathology of internal organs and to make accurate diagnosis.

Ruddock (1937) introduced a biopsy forceps with diathermy coagulation.

Hope (1937) emphasized the value of laparoscopy in the differential diagnosis of ectopic pregnancy.

Te linde (1939) attempted endoscopy of the pelvic organs by vaginal route, but abandoned the method because of difficulties due to the presence of small intestines behind the uterus.
Decker (1944) by adoption of the genupectoral position and the induction of pneumoperitoneum created by negative pressure of the position overcame the difficulties experienced by Te linde and named the procedure 'culdoscopy'.

Palmer (1944) did gynaecological coelioscopy using the transparietal route in Trendelenburg position after obtaining gaseous distension. Both Decker and Palmer have made notable and extensive contributions to the study of sterility in particular, and to other complementary diagnostic and therapeutic techniques.

Fourestier, Gladu and Vulmiere (1952) developed a method of transmitting an intense light along a quartz rod from the proximal to distal end of the telescope. This removed the dangers of accident due to electrical burns and allowed such intense light so that photographs could be taken.

Frangenheim (since 1957) has published many excellent treatises on laparoscopy. His personal experience included 1850 peritoneoscopies and culdoscopies performed without serious complications. Frangenheim stressed general anaesthesia, extreme caution in inducing a pneumoperitoneum and avoidance of puncture through previous laparotomy scar.

Steptoe (1960) became interested in laparoscopy and culdoscopy in relation to the unsolved problems of sterility and concluded that in properly selected cases
and particularly in field of sterility investigations, laparoscopy can be the most important and indeed the only method of accurately assessing certain factors. 

First international symposium was held in Italy in 1964 and the first text book on laparoscopy was written by Steptoe in English.

Pear (1968) presented a series on 134 patients on whom laparoscopy was performed for various indications.

**Laparoscopy in Female Infertility:**

Cohen R. Melvin (1968) compared peritoneoscopy VS culdoscopy and concluded that peritoneoscopy afforded a more detailed and close inspection of the complete fallopian tubes, ovaries, the uterine ligaments and the cul-de-sac and all surfaces of the uterus. He listed the indications for culdoscopy and peritoneoscopy.

Coltart, T.M. (1970) reported the findings at laparoscopy in combination with the installation of dye through the cervix in 36 patients with a diagnosis of bilateral tubal occlusion on HSG. They alleged that fimbrial occlusion was associated with absence of spill in only 21%.

Duignan, N.M., Jordan, J.A., Edwards-Logan R. (1972) performed laparoscopy on 520 patients of primary infertility. 62.5% cases showed no abnormality whereas
37.5% cases revealed some pathology. They also concluded that laparoscopy provided a more accurate assessment to tubal patency and function than HSG.

Maathius, J.B., Horbach, G.N. and Van Hall, E.V. (1972) compared the findings of HSG with laparoscopy in 207 cases of infertility of at least 2 years duration. In 46% cases, both methods showed similar results. In 38 of the patients, in whom abnormalities were detected by both procedures, those abnormal findings were found to be non-identical. 18% patients with normal HSG were found by laparoscopy to have pathologic conditions seriously affecting tubal function of which peritubal adhesions constituted the majority.

Varma, T.R.; Murphy Harry (1978) studied 98 cases of primary infertility and 76 cases of secondary infertility by laparoscopy and found laparoscopy to be very useful in the investigation of infertility. They said that it provided a more accurate assessment of tubal patency and function that did hysterosalpingography.

Hulka (1982) reported a classification system for adnexal adhesions employing HSG and laparoscopy prior to planned repair. Stage of adnexal disease included extent of adhesions, nature of adhesions, fimbrial patency and isthmic patency. In extent of adhesion Stage I is over 50%
of the ovarian surface visible. Stage II is less than 50% of the ovarian surface visible. In nature of adhesion Type A is filmy, avascular adhesions with good potential organ separation. Type B is dense, vascular adhesions with minimal potential organ separation.

Varma, R.; Thankam and Harry Murphy (1978) performed diagnostic laparoscopic examination in 530 patients mainly for obscure pelvic pain and infertility. They found that as compared to HSG, laparoscopy provided a more accurate assessment of tubal patency and function.

Ansari, A.H. (1979) emphasized that whereas laparoscopy is the ultimate procedure for assessment of peritubal and fimbrial pathology, salpingography is equally indispensable for evaluation of tubal lumen and the uterine cavity.

Rajan, R.; Joseph, K.C.; K. Ambika Dov (1981) reviewed 645 HSGs performed to assess the tubal function in infertile women. The purpose was to detail the technique of HSG, results of the study and the types of complications encountered.

Rajan, R.; Girija Leela, V.S.; Jitha, Kumar S.; Sreedevi, N.S.; Ajitha Kumari, K.; Molkutty, T. and Prabha Kumari, C. (1984) concomitant with the diagnostic procedures they carried out certain operative procedures which could be
diagnostic as well as therapeutic and presented their experience with the different types of operative laparoscopic procedures. They felt that the diagnostic accuracy and decision for treatment achieved a high standard by employing HSG and laparoscopy as complementary procedures (Rajan and Joseph, 1982).

Prof. Mitra, R.; Aggarwal, Usha; Srivastava, Manjul (1986) studied 92 cases by hysterosalpingography, and laparoscopy and found agreement between findings of the two procedures in 61.53% cases. Difference in the findings of the two procedures was noted in 10 (19.26%) cases. They concluded that HSG findings were inaccurate for the diagnosis of peritubal and periovarian adhesions and other pelvic pathology but HSG is useful for luminal study of fallopian tube and ovary. They suggested that laparoscopy and HSG should be considered supplementary procedures.

Deshmukh, G.A.; Vijay, Kar, I.V.; Singhal, A.B.; Tilwani, S.P. (1986) investigated 431 cases of sterility by laparoscopy and emphasized that tubal factor could not be completely studied by laparoscopy alone, but in occasional cases required other investigations like HSG and cervical smear culture.
Dastidar Ghosh, S., Chattopadhyay, S. and Chakravarty, B.M. (1986) graded endometriosis based on the classification suggested by Accosta et al and observed that the highest number of cases belonged to moderate grade. Infertility in these cases is explained by the extensive tubal and ovarian distortion.

Mage, G., Conis, M. and Pouly, J.R. (1988) used the carbon dioxide laser via a second puncture probe during laparoscopy to vaporise endometriotic implants on uterus, bladder and uterosacral ligaments, to divide dense adhesions between ampulla of tube, ovary and over the surface of the ovary and to perform salpingostomy of a hydrosalpinx.

Jayakrishnan, K., (1989) performed diagnostic laparoscopy on 362 patients over a 4 year period and assessed laparoscopically patients with long standing infertility, those with suspected pelvic pathology and patients with abnormal HSG findings. He concluded that any evaluation of laparoscopy in case of infertility must be based on comparison with HSG.

Amar Nath, G. Bhide (1990) studied 410 cases of infertility over an 8 year period by laparoscopy and concluded that laparoscopy helps to reveal many fine etiological factors contributing to infertility, in bringing to light multiple factors acting in consonance and leading to infertility.
Bose Fusey Deshmukh (1990) correlated findings on HSG and laparoscopy in the investigation of infertility in the female partner. They found false negative rate was 10.76%, false positive rate was 26.15% and HSG and Laparoscopy were in complete agreement in 64% cases.

**Chronic Pelvic pain**

Steptoe (1965) studied 15 patients of obscure pelvic pain who had no clinical signs of any organic lesion. On laparoscopy, only 2 patients were found to have normal pelvic organs while 13 had evidence of pathology. He diagnosed chronic appendicitis in 4 patients, salpingitis in 3, endometriosis in 2 while ovarian cyst was diagnosed in 4 patients. Laparoscopy thus enabled him to avoid unnecessary laparotomies in 7 patients.

Fear (1968) evaluated the problem of chronic pelvic pain in 23 patients. Laparoscopy revealed endometriosis and minimal chronic pelvic inflammatory disease in 10 patients with no abnormal clinical findings. In 4 patients, operable conditions were discovered and appropriate treatment carried out with relief of pain.

Pent (1972) examined 38 patients of chronic pelvic pain. He could not find any cause of pain in almost half of these patients on laparoscopy.
Liston et al (1972) reported the findings of 134 cases who complained of continuous dull aching pain in one or other iliac fossa. 102 of these patients were found to have normal organs on laparoscopy, while abnormal findings such as intra-pelvic adhesions or endometriosis were found only in 32 cases. According to the author, laparoscopy should be undertaken in only those cases where a definite pattern of symptoms is present.

Duignan et al (1972), out of 135 patients of chronic pelvic pain, laparoscopy revealed normal pelvic organs in 84 patients. Among the 51 patients with pathological lesions discovered on laparoscopy, 37 did not have any clinical signs.

Semchysyn et al (1976) did laparoscopy on 198 patients of pelvic pain, 23% patients had pelvic inflammatory disease or endometriosis. No cause could be detected in 66% patients.

Varma et al (1978) investigated 222 cases of pelvic pain by laparoscopy. Out of 108 (49%) cases with abnormal clinical findings, laparoscopic confirmation of the same was made in only 85 cases, while rest 23 had normal findings. Out of 114 cases with normal clinical findings laparoscopy detected abnormalities in 44 cases and normal pelvic organs in 70 cases.
Krishna et al (1979) carried out laparoscopy in 557 cases, suffering from infertility, chronic pelvic pain, amenorrhea. They diagnosed 125 cases of chronic pelvic inflammatory disease or both tuberculosis and non-specific varities on laparoscopy of 557 cases. In their 125 cases diagnosed as pelvic inflammatory disease by laparoscopy, clinical examination had missed the diagnosis in 87 patients.

Chandavati, Sanjaya Sharma studied in 1982, 25 patients complaining of chronic pelvic pain by laparoscopy. 20% cases revealed pelvic adhesions, signs suggestive of tuberculosis was present in 16% cases. Endometriosis was present in 12% cases. Other findings included simple pelvic congestion, hydrosalpinx, follicular ovarian cyst and old ruptured ectopic gestation.

Cunanan, Courey, Lippes (1983) reviewed 1,268 patients who underwent laparoscopy for pelvic pains and found that among 749 women with normal pre-operative pelvic examination, 472 (63%) had abnormal laparoscopic findings. The error in diagnosis at pre-operative pelvic examination in this series ranged from 17.5% to 63%. They found that there was a better correlation between an abnormal preoperative pelvic examination and abnormal laparoscopic findings (82.5%).
Sud, Malan, Saxena and Thakur (1987) reported their findings by laparoscopy in cases of pelvic pain. In 45.71% of the pelvic inflammatory disease was found. In 17.14% of cases, pelvic viscera were found to be normal.

Patwardhan, Damania, Desai, Hansotia and Walvekar (1988) did a study of 61 cases of suspected pelvic inflammatory disease by laparoscopy and concluded that chronic pelvic inflammatory disease (47.2%) is one of the main causes for pelvic pain and infertility.

Chakraborti, Kole (1990) performed diagnostic laparoscopy in 7 cases of unexplained pelvic pain, and found clear pelvis in 4 cases, PID in 2 cases and tubercular salpingitis in 1 case.

**Acute Pelvic Pain**

Fear (1968) reported the laparoscopic study of 50 patients with acute pelvic pain. In 21 patients the provisional diagnosis was changed on laparoscopy resulting in a change in the line of management of these cases. Laparoscopy helped in avoiding 26 unnecessary laparotomies.

Jacobson (1969), laparoscopic study disproved the clinical diagnosis of pelvic inflammatory disease in 35% of the 814 cases, thus bringing a change in the line of management in more than 1/3rd of the cases.
Duignan et al (1972) reported that out of 24 cases suspected to have ectopic pregnancy, only in 8 cases the diagnosis was confirmed.

Semchyshyn et al (1976) reported that in 36 patients with a clinical picture compatible with ectopic pregnancy, laparoscopy confirmed the diagnosis in 3 patients only, while the other women were diagnosed as having normal pelvic organ in 11, ovarian cyst in 11, pelvic inflammatory disease in 8, endometriosis in 1 and intrauterine pregnancy in 2.

Sud, Malan, Saxena, Thakur (1987) did laparoscopic examination of 17 cases suspected to have ectopic pregnancy. In 2 cases the pelvic organs were normal despite the needling being positive. Needling was false positive in 4 cases and false negative in 1 case. By diagnostic laparoscopic examination, laparotomy was avoided in 5 cases.

Prabhu, Sivaraman, Srinivasan and Rajarathnam (1988) laparoscopy was done in 19 patients suspected to have ectopic pregnancy. Pelvic inflammatory disease was seen in 52.7%, pelvic adhesions in 21% and ovarian cyst in 5.3% cases.
Chakraborti, Kole (1990) did laparoscopy in 12 cases of suspected subacute or old ectopic pregnancy. The suspicion was proved correct in 7 (58.3%) cases and wrong in 5 (41.7%) cases.

Resad Pasic and Walter M. Wolfe (1990) studied a patient with a history of 6 weeks amenorrhoea and steady bleeding but without complaining of pain. They found interstitial implantation which is one of the rare sites of ectopic gestation. In addition to its value as a diagnostic tool, laparoscopy coupled with pelviscopic surgical technique can be used to treat ectopic.

AMENORRHOEA

Steptoe (1965) could establish a diagnosis in all the 22 cases of amenorrhoea by laparoscopy.

Fear (1968) studied 6 patients of amenorrhoea both primary and secondary by laparoscopy. He found hypogonadotropic ovaries in 3 cases, normal pelvic organs in 1 and testicular feminization syndrome in 1 case. One case with congenital absence of cervix, uterus and proximal position of the tubes were found to have distal portions of the tubes and both ovaries normal on laparoscopy.
Duignan et al (1972) performed 17 laparoscopies to assess the patients of primary amenorrhoea and found that the patients fell into three distinct groups gonadal dysgenesis, anatomic anomaly and unstimulated ovaries.

Sykes et al (1972) emphasized the value of ovarian biopsy in assessing the patients of menstrual dysfunction. In a study of 70 ovarians biopsies taken on laparoscopy, they established a correlation between the state of follicular apparatus and the subsequent clinical progress.

Semchysyn et al (1976) carried out laparoscopic evaluation of both primary and secondary amenorrhoea. Of the 56 cases of secondary amenorrhoea, 45 were found to have normal organs, while polycystic ovaries were diagnosed in 11 cases. Only 2 cases of primary amenorrhoea were found to have normal pelvic organs while gonadal dysgenesis was present in 6 cases.

Gupta Bina and Taly Anju (1986) studied 100 cases of amenorrhoea which included 48 cases of primary and 52 cases of secondary amenorrhoea. In 55% of the cases of primary amenorrhoea, incomplete development of mullerian tract was the main pathology detected.
Malati, L. and Sholapurkar (1986) studied 20 cases of primary amenorrhoea and found ovarian or mullerian developmental defect to be the commonest cause.

Prabhu, Sivaraman, Srinivasan and Rajarathnam (1988) out of 39 patients with primary amenorrhoea subjected to laparoscopy, mullerian agenesis was seen in 48.7%, streak ovaries in 25.7%, polycystic ovaries in 7.7% and pelvic tuberculosis in 5%.

K.C. De and N. Biswas (1989) performed diagnostic laparoscopy in 173 cases of primary amenorrhoea and found Mullerian abnormality to be the commonest cause (76.30%). In gonadal abnormality streak gonad was single most common case i.e. 13.872% and unilateral and bilateral agenesis combinedly noted in 19.075%. Streak ovary was most commonly associated with aplastic uterus (58.333%).

Chakraborti, Kole (1990) did laparoscopy in 67 cases of primary amenorrhoea and found Mullerian agenesis in 18 (27.0%) cases and gonadal dysgenesis in 24 (35.8%) cases. In patients with developmental abnormalities, degree of Mullerian agenesis was recorded by them.

**MISCELLANEOUS (PELVIC MASS)**

Fear (1968) reported the laparoscopic findings in 17 patients with asymptomatic adenexal masses, the etiology of which was not clear on clinical examination. A positive
diagnosis was made in 7 patients and in 5 patients the suspected diagnosis was confirmed. 10 patients were spared laparotomy, while 5 patients were explored on the basis of findings at laparoscopy.

Smith et al (1970) evaluated 19 patients with pelvic masses by laparoscopy. In 20 cases the clinical diagnosis was confirmed by laparoscopy, while in the other 16 cases, a new diagnosis was established on laparoscopy, which was missed on clinical examination. It was felt that 32 of these women would have had laparotomies, if laparoscopy had not been performed.

Neuwirth (1970) found in 22 patients with pelvic masses that laparoscopy could yield a variety of diagnosis including hydrosalpinx, pedunculated fibroid, simple ovarian cyst, adhesions of bowel to pelvic structures and endometrial cyst of the ovary.

Duignan et al (1972) out of 14 patients with indefinite pelvic mass, laparoscopy revealed diverticulitis in 2 patients subsequently confirmed by barium enema.

Semchyshyn et al (1976) laparoscoped 84 patients with a clinical diagnosis of pelvic mass and found normal pelvic organs, pelvic inflammatory disease, ovarian tumour and uterine fibroid occurred with equal frequency (20-25%).
Sud, Malan, Saxena, Thakur (1987) out of 16 cases of pelvic mass, laparoscopy revealed ovarian cyst in 50%, tubo-ovarian mass in 25%, myoma in 18.75%, and polycystic ovaries in 6.22% cases.

Prabhu, Sivaraman, Srinivasan and Rajarathnam (1988) reported their findings in 15 patients with various pelvic masses. Ovarian cyst was seen in 66.6%, tubo-ovarian masses in 26.7% and uterine fibroid in 1 patient.