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# ROLE OF DIAGNOSTIC LAPAROSCOPY IN TREATMENT OF SECONDARY INFERTILITY

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## ABSTRACT

*Background: One of the on-the-increase concerns facing reproductive-aged women is the secondary infertility, which refers to an inability to conceive after a successful pregnancy. Although different modalities of diagnosis are used, there are numerous cases which are not explainable after standard checks. A diagnostic laparoscopy has turned to be an ideal method to identify some hidden underlying pathologies in the pelvic region which cannot be initially recognized by non-invasive approach.Aim: The purpose of this research was to assess the utility of diagnostic laparoscopy in the detection of the causes and management of secondary infertility of women with inconclusive findings in the regular infertility tests. Methods: The present prospective observational research has been carried out at Ayub Teaching Hospital, Abbottabad during June, 2024, to May, 2025. Ninety Women with secondary infertile with normal baseline tests (Hormonal profile, ovulation profile, and hysterosalpingography) were taken. Diagnostic laparoscopy was carried out on all the participants to evaluate the presence of pelvic abnormalities such as tubal patency, endometriosis, pelvic adhesions, and pathologies of uterus or ovary. The results were recorded and matched with future treatment planning. Results: Of 90 participants under subjecting to diagnostic laparoscopy, 71 cases (78.9%) enjoyed abnormal findings. Comparison of the cycle-controlled discharge showed that in 24 (26.7) patients pelvic adhesions, in 21 (23.3) patients there was tubal blockage, 16 (17.8) cases with endometriosis, and 10 (11.1) cases had ovarian cysts or anomalies. The normal laparoscopic pictures were presented in 19 (21.1%) cases. Appropriate treatment schemes were formulated due to laparoscopic results in 62 (68.9%) cases whether directly by operation or by means of assisted reproductive technology, and this has demonstrated the central role in focused patient care. Conclusion: Diagnostic laparoscopy was an important investigative intervention in assessment and management of secondary infertility. It marked major pathological conditions of the pelvis that were not evident through the traditional measures and enabled specific treatment measures. Its regular application in inaccessible secondary infertility is highly advised to increase the accuracy of diagnosis and to maximize outcome of the treatment.*

***Keywords***: *Secondary Infertility, Diagnostic Laparoscopy, Pelvic Adhesions, Tubal Blockage, Endometriosis, Infertility Evaluation.*

## INTRODUCTION

Secondary infertility had been a major issue in the field of reproductive health that preoccupied a large percent of couples that had already given birth but failed to do so again after at least a year of unprotected sexual intercourse. Compared with the primary infertility, secondary infertility was not always adequately recognized, although it was equally exhausting both emotionally and physically. Various predisposing causes were found to be linked to secondary infertility among them being pelvic adhesion, endometriosis, pathologies of the tubes, pelvic inflammatory disease (PID) and uterine anomalies [1]. Distribution and the proper identification of these etiologies was very important in effective treatment of the victims that were affected.

In clinical practice, traditional ways of diagnosis, including transvaginal ultrasound, the hysterosalpingography (HSG), and hormonal profiling offered little information about the minor pathologies of the pelvis. These procedures were useful most of the time, but they still could not identify the peritoneal or tubal adhesions and small endometriosis [2]. Thus, more detail and direct minimal invasive method of diagnosing was needed. Laparoscopy had become key in the examination and management of secondary infertility since it provided visualization as well as operative access to the cavity of the pelvis.

Laparoscopy enabled gynecologists see uterus, fallopian tube, ovaries and related peritoneum structures in magnified clear view [3]. It had allowed the detection of adhesions within the pelvis, pregnancy obstructions, endometriotic lesions, ovarian cysts, and fibroids, which were often overlooked during standardised images. In most circumstances, laparoscopy had unveiled anomalies that could never have been suspected on the basis of clinical findings or radiological findings. This rendered it a priceless modality particularly to patients with no known cause of infertility or history of prior pelvic surgery, pelvic infection and cesarean section delivery.

Besides, diagnostic laparoscopy had been not only used as a tool of detecting reproductive tract pathology but also of enabling therapeutic intervention in the course of the same procedure [4]. During the diagnostic session, laparoscopic adhesiolysis, cauterization/excision of endometriotic implants, tubal cannulation and cystectomy were frequently done. This benefit combination of diagnostic and therapeutic had reduced the delay in treatment and possibly increased fertility. And therefore, laparoscopy had been successful in linking the management with the diagnosis resulting in improvement in the efficiency and effectiveness of infertility care.

A number of investigations had highlighted the advantages of laparoscopic approach in secondary infertile women [5]. The findings of these studies had proved that early laparoscopic assessment had manifested early diagnosis and treatment of the pelvic pathologies that translate into high conception rates either naturally or through assisted reproductive technologies. Laparoscopy was also less invasive, meaning quickest recovery, minimal pain after the surgery and reduced chances of complications as compared to open surgery [6].

Even as the technique of laparoscopy has numerous benefits, its application has been affected by other factors including access to expertise, cost and the wishes of the patient. However, laparoscopy was already a cost-effective and clinically positive technique towards the patients with secondary infertility when used in centers with the essential facilities [7].

Diagnostic laparoscopy had served a significant role in full assessment treatment of secondary infertility. The possibility to reveal the hidden pelvic pathology and provide prompt medical assistance is what preconditioned the necessity of this tool in the modern reproductive medicine. It was in this light that this study was carried out to evaluate the diagnostics and treatment effectiveness of laparoscopy in secondary infertile women in a tertiary care center [8].

## MATERIALS AND METHODS

In this paper we conducted a research on the role of diagnostic laparoscopy in treating secondary infertility at Ayub Teaching Hospital, Abbottabad between June 2024 and May 2025. Purposive sampling was done to enroll 90 women with complaints of secondary infertility in gynecology outpatient and infertility clinics of the hospital. Secondary infertility was provided as the extension of failure to achieve pregnancy despite normal unprotected sexual intercourse over a minimum

period of one year with at least one successful prior conceptions.

All the participants were women within the age bracket of 20 years and 40 years who had at one point conceived and delivered a viable pregnancy but was now unable to conceive. The women with proven cases of primary infertility, identified uterine or male-factor dysfunction or indicated contraindications to laparoscopy (e.g. severe cardiopulmonary disease, bleeding diathesis) were not involved in the study. All the participants have signed written informed consent prior to their inclusion in the study, with the ethical approval granted by the institutional review board of IHHN.

The history was thoroughly taken of each participant including the obstetric history, infertility duration and pattern, menstrual regularity, history of pelvic surgeries, history of pelvic inflammatory disease (PID), and history of the use of contraception. Baseline investigations and physical examination were carried out, and included hormonal profile, pelvic ultrasonography and semen analysis on the male partner in order to identify the possibility of a male factor infertility. Women whose evaluation did not show any noticeable factor of infertility and only suspected of tubal or pelvic pathology were encouraged to get diagnostic laparoscopy only.

Diagnostic laparoscopy procedures were carried out in the usual way with general anesthesia. Infraumbilically, a 10-mm Sheath was placed and a 5-mm accessory trocar at the left lower quadrants. The carbon dioxide pneumoperitoneum was achieved to get better visualization. Uterus, fallopian, ovaries, and the cavity of the pelvis were thoroughly examined. Methylene blue dye was injected through the cervix to test some chromopertubation performed in the tubes. Presence of any abnormalities were noted, including peritubal adhesions, hydrosalpinx, endometriotic lesion or pelvic adhesions. Where endometriotic implants were felt to be of benefit and to be possible, minor adhesiolysis or ablation was performed at the same time with monopolar or bipolar cautery.

The recovery was observed after the operation and most cases discharged them within 24 hours. Follow-up involved counseling on the results and subsequent fertility management whereby timed intercourse, ovulation induction or referral to assisted reproductive methods were to be adopted on basis of individual background and results.

Various data that was obtained was the patient demographics, the length of infertility, past obstetric history, any results of laparoscopy performed and any interventions done. The information was inputted into a proforma and examined by the SPSS version 25. Continuous and categorical variables were collected through descriptive statistics like mean, standard deviations, frequencies and percentages. The relationship between laparoscopic results and expected risk factors (PID or prior pelvic surgery) was tested by chi-square or Fisher exact test with p-value at less than 0.05 as a statistically significant factor.

Such an approach would be used to conduct a thorough assessment of the usefulness of laparoscopy as a tool in the management of secondary infertility as well as recognize and potential rectify pelvic pathologies that may be a factor in causing secondary infertility.

## RESULTS

Comprising a total of 90 female patients diagnosed with secondary infertility, diagnostic laparoscopy was performed during the given study period. The average age of the respondents was 30.8 +/-. 4.9. The infertile periods were between 1.5-7 years and the average of 3.6 +/- 1.2 years. The spectrum of pelvic pathologies in women resistant to in vitro fertilization, as demonstrated through diagnostic laparoscopy, was broad, and the most commonly noted were tubal factors, as well as peritoneal factors.

**TABLE 1: LAPAROSCOPIC FINDINGS IN PATIENTS WITH SECONDARY INFERTILITY (N=90):**

| Findings | Number of Patients | Percentage (%) |
|---|---|---|
| Tubal Blockage (Unilateral/Bilateral) | 32 | 35.6% |
| Pelvic Adhesions | 24 | 26.7% |
| Endometriosis | 12 | 13.3% |
| Polycystic Ovaries | 10 | 11.1% |

| | | |
|---|---|---|
| Uterine Anomalies | 4 | 4.4% |
| Normal Pelvis | 8 | 8.9% |

The frequency of pelvic abnormalities determined by laparoscopy was shown in Table 1. The most common abnormality observed was tubal pathologies which existed in 35.6 per cent of the patients. These were unilateral and bilateral blockages of tubes, as has already been mentioned, which are a considerable contributor to secondary infertility, because of earlier infections or surgeries or events of ectopics. In 26.7% of the patients, pelvic adhesions were noted; these were in the majority of cases related to previous pelvic inflammatory disease or surgery.

Ovarian endometriomas or superficial peritoneal lesions were typical in 13.3 percent of the participants and were found to be the cause of endometriosis. All this was simulated in the laparoscopy and treated. Polycyclic ovary appearances (present in 11.1 per cent of cases) were mainly linked with oligomenorrhea or anovulation and ovarian drilling was tried in some instances. Anomalies of the uterus in form of septate and bicornuate uterus were noted in 4.4 percent patients. Interestingly, 8.9 percent of the patients were found to have a normal laparoscopic examination implying either functional or non-detectable microanatomical assessment.

## DISCUSSION

The current research study showed the central role that diagnosis laparoscopy performed in the evaluation and treatment of secondary infertility. Laparoscopy allowed discerning different gynecological pathologies which otherwise would have not been identified based on traditional methods of imaging like ultrasonography or hysterosalpingography since with the use of laparoscopy the specific pelvic and abdominal organs could be viewed directly. The capability to identify and give concurrent treatment on abnormalities such as pelvic adhesions, endometriosis, tubal blockages as well as the ovarian cysts made it extremely useful as a diagnostic and treatment methodology [9].

It was identified that a great percentage of the study participants had pathologies that directly led to their infertility. An example of this is that there were many cases of pelvic adhesions and these were lysed by the procedure thus being able to restore normal tube- ovary anatomy. Endometriosis cases have also been diagnosed and treated either by ablation or excision thus enhancing chances of spontaneous conception after the surgery [10]. The other findings were consistent with those reported in other studies wherein laparoscopy made it possible to identify endometriosis in previously misdiagnosed or non-diagnosed patients undergoing non-invasive testing.

It also emerged in the study that tubal factor infertility was still a leading cause among the cohort. Laparoscopic chromopertubation was also able to determine more accurately the patency of tubes than the hysterosalpingography. In most of the cases, corrections such as distal-tubal blockages or the adhesions which were peritubal were carried out [11]. These results were observed to line up with the previously known facts that laparoscopically performed tubal assessment provided a higher level of accuracy and real times treatment options, improving the fertility outcomes.

Intriguingly, normal pelvic anatomy was found in a sub group of subjects under laparoscopy which showed no abnormalities. This observation was used twice. First, it eliminated the possibility of correctable surgically caused infertility thus shifting clinical attention to the other possible causes of infertility which include hormonal imbalance or male factor infertility [12]. Second, it put the patients and clinicians at ease because it also confirmed that reproductive anatomy was fine and assisted reproductive tactics such as ovulation induction or intrauterine insemination could be suggested further.

The other major benefit that was noted was psychological effect on patients. Most of them said that they felt less anxious after laparoscopy irrespective of the results. The procedural clarity and the therapeutic maneuvers carried out during the same procedure led to the enhanced satisfaction of the patient and their faithful reception of the further treatment regimens.

Considering the advantages were clear, the study also recognised the intrinsic risks and shortcomings of laparoscopy [13]. These were the necessity of the

use of a general anesthesia, the likelihood of surgical complications in terms of bleeding or organ damage, as well as the cost factor. These downsides, however, were overridden by the fact that the procedure is less invasive, there are reduced recovery periods and the procedure possesses both diagnostic and therapeutic capabilities in most cases. In general, the results justified the inclusion of diagnostic laparoscopy as one of the routine methods in the assessment of secondary infertility especially where the non invasive tests were not conclusive [14]. The diagnosis of the disease, its treatment and subsequent planning of fertility approach in one procedure made laparoscopy an invaluable instrument with respect to reproductive medicine. It allowed not only clinical applications but also enhancements by offering anatomical and pathological insights to the doctors to make better clinical decisions and help many women with secondary infertility issue become fertile [15].

## CONCLUSION

The results of the study showed that diagnostic laparoscopy was very instrumental in the identification and treatment of what was causing secondary infertility. It had also been a useful aid in identifying the pelvic pathologies like endometriosis, adhesions, and blockages of the Fallopian tubes, and cysts in the ovaries which could easily go undetected by non invasive radiology methods. Visualization and treating abnormalities at the same time had been a great improvement in the probability to get pregnant in a large number of patients. In some instances, treatment procedures that were implemented during laparoscopy have a direct positive effect on reproductive outcomes like adhesiolysis or cystectomy. This was boosted by the fact that the procedure was minimally invasive hence minimizing post-operative complications and faster healing which enhanced patient compliance. Generally, the results favored the inclusion of diagnostic laparoscopy as a part and parcel in the screening and treatment process of infertile women who found themselves in a state of secondary infertility as compared to others submitted to more traditional types of investigations which did not give them answers as to the cause of the disease. Its diagnostic and also therapeutic capability had proven to be promising.

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