TUBAL FACTOR IN INFERTILITY

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ABSTRACT

Objective: This study was conducted to find out the percentage of bilateral tubal blockage in infertile female patients.

Material and Method: Methylene blue dye was injected with a catheter through the external cervical os and its spill into the peritoneal cavity was visualized using laparoscopic technique.

Results: 34% of the patients had bilateral tubal blockage, mainly due to pelvic inflammatory disease tuberculosis and endometriosis.

Conclusion: Tubal pathology is one of the main causes of female infertility

Key words: Infertility, Tubal Pathology.

INTRODUCTION

Infertility is defined as involuntary failure to conceive within 12 months of unprotected intercourse while sterility is total inability to conceive due to some absolute factor in either couple. Infertility may be primary, means couple has never conceived or secondary, where at least one conception has occurred for one or both the partners.

Infertility is a common problem affecting one couple in six. Previously the incidence was one in ten. The evidence for changes in the prevalence of infertility is difficult to establish. This increase could be due to at least four factors: delayed childbearing, alterations in semen quality due to habits such as cigarette smoking and alcohol, changes in sexual behaviour and eliminations of most taboos. During the past two decades there have been three important changes in infertility practice. First, the introduction of assisted reproduction technologies has provided an opportunity to study basic reproductive processes. Second, social changes have occurred such as the increase in the proportion of women over 35 years old seeking pregnancy. This fact is due to later age for marriage and postponement of pregnancy. Third, the development of molecular biology and genetics has become very important for the study, diagnosis and assessment of couples, many of them considered until now as “unexplained infertile couples”!
Infertility needs thorough and prolonged management including history, examination, investigation and planning treatment for the couple as well as detailed counselling of the couple otherwise they soon get disappointed. History includes age of both partners, duration of infertility, previous fertility, coital history, menstrual history, endocrine history, medical history, surgical history, previous obstetrical history, contraceptive history and drug history. One may find a factor in the history and proceed accordingly for examination and investigations. Examination includes: General physical examination, thyroid and breast examination, abdominal examination, genital and pelvic examination. Known causes of infertility are shown in Fig-I.

Laparoscopy has got a very important role in the investigations and management of female infertility.

![Fig. 1](image)

It is the main diagnostic procedure for checking tubal patency besides many other techniques.

Out of 564 laparoscopies 408 (72%) were for primary infertility while 156 (28% of 564) were for secondary infertility.

### MATERIAL AND METHODS

From January 1997 to August 1997 total of 751 laparoscopic procedures were performed at Gynae A Unit LRH, Peshawar. Out of which 564 (75%) were for infertility.

### RESULTS

The result of the 751 laparoscopic procedures done for infertility both primary and secondary showed that the age range of the patients presenting for medical intervention was from 20-45 years with an average of 35 years (Table-1). Duration of infertility varied from one to more than 10 years with a mean, (Table-2) duration of 5 years. Laparoscopically performed dye test confirmed the bilateral tubal blockage in 34% of the patients while unilateral tubal obstruction was present in 8.3% of the cases. (Table-3) 10.7% of the patients with primary infertility and 7.7% with secondary infertility had pelvic tuberculosis as the cause. While in 25% of the primary and 41% of secondary infertility the cause was PID (Pelvic Inflammatory disease). The rest of the causes were Polycystic ovarian diseases. In 5.8% and 7.5%, Endometriosis, 10.7% and 5.8%, Fibroid uterus, 3.7% and 3.2% for primary and secondary infertility respectively (Table-4). The result shows the

### AGE RANGE

<table>
<thead>
<tr>
<th>Age Range</th>
<th>PRIMARY</th>
<th>50%</th>
<th>SECONDARY</th>
<th>46%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25 years</td>
<td>204</td>
<td>50%</td>
<td>20-30 years</td>
<td>72</td>
</tr>
<tr>
<td>25-30 years</td>
<td>98</td>
<td>24%</td>
<td>30-40 years</td>
<td>58</td>
</tr>
<tr>
<td>&gt;30 years</td>
<td>106</td>
<td>26%</td>
<td>&gt;40 years</td>
<td>26</td>
</tr>
</tbody>
</table>

**TABLE -1**
high incidence of tuberculosis in both Primary and Secondary infertility but the main point to be noted is the prevalence of PID in secondary infertility. 41%, showing infection in previous deliveries, Instrumentation, abortion and sexual transmission.

**DISCUSSION**

Healthy and patent fallopian tubes play an important role in the transfer of unfertilised and fertilized eggs to the uterus thus assisting conception and child bearing ability while the diseased tubes act otherwise. Checking the tubal patency is one of the important step in investigating the female partner. Hysterosalpingography, Hysteroscopy, laparoscopy, salpingoscopy and sonosalpingography are the different techniques available. Laparoscopy has an additional advantage that one can visualize the other abdominal and pelvic structures, can take the biopsy and can do adhesiolysis and laser surgery as well. Tubal pathology can be managed medically and surgically. Medical treatment includes antibiotics for pelvic inflammatory disease, Antituberculous for pelvic tuberculosis and medical treatment of endometriosis.

Laser ablation is the treatment of choice for mild to moderate endometriosis. For complete tubal blockage different surgical techniques of tuboplasty can be attempted. Tuboplasty under microscope needs great surgical skill and fineness and even in the best hands conception rates following tuboplasty are poor. Assisted reproduction is the answer if medical and surgical techniques fail and is also the first choice in most of the affording couples without going for tuboplasty. IVF represent an effective means

Laparoscopy with Dye test confirmed the "Bilateral tubal blockage in 34% of patients as per table 3.

<table>
<thead>
<tr>
<th></th>
<th>Both Tubes Patent</th>
<th>One Tube blocked</th>
<th>Both Tubes blocked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Infertility</strong></td>
<td>243</td>
<td>33</td>
<td>132</td>
</tr>
<tr>
<td><strong>Secondary Infertility</strong></td>
<td>82</td>
<td>14</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>325</td>
<td>47</td>
<td>192</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>57.7%</td>
<td>8.3%</td>
<td>34%</td>
</tr>
</tbody>
</table>

**TABLE - 3**
On history, examination and investigation following was the cause wise distribution table 4.

**CAUSES**

<table>
<thead>
<tr>
<th>Type</th>
<th>Normal</th>
<th>PID</th>
<th>Tuberculosis</th>
<th>PCOS *</th>
<th>Endometriosis</th>
<th>Fibroids</th>
<th>Cysts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Infertility</td>
<td>171</td>
<td>102</td>
<td>44</td>
<td>24</td>
<td>44</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>41.9%</td>
<td>25%</td>
<td>10.7%</td>
<td>5.8%</td>
<td>10.7%</td>
<td>3.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Secondary Infertility</td>
<td>47</td>
<td>65</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>41%</td>
<td>7.7%</td>
<td>7.5%</td>
<td>5.8%</td>
<td>3.2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

* PCOS – Polycystic Ovarian Syndrome

**TABLE – 4**

of bypassing the hostile peritoneal environment and anatomic distortion associated with tubal pathology.10

Following is the chart of the different techniques of assisted reproduction with percentage of the success rates.

**ASSISTED REPRODUCTION**

<table>
<thead>
<tr>
<th>Technique</th>
<th>Principle</th>
<th>Indications</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>In – Vitro Fertilization (IVF)</td>
<td>Super ovulation, Oocyte retrieval, insemination and Replacement between 4-8 cell stage.</td>
<td>Tubal disease, Unexplained infertility, Male factors, Endometrioses, Anovulation, Egg donation, Host surrogacy, Donar insemination</td>
<td>20-25%</td>
</tr>
<tr>
<td>GIFT, ZIFT</td>
<td>Oocyte Retrieval and replacement with sperm into tubular ampula at laparoscopy</td>
<td>Long term infertility of any cause&gt; 2 years, Unexplained infertility, Immunological factors.</td>
<td>20-30%</td>
</tr>
<tr>
<td>PROST, Pronuclear Stage tubal Transfer</td>
<td>Oocyte Retrieval, fertilization &amp; transfer of pronuclear embryo into tubal ampula at laparoscopy.</td>
<td>As for GIFT</td>
<td>15-30%</td>
</tr>
<tr>
<td>Embryo Cryo Preservation</td>
<td>Excess embryo from IVF or GIFT are cryo preserved at 3-4 cell stage.</td>
<td>As for IVF &amp; GIFT.</td>
<td>20-25%</td>
</tr>
<tr>
<td>Micro manipulation</td>
<td>Creation of an artificial gape in zona pelludica of oocyte</td>
<td>Severe oligospermia.</td>
<td>20%</td>
</tr>
<tr>
<td>SUZI Sperm under Zona Injection</td>
<td>Sperms are micro injected into the perivitelline space of the oocyte.</td>
<td>Severe oligospermia.</td>
<td>20%</td>
</tr>
<tr>
<td>ICSI Intra cytoplasmic Sperm Injection</td>
<td>Single sperm is injected directly into the cytoplasm of the oocyte.</td>
<td>Severe oligospermia.</td>
<td>24%</td>
</tr>
</tbody>
</table>

**TABLE – 5**
Infertility is a problem of global proportion affecting an average 8-12% of the couples worldwide. But in infertility belt of the sub-Saharan Africa, as many as one third of the couple are unable to conceive. Tubal factors including bilateral tubal blockage is the main cause in many studies. Post abortal, post partum and sexually transmitted diseases are the main factor of tubal blockage. Using Egypt in an illustrated case study which focuses on the constrain of the practice and utilization of NRT, (New Reproductive Techniques) stresses the need for primary prevention of infections as it leads to tubal obstruction. The study confirms the infections leading to tubal blockage as major cause of infertility. In another retrospective study of the hospital record of 206 women in university hospital, Johannesburg bilateral tubal blockage was the cause of infertility in 65.5% and unilateral tubal blockage in 33%. In University Hospital, Madagascar a twelve-month prospective study was carried out to find out the possible causes of infertility in couples. Tubal obstruction was responsible in 76% of cases, hormonal disturbances in 76%, and genital infection in 70%. Most of the studies have reported coexistence of multiple causes of infertility at one time. So the selection of most effective approach to overcome infertility must be individualized and based on the extent of the disease, additional infertility factors, patient’s comfort and a frank discussion of success rates and risks with the couples.

Conclusion

Tubal pathology is one of the main cause of female infertility. The results of medical, surgical and assisted reproduction techniques is comparable but in non of the cases, “take home baby rate” is more than 20%. So a great caution is required in pelvic operative techniques which will prevent infection and tubal obstruction. Infertility is not only social and psychological stigma for the couple, it is also a medical stigma. Medical profession could never achieve cure in 100% of cases. Tubal obstruction is not the only cause. Immunological factors, endocrine factors and pelvic infections may also be responsible in both or in either partner and should be managed accordingly.

References


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