Hysterolaparoscopic Myomectomy: Reproductive outcome and complications
A Clinical original research article

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INTRODUCTION
Fibroids are the commonest tumours of female genital tract.1 20-50% of women in reproductive age have fibroids. Fibroids are common in nulligravida, late marriage, obesity and increasing age. Family history of fibroids and racial occurrence like in negroes also affect incidence. Fibroids may be asymptomatic or cause menorrhagia, dysmenorrhea, infertility and pressure symptoms. 10-20% of patients of infertility have fibroids. Mechanisms by which fibroids cause infertility are not clear. Apart from distortion of cavity, obstruction of tubal opening, endometrial microvascularisation defects are also involved.2-7 Association of infertility and fibroids is not evident in all cases. So questions arise - Myomectomy should be done or not? Few studies say that myomectomy can lead to postoperative adhesions and increased rate of uterine rupture. Further studies say only submucus and large fibroids should be removed. But recent studies say – (1). There is a lower fertility rate in woman presenting a myoma (2). Association between myoma and infertility is seen in observational surveys (3). Rate of implantation for pregnancy obtained by IVF is lower in women with intramural myomas.3 If we decide to operate – which method be done - Laparoscopy or laparotomy? More chances of recurrence, more conversion rate to laparotomy, prolonged surgery, more bleeding are the complications attributed to laparoscopy. So this study was undertaken to find answers to these dilemmas related to myomectomy.

ABSTRACT
OBJECTIVE: To study the reproductive outcome and complications in operated cases of hysterolaparoscopic myomectomy done solely for infertility. METHODS: A retrospective Observational study at a private setup of 208 operated cases from January 2011 to February 2015. 124 patients followed up. RESULTS: 77.8% had primary infertility, 14 % had previous abortions, 21% multiple fibroids. Size of fibroid was 7-9 cm in 13% and 10-18 cm in 7.9%. Even very large > 15 cm fibroids were removed by laparoscopy. Hysteroscopy was done in all cases. Uterine artery ligation was done in 5 cases. Pregnancy rate was 45.96%. 84.2% conceived naturally or with induction and 12.2% IVF. All but 1 patient had live births at full term and 2 patients had ongoing pregnancy. No patient had preterm birth or abortion. No major complications were seen. Patients with multiple fibroids had more complications. 5.6% patients had asymptomatic recurrence (small multiple fibroids) and 1 patient had symptomatic recurrence, all with multiple fibroids. 1 patient with uterine artery ligation conceived. CONCLUSIONS: Hysterolaparoscopic myomectomy is a safe procedure with good reproductive outcome, low recurrence and very low conversion rate to laparotomy even with large fibroids. Management of multiple fibroids should be individualized.

Keywords – myomectomy; infertility; pregnancy; recurrence; conversion; complications

INTRODUCTION
Fibroids are the commonest tumours of female genital tract.1 20-50% of women in reproductive age have fibroids. Fibroids are common in nulligravida, late marriage, obesity and increasing age. Family history of fibroids and racial occurrence like in negroes also affect incidence. Fibroids may be asymptomatic or cause menorrhagia, dysmenorrhea, infertility and pressure symptoms. 10-20% of patients of infertility have fibroids. Mechanisms by which fibroids cause infertility are not clear. Apart from distortion of cavity, obstruction of tubal opening, endometrial microvascularisation defects are also involved.2-7 Association of infertility and fibroids is not evident in all cases. So questions arise - Myomectomy should be done or not? Few studies say that myomectomy can lead to postoperative adhesions and increased rate of uterine rupture. Further studies say only submucus and large fibroids should be removed. But recent studies say – (1). There is a lower fertility rate in woman presenting a myoma (2). Association between myoma and infertility is seen in observational surveys (3). Rate of implantation for pregnancy obtained by IVF is lower in women with intramural myomas.3 If we decide to operate – which method be done - Laparoscopy or laparotomy? More chances of recurrence, more conversion rate to laparotomy, prolonged surgery, more bleeding are the complications attributed to laparoscopy. So this study was undertaken to find answers to these dilemmas related to myomectomy.
MATERIALS AND METHODS
All patients underwent preoperative workup. History, examination, ovulation study, hormonal assay, AMH, SSG, ultrasound, semen analysis. MRI was requested in few cases of multiple fibroids. Procedure – Hysteroscopy was done in all cases. In case of submucous fibroid either bipolar or monopolar resectoscope was used. Resection done with loop electrode. 3 port access used for laparoscopy with 1 supraumbilical 10 mm laparoscope camera port, 2 left lateral 5 mm port for ipsilateral suturing and 1 right lateral 5mm/10 mm port. Vasopressin injected 20 U in 200 ml saline at the base of myoma. Incision given with harmonic. Myoma enucleated. Myoma bed sutured using barbed V loc sutures by ipsilateral endosuturing. Electromechanical morcellation by ROTAGUT and in few cases, colpotomy with Sawalhe’s morcellator used. Uterine artery ligation when done, posterior approach preferred, bilateral arteries ligated with vicryl no 1. Patients were counselled to avoid pregnancy for 3 months and later reassessed for natural, induction, IUI or IVF conception. Phone calls were made to all patients and fixed questions were asked. Statistical analysis done with SPSS software.

RESULTS
A total of 606 patients underwent hysterolaparoscopic myomectomy in this period. Of these 208 (34.3%) patients came with main complaint of infertility. 77.8% had primary infertility and 16.4% with secondary infertility. 65% patients were of 24-38 years age, 6.7% were above 39 years. Fibroids were asymptomatic in most of the cases, others had menorrhagia, dysmenorrhea or anemia. 77.8% were nulligravida, 14 % had previous abortions, 1.7% had one live issue. 41% patients had single fibroid and 21% multiple fibroids. Size of fibroid was 4-6 cm in 40%, 7-9 cm in 13% and 10-18 cm in 7.9%. 64.6% had laparoscopic removal, 2% only hysteroscopic resection and 6% both procedures were done. 44% patients had intramural fibroids, 8% had submucous fibroids and remaining subserous. Only 3 patients needed blood transfusions. Intraoperatively 4% patients were found to have endometriosis, 1.4% tubal block, 1.4% uterine septum. Uterine artery ligation was done in 5 cases with multiple fibroids. Of the 124 patients who followed up, pregnancy rate is 45.96%. A total of 57 patients conceived, 43 with primary infertility and 14 with secondary infertility. 84 patients were lost to follow up. Of the 57 patients which conceived - 84.2% conceived naturally or with induction,12.2% IVF and 3.4% with IUI. All but 1 patient had live births at full term. 1 patient had IUD 1 had twins and 2 were ongoing pregnancy. Of the patients who did not conceive, 23.38% were still undergoing treatment and 6 patients had failed IVF treatment. No patient had preterm birth or abortion, no NICU admissions. No cases of rupture, all delivered by LSCS. In our study 1 patient with uterine artery ligation conceived. Conception rate decreased after 35 years, majority conceived with IVF. 50% patients with fibroid size 4-6 cm conceived. Only 1 patient with endometriosis conceived, 2 patients with septal resection and no patients with tubal disease conceived.

Table no 1 – Pregnancy outcomes after operation

<table>
<thead>
<tr>
<th>Conception</th>
<th>No</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total conceived – 57 patients (45.96%) out of 124 follow ups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural + OI</td>
<td>48</td>
<td>84.2 %</td>
</tr>
<tr>
<td>IUI</td>
<td>2</td>
<td>3.4 %</td>
</tr>
<tr>
<td>IVF</td>
<td>7</td>
<td>12.2 %</td>
</tr>
<tr>
<td>Not tried</td>
<td>35</td>
<td>28.22 %</td>
</tr>
<tr>
<td>Failed IVF</td>
<td>6</td>
<td>4.83 %</td>
</tr>
<tr>
<td>Ongoing Rx</td>
<td>29</td>
<td>23.38 %</td>
</tr>
</tbody>
</table>

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had chronic pelvic pain treated conservatively, no patients had menorrhagia. No major complications were seen. 1 patient had intraoperative hemorrhage, multiple transfusions were given, 1 had DVT. All these had multiple-more than 15 fibroids. Conversion to Laparotomy was done in 2(0.7%) cases for multiple fibroids. Most of the patients having immediate and delayed postoperative complications had multiple fibroids. No hysteroscopy complications occurred. 5.6% patients had asymptomatic recurrence (small multiple fibroids) and 1(0.8%) patient had symptomatic recurrence, all with multiple fibroids. No reoperation was done.  

Discussion Main findings  

Pregnancy rate after myomectomy was 45.96%. Most patients conceived naturally or with ovulation induction. Patients with multiple fibroids had more complications due to prolonged operating time and blood loss. The recurrence rate was 6.4% mostly asymptomatic, conversion to open in 0.7% and major complications were less than 1% which is extremely important fact.  

Strengths and limitations  

As ours is a laparoscopy and infertility referral centre, the population number is large but as it is a retrospective study, preoperative and postoperative data collected is less. Male factor, hormonal levels, ovulatory dysfunction are not available. As patients were lost to follow up, precise outcomes cannot be obtained.  

Interpretation  

Fibroids typically occur in women of reproductive age as they are hormone dependant tumours as seen in our study. Fibroids mostly cause infertility, interference with pregnancy is less common, only 14% had previous abortions. Large 15 cm fibroid was also removed by laparoscopy. In other studies conversion rates have increased with large fibroids. In our experience multiple > 10-15 fibroids pose greater problem. Hysteroscopy was done in all cases and it is very important for completion of surgery. Need for blood transfusion is rare, except with multiple fibroids. In this study pregnancy rate is 45.96%. In a study by Donnez and Jadoul in 2001, pregnancy rate was 45-49%. In another study by Bulleti et al, pregnancy rate in operated cases of fibroid was 42% and in unoperated cases 11%. Conception rates are good after myomectomy if no associated infertility factors are present. The procedure should not be delayed due to size or location of fibroid if patient is not conceiving. 79% patients conceived within 1-2 years of operation. Maximum patients conceived naturally or with induction. All were delivered by LSCS because of increased age and years of infertility. Due to fear of uterine rupture in these cases LSCS is often preferred. This is is supported in one review study of 30 years research in myomectomy by Pankaj Desai. Although conventionally if > 50% of myometrium gets disrupted LSCS is done. In a study by Tulandi et al of 26 patients undergoing myomectomy most patients conceived between 12-36 months after operation, the cumulative pregnancy rate was 33.4% at 6 months and 66.7% at 12 months after the procedures. Other studies found abortion rate of 8-10 % post myomectomy. In a study by Buttram and Reiter reveals that 30% of patients had spontaneous abortion rate before myomectomy and 19% after myomectomy. In our study there were no cases of rupture. In one study by Roopnarinesingh S on obstetric outcomes after open myomectomy rupture rate was 5.3%. Dubuisson et al. (2000) study of 100 patients following laparoscopic myomectomy had three cases of uterine rupture, though only one involving the myomectomy scar. In a study by P.G. Paul of 115 pregnancies after laparoscopic myomectomies there were no cases of rupture. Relation between location of fibroid and conception rate was 4% more with intramural and submucus fibroids than subserous but not statistically significant. There was no relation between parity, procedure of myomectomy and conception. Associated factors like endometriosis, tubal block decreased conception rate. Conversion rate is less than other studies even in cases of large fibroids. In a study by Sizzi of 2050 laparoscopic myomectomies and study of complications, conversion rate is 1.51%. Holub et al. assessed pregnancy outcomes
and deliveries after laparoscopic uterine artery transection in symptomatic women with fibroids. One hundred and fifty-three patients underwent laparoscopic transection of uterine vessels during a four-year period. The study concluded that laparoscopic transection of uterine vessels is a minimally invasive operative procedure, that preserves the uterus and ovarian blood supply and allows for the achievement of pregnancy in women with symptomatic fibroids. Many other studies also support this. In a study by Lenzi on pregnancy after uterine artery ligation successful pregnancies have been recorded. The recurrence rate was 6.4% after 1-4 years of follow up which is significantly less than other studies. In a multicenter study, the recurrence rate of leiomyomas was estimated to be 11.7, 36.1, 52.9, and 84.4%, respectively, after one, three, five, and eight years following laparoscopic myomectomy. However, the probability of a re-operation is 6.7% after five years, and 16% after eight years. When done with experienced surgeon chance of missing fibroids in laparoscopy is negligible. Most of the patients having immediate and delayed postoperative complications had multiple fibroids. In our experience it is wise to go for open myomectomy in patients with more than 10 fibroids to reduce the laparoscopy related morbidity. The figure of > 10 is derived from the author’s experience with complications and reference of previous studies. Size or location of the fibroid is not the criteria to go for open but number of fibroids is as supported in a study by Sizzi which states not to perform laparoscopic myomectomies with more than 5 to 7 large myomas because in these cases the procedure is excessively time-consuming and that the surgeon can miss the smaller myomas after the uterus has been incised and repaired in too many places. Acquiring laparoscopy and hysteroscopy skills is necessary to avoid open myomectomy.

CONCLUSIONS

Hysterolaparoscopic myomectomy is a safe procedure with good reproductive outcome and very low conversion rate to laparotomy even with large fibroids, low recurrence. Myomectomy should be considered irrespective of location and size of fibroids if other factors are normal. Multiple fibroids >10 should be dealt with caution and decision individualized.

REFERENCES