Diagnostics and Laparoscopic Therapy for Ectopic Pregnancy

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Abstract

The objective of this study was to assess the feasibility and effectiveness of laparoscopic surgical administration for patients with ectopic pregnancy. 50 patients underwent laparoscopic management under general anesthesia and all operations were completed in the semi lithotomy position. The laparoscopic surgeries including salpingostomy, salpingectomy, pelvic haematocoele suction and corpus luteum desiccation were performed based on ectopic pregnancy diagnostic stage. The 15 patients undergone laparoscopic salpingectomy among which 2 patients reported ectopic after tubectomy and 2 underwent laparoscopic sterilisation of other tube additionally to salpingectomy. Among 5 patients with infertility, 3 reported extensive injury because of rupture and late reporting while in remaining 2, tube was injured during hemostasis accomplishment. 6 cases reported with tubal abortion among which, 4 patients reported with acute ectopic tubular ovarian masses with fluids in dougla's pouch. The haematosalpinx was reported in 3 patients that cleared with recurrent saline lavage from fimbrial end and 2 patients reported with acute abdomen with fluid filled inside the paracolic gutters and vigorously bleed by fimbrial end. The average operational duration was found to be 70 to 90 minutes with zero post-operative morbidities. After six weeks, the postoperative β-HCG levels were assessed in the patients undertaken conservative operation called salpingostomy. The comparative studies confirmed that laparoscopic surgery for ectopic pregnancies is more advantages than open surgery and it has been well accepted by the surgeons and patients and a safe and feasible approach in terms of the less post-operative complications and recovery time as well as hospital stay duration.

Key Words: Ectopic pregnancy, laparoscopic surgery

Introduction:

Ectopic pregnancy is one of the most challenging pregnancy complications that is characterized with the implantation of fertilized ovum exterior to endometrial and endometrium cavity such as inside the abdomen, ovaries and uterine tubes. The ectopic pregnancy is the widespread cause of maternal death during first trimester in advanced countries. If it is not treated can become the serious emergency threat for the life of a pregnant women and can impose adverse effects. In this complication, the fertilized embryo usually stays on to the fallopian tube linings and enters into the adjacent vessels and triggers bleeding (1).

Sometimes, the immense intratubal bleeding impends the health as well as life of the female. Moreover, during this complication if embryo enters into the adjacent sampson artery, the highly bleeding arises more prior as compared to normal and considered more threatening for a mother's life because of internal hemorrhage. Therefore, ectopic pregnancy can be deadly without quick diagnostics and treatments. Typically, ectopic pregnancies can be resolved in the maximum cases without surgical treatment but on rupturing the fallopian tube the surgery is mandatory with a large incision also called laparotomy (2).

Over the last 3 decades, the overall incidents have raised intensely in low- and middle-income countries worldwide. In 2018, among most of North America and Europe, the incidence rate of ectopic pregnancy has been reported 2% of deliveries. Meanwhile, the surveillance of ectopic pregnancy reported 2.0%, 2.8% and 2.2% in France, Finland and United States respectively. Likewise, during 1976 and 1993 the ectopic pregnancy incidents were 1.4-2.2% in Norway while 1.24% reported in England. In the Kingdom of Saudi Arabia during 2018, the ectopic pregnancy incidences were reported 0.58% in terms of 1 in 171 livebirths (3).

In the under developed countries of Africa, the most of researches have testified ectopic pregnancy incidents from 1% to 3% that is ten folds greater as compared to developed countries (4). In India, the incidents of ectopic pregnancy reported 0.6% as 1 in 161 livebirths. In Pakistan, the incidents of ectopic pregnancy fluctuate from 100-175 per 100,000 females age between 15-44 per year. The CDC reported that the ectopic pregnancy incident is 1 in 70 gestations worldwide but it varies from 1 in 130 pregnancies in Pakistan (5).

Since the early 1900s, the minimally invasive surgery is the most vital revolution in surgical management of ectopic pregnancy. Laparoscopy has been well recognized in gynaecology for

in the developed countries and widely employed including laparoscopic salpingectomy for management of ruptured tubal ectopic pregnancy. It is a very useful technique for diagnosis but its regular use for pregnant women diagnostics of ectopic pregnancy often lead towards excessive risks, costs and morbidities. Laparoscopic administration of ectopic pregnancy has been verified to be protected and an efficient alternate to conventional administration by laparotomy. Laparoscopic operations are linked with lower analgesic prerequisites, small hospital stay, quick return to normal life and less intra-operative loss of blood (6).

Material and Methods:

Fifty female patients of 25-60 years ages with ectopic pregnancy underwent a diagnostic laparoscopy at the Department of Surgery and gynecology of Liaquat University of Medical & Health Sciences, Jamshoro, Sindh, Pakistan. The sequence of clinical investigations was made for initial diagnostics of ectopic pregnancy including transvaginal ultrasonography and β-HCG assay (7). On the basis of haemodynamic status, all females were treated by laparotomy or laparoscopy by expert surgeons using available endoscopic equipment's (8). The particularizes of operational process, procedural time and stay duration in the hospital were noted. Under general anesthesia, all operations were completed.

All laparoscopic operations were carried out in the semi lithotomy position and the cannula and trocar were introduced via an intra-umbilical incision. After confirmed diagnostics, the 5mm punctures were formed in the right and left lower quadrants with the help of direct transillumination and visualization following the insertion of 10mm laparoscope and evaded the epigastric vessels (9). Following the stepwise mesosalpinx desiccation with bipolar forceps and incision across the proximal tube and along the mesosalpinx, the salpingectomy was performed using scissors. During salpingostomy, the linear incision was made using unipolar electrode knife on the most distended and prominent antimesenteric fallopian tube border.

Under the fluid pressure, the conception products were separated and sucked out. The tubal cut was remained open and let to heal with secondary intentions. The specimens of surgery were removed through the 10mm sub-umbilical trocar sleeve. During removing the tissue, the hysteroscope (telescope) of 4mm size along with sheath was introduced at 30^0 from side port with the assistance of 10mm grasper for visualizing the umbilical ports (10). At the end of every operation, the pelvis was abundantly irrigated using saline. After six weeks, the postoperative β-HCG levels were assessed in the patients undertaken conservative operation called salpingostomy.

Results:

The 50 patients (Table 1) were managed with the help of laparoscopy and about 25 were underwent salpingostomies. This group was suspected of infertility which regarded after treatment in the form of intrauterine insemination (IUI). Since these women were undergone regular checkup and the tubal pregnancy was diagnosed among which five patients endured the standards for clinical management but due to particular observed with non-reassuring sonography, the clinical management had to be abandoned and treated by gynaecology experts. Meanwhile, the bleeding was very less observed among these patients.

Operations	Total Cases
	Laparoscopy
Salpingostomy	25
Salpingectomy	15
Lavage and suction of pelvic haematocoele	5
Desiccation of corpus luteum	5
Total	50

About 15 patients were undergone laparoscopic salpingectomy among which 2 patients reported ectopic after tubectomy and 2 underwent laparoscopic sterilisation of other tube additionally to salpingectomy. Furthermore, among 5 patients with infertility, 3 reported extensive injury because of rupture and late reporting while in remaining 2, tube was injured during hemostasis accomplishment. Meanwhile, among all these women the other tube was in good physical shape. In addition, about 6 cases reported with tubal abortion out of which, 4 patients reported with acute ectopic tubular ovarian masses with fluids in dougla's pouch.

Moreover, laparoscopic procedure revealed para tubal and pelvic tubal haematocoele and adhesions with gut, pelvic and omentum peritoneum which were cleared with the help of suction, hydrodissection and adhesiolysis. The evidences of haematosalpinx were reported in 3 patients that cleared with recurrent saline lavage from fimbrial end. While, 2 patients were reported with acute abdomen with fluid filled inside the paracolic gutters and pouches and vigorously bleed by fimbrial end. As the tubes were healthy and intact, it was supposed that bleeding occurring from the trophoblastic detachment site might be due to tubal abortion. In both such events, the tubular drain was left from side port and eliminated after 36 hours as the recurrent abundant lavage with warm saline can achieve hemostasis. Likewise, 5 patients reported with actively bleeding from corpus luteum among which 3 patients were suspected of

rheumatic heart disorder with prosthetic valves and treated with anticoagulants. In both cases, the haemostasis was achieved with bipolar coagulation but in heart complaint patient, there was observed umbilical port oozing for 24 hours. The average duration of operation for all patients was found to be 70 to 90 minutes with zero post-operative morbidities and average 1-week hospital stay duration.

Discussion:

The conventional surgical approaches for the ectopic pregnancy usually seemed to be open laparotomy. In 1884, Lawson Tait first time illustrated the life restorative technique of salpingectomy with laparoscopy. Laparoscopy has been progressing effectively in the ectopic pregnancy diagnostics for several years. in 1980, the Bruhat and Manhes performed the first tubal pregnancy excision with laparoscopy and since it has been used with higher frequency in the invasive treatment of ectopic pregnancy (11). It allows diagnostics and cure of ectopic pregnancies at an initial phase as it stands appropriate also for feasible and safe treatment ways significantly in hemoperitoneum and tubal rupture by avoiding the patient from severe and compromised hemodynamics

In the current laparoscopic study on 50 patients, the highest calculated hemoperitoneum was 3000 ml and the operations were successfully performed. It has been found that the operations such as salpingectomy, salpingostomy and suction of peritoneal lavage with the help of laparoscopy had taken average 80 minutes duration that was found to be significant statistically. More practice with laparoscopical surgery equipment and experienced paramedical and nursing staff will reduce the procedural time definitely and can made it analogous to laparotomy. In the meta-analysis of different researches, the incidences of intrauterine pregnancy later to tubal management was recorded 46% comparative to 44% subsequent to tubal excision with recurrence ectopic rates of 15% to 10% respectfully.

Different random trials studies have published the results for comparing the laparoscopic tubal procedure and traditional surgical approaches. The Murphy has reported that different distinguishing perspectives for the salpingectomy and salpingostomy which are trends of laparoscopic approaches (12). In current studies, we found 15 patients experienced salpingectomy and 5 salpingectomies out of 50 patients carried out laparoscopically. Such approach has been linked with short hospital stay and quick postoperative recoveries as well. It has been reported by Yao and Tulandi that the successive rates of intrauterine pregnancy

occurrences were 55% after laparotomy which are comparive to 70% that of with laparoscopic surgery (13).

Similarly, in another imperative meta-analysis of better qualities comparative researches there were not significant variance reported in the intrauterine gestations between salpingectomy and salpingostomy (49.3% v 53%) (14). While, in few other studies on non-comparative and diluted methods, about 60.3% women reported intrauterine pregnancies subsequent to salpingostomy comparative to just 38.1% later to salpingectomy (15). Comprehensive comparisons using these kinds of dissimilar data we have abled to accomplish that tubal conservation may be linked with succeeding intrauterine pregnancies which is no less than comparable to completely eliminated tube. The recurring ectopic pregnancies were however higher in conventional ways of operations for salpingectomy and salpingostomy.

Recommendations:

From reviewing the literatures, it has been acknowledged that laparoscopic surgery is also most cost-effective surgical approach with an average saving of about US$1500-2000 per patient with significantly decreases the hospital stay duration. Meanwhile, the overall cost of endoscopic setup installation is also higher. More than 75% of ectopic pregnancies are largely treated with laparoscopy in the developed countries. Considering the challenges to health of mothers and children in Pakistan during pregnancy, the ectopic pregnancy has emerged one of the prominent issues across the board. The UNICEF statistics reported that regardless of significant developments in the last 20 years, Pakistan positions towards the lowest among other Asian countries with respect to neonatal mortalities. It has recommended that in future, all para medic should be fully qualified for safe undertaking of both the laparoscopic as well as open surgery administration of ectopic pregnancy. The surgeons must be capable in operational laparoscopy including the safely use of bi and mono-polar diathermy. They must also be maintained with adequate modern apparatus to enable safe surgeries.

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Roles and Contribution of Authors:

- Dr. Jabeen Atta collected the data, references and did the initial writeup
- Dr. Zubair Ahmad Yousfani as a corresponding author helped in collection of data, and also helped in introduction writing
- Dr. Khenpal Das critically review the article and made the useful changes
- Dr. Ghullamullah Rind collected the references, and helped in discussion and conclusion writing

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