

Laparoscopic Management of Dermoid Cyst of Ovary is a Safe Procedure

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ABSTRACT

Background: Dermoid cyst, a common benign neoplasm of ovary in women, needs treatment because of the risk of torsion, rupture, and malignant change. Laparoscopic surgery nowadays is the preferred treatment modality, but the only issue is its safety in case of rupture and spillage of its contents with the risk of chemical peritonitis and malignant dissemination. Aim of the study was to find out the safety of laparoscopic surgery for dermoid cyst of ovary.

Methods: It was a retrospective study done from January 2017 to December 2019. All the women with diagnosis of dermoid cyst of ovary managed laparoscopically either salpingoophorectomy or cystectomy were taken into study. Analysis of size of the cyst operated, the time taken, spillage rate, duration of hospital stay, and post-operative complications especially chemical peritonitis was done.

Results: There were 61 women who had undergone laparoscopic surgery. Laparoscopic cystectomy was done in 68.9% (n=42), laparoscopic salpingoophorectomy in 29.5% (n=18). Mean age of the patient was 31.74 ± 8.38 years. Mean size was 6.21 ± 1.99 cm. Rupture and spillage were observed in 21.3% (n=13) that were > 5 cm in diameter ($X^2 = 3.62, p=0.05$). Larger the size of the cyst, more the surgical time was noted ($X^2=6.26, p=0.04$). Significant difference in mean operating time in case of cyst rupture and spillage ($p=0.004$) was observed. Mean hospital stay was 53.5 ± 1.3 hours. No case of chemical peritonitis was observed with spillage. All cases had histopathology of mature cystic teratoma.

Conclusions: Laparoscopic surgery is safe for dermoid cyst of ovary even with rupture and spillage of its contents.

Keywords: Dermoid cyst; laparoscopy; spillage

INTRODUCTION

Dermoid cysts are the most common benign neoplasm of ovary predominantly seen in young women. It constitutes 25% of all the ovarian neoplasm and 10-15% being bilateral.¹⁻⁴ Most of the time they are asymptomatic but need treatment because of the risk of torsion, spontaneous rupture followed by peritonitis and malignant transformation in 1-3%. Malignant change has been observed more commonly in postmenopausal woman, long standing cyst, and cyst diameter >10 cm.⁵

Treatment modality of dermoid cyst of ovary traditionally has been laparotomy and cystectomy or salpingoophorectomy. With the development of minimally invasive surgery, laparoscopic management of the cysts has definitely decreased the morbidity including pain, scar size, complications and hospital stay. It has been seen that laparoscopic treatment of the cyst has increased the risk of intra-operative rupture and spillage of the contents than laparotomy.³ Hence, this

study has been done to analyze the morbidities related to the spillage of dermoid cyst during laparoscopic management.

METHODS

A retrospective descriptive study was done in Civil Service Hospital of Nepal over a period of three years from January 2017 to December 2019. During the period, 61 patients with the diagnosis of dermoid cyst of ovary, who underwent laparoscopic management were included.

After the clinical evaluation and transabdominal ultrasonography, the diagnosis of dermoid cyst was made and patients were planned for laparoscopic management. Pre-operative evaluation with blood, urine, chest x-ray and electrocardiography was done. Cancer Antigen (CA-125) within normal limits were posted for surgery. Some patients with large cysts, bilateral cysts, and postmenopausal ladies with cyst, Contrast Enhanced

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Computed Tomography (CECT) abdomen and pelvis was done to rule out malignancy.

All the laparoscopic surgeries were done under general anesthesia and endotracheal intubation and by four ports technique. Primary port was opened with open Hasson's technique sub-umbilically or supra umbilically depending on the size of the cyst. After opening the primary port, pneumoperitoneum was created and then opened two ipsilateral ports on left side of the patient and remaining one on the other side. Patient was kept on Trendelenburg position with primary surgeon being on the left side and the assistant on the other side. After putting the ports, inspection of the abdomen was done. Depending on age and presence of ovarian follicle seen during inspection, either salpingoophorectomy or cystectomy was decided. For salpingoophorectomy, the infundibulo-pelvic ligament was divided with bipolar or vessal sealing device or tied when vessal sealing device was not available.

For cystectomy, an incision was given with monopolar hook over the cyst and then extended laterally followed by peeling off the ovarian tissue securing hemostasis. Specimen retrieval was done by putting inside a sterile plastic bag or endobag through the 10mm cannula and decompressing the cyst.

In case of rupture of cyst and spillage of dermoid components, the bag was put inside the abdomen and the dermoid was peeled off from the ovary keeping the dermoid inside the bag in an attempt to decrease amount of the spillage. Thorough peritoneal lavage was done with normal saline around 4-5 litres and when no dermoid tissue was seen we kept a drain of 14gauge (Romovac).

Patients were kept in post-operative ward for 24 hours. On first post-operative period liquid to soft diet and oral antibiotics and analgesics started. Post-operative morbidity especially chemical peritonitis, and duration of hospital stay were noted.

The patients were discharged on second or third post-operative day and followed up on outpatient department

for stapler removal on 8th or 9th day. Confirmation of the dermoid cyst was done with the histopathological report.

The main parameters observed were occurrence of rupture of cyst and spillage during surgery, relation of spillage with size of the cyst and time and hospital stay, postoperative complications especially occurrence of chemical peritonitis.

Ethical clearance was taken from Institutional Review Committee - Civil Service Hospital of Nepal. Data were analyzed by chi-square test for assessing the association between categorical variables. Results of tests with corresponding $p < 0.05$ were considered statistically significant. For continuous variables, values are reported throughout as mean \pm SD, compared means with independent-t test with corresponding $p < 0.05$ were considered significant.

RESULTS

Total 61 cases of laparoscopic surgery for dermoid cyst of ovary were performed during the three years period. Out of them, 93.4% (n=57) had unilateral ovarian cyst and 6.6% (n=4) had bilateral cysts. Laparoscopic cystectomy was done in 68.9% (n=42), laparoscopic salpingoophorectomy was done in 29.5% (n=18), and 1.6% (n=1) had laparoscopy converted to laparotomy followed by salpingoophorectomy. Among them, 96.7% (n=59) had no previous surgery and 3.3% (n=2) had previous surgery. One had previous two cesarean section and the other had previous laparotomy for bilateral dermoid cyst of ovary.

Mean age of the patient was 31.54 ± 8.38 years ranging from minimum 15 years to maximum 60 years. Regarding size of the cysts, mean size was 6.21 ± 1.99 cm with minimum 3cm to maximum 10cm in diameter. Time taken during the surgery with mean 78.6 ± 33.8 minutes, minimum 35 minutes to 180 minutes. Out of 61 patients, 68.9% (n=42) had cystectomy and 31.1% (n=19) had salpingoophorectomy. Majority 78.7% (n=48) had no cyst rupture and spillage of dermoid contents while 21.3% (n=13) had spillage during surgery.

Table 1. Descriptive statistics of patients with dermoid cysts.

	Minimum	Maximum	Range	Mean	Standard Error of Mean	Standard Deviation	Skewness	Standard Error of Skewness
Age (years)	15	60	45	31.54	1.073	8.382	.685	.306
Dermoid size (cm)	3	10	7	6.21	.255	1.993	.466	.306
Operating time (minutes)	35	180	145	78.61	4.330	33.815	.876	.306
Hospital stay (hours)	48	72	24	53.51	1.303	10.176	1.319	.306

Table 2. Type of surgery and spillage of content.

Type of Surgery	Spillage		Total
	Present	Absent	
Cystectomy	10	32	42
Salpingoophorectomy	3	15	18
Laparoscopy converted to laparotomy and Salpingoophorectomy	0	1	1
Total	13(21.4%)	48(78.6%)	61

There was no significant difference between the type of surgery and rupture of cysts and spillage. Mean hospital stay was 53.5 ± 1.3 hours with minimum of 48 hours and maximum 72 hours. During the hospital stay, there was no case of peritonitis and no case of readmission after discharge.

On comparing size of the cyst and spillage during the surgery, among ≤ 4 cm size cyst, not a single case had rupture and spillage whereas in > 5 cm diameter cysts there were 13 cases of rupture and spillage of dermoid contents ($X^2 = 3.62$, $p = 0.05$). There were 11.5% ($n = 7$) and 19.7% ($n = 12$) of 10 cm and 8 cm cysts respectively and out of which, 6 cases had rupture and spillage. So there was rupture and spillage of the cyst as the size increase. Larger the size of the cyst, more the time was consumed during surgery ($X^2 = 6.26$, $p = 0.04$) which was also statistically significant.

Table 3. Spillage of content and operating time.

Intra-operative spillage	Number	Mean Operating Time (minutes)	Standard Deviation	p - Value
Absent	48 (78.6%)	71.46	30.439	0.004
Present	13 (21.4%)	105.00	33.603	

The mean \pm SD time spent in cases of no spillage was 71.46 ± 30.43 minutes and mean \pm SD time spent in cases of spillage was 105 ± 33.60 minutes (p -value = $0.004 < 0.05$) which shows there is statistically significant difference between mean surgical time of spillage present and absent.

This could be because of thorough washing needed following the spillage. It was also observed that smaller the size of the cyst, easier the process of enucleation as the cyst had thicker capsule.

There was no significant difference in hospital stay between those that had cyst rupture and spillage

and those that did not. None had chemical peritonitis even in patients with surgical spillage. All cases had histopathology of mature cystic teratoma.

DISCUSSION

Minimally Invasive Surgery (MIS) which includes both laparoscopic and robotic has been developed a lot worldwide and very much common in gynaecological procedures. Though controversy still exists regarding MIS and ovarian cancer, for benign ovarian pathology, MIS is the first choice because of reduced post-operative pain, less post-operative complication such as febrile morbidity, shorter duration of hospital stay and cosmesis.⁶⁻¹⁰ Questions have been raised regarding safety of managing the dermoid cyst of ovary as there has been increased chance of rupture of cyst and spillage during MIS. It is 50-100% in MIS as compared to laparotomy (4-13%)^{2,3,11,12} There has also been the concern of spillage and dissemination of unknown underlying malignancy. As malignancy in mature cystic teratoma ranges 1-3% and is being more common in postmenopausal ladies, size > 10 cm, long standing cyst⁵, only few such cases were done in the present study and none had underlying malignant change in histopathological findings.

In the present study, the spillage was 21.3% which is comparable to other studies.^{13,14} There was no chemical peritonitis probably due to thorough peritoneal lavage. There has been study showing 0.2% rate of chemical peritonitis reported after nine months of surgery.¹⁵ All authors do recommend jet lavage after spillage to prevent peritonitis which had been done in our patients.

The patients who had ≤ 4 cm cyst found to have less chance of rupture than > 5 cm sized which was significant as shown by Godinjak et al and other previous studies also.^{16,17}

In this study, larger the size of the cyst more was the surgical time. This might be because of difficulty in vision as distance between the cyst and telescope is decreased, difficulty in making the circular incision by electrosurgical device and also rupture. Invariably rupture of cyst and spillage needs thorough peritoneal lavage which increase the time duration. However, there was no difference in spillage of cyst contents with post-operative duration of hospital stay.

Main issue of post-operative morbidity with spillage did not occur in the present study as the recommendation of early/immediate removal of the split contents and with thorough washing was followed.¹⁸

CONCLUSIONS

Laparoscopic surgery is safe for dermoid cyst of ovary even with rupture and spillage of dermoid contents. With increase in size of the cyst, the operating time also increases and rupture is more likely. Thorough peritoneal lavage will prevent chemical peritonitis after spillage.

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Competing interests: None declared

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