

# Safety of laparoscopic management of ovarian dermoid cyst

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## Abstract

**Background:** In the recent years, with the advancement of laparoscopic surgery, management of ovarian dermoid cysts is possible with laparoscopic approach. Concerns regarding safety of the procedure has been raised.

**Objective:** To analyze the safety of laparoscopic surgery done for ovarian dermoid cyst at Kathmandu Medical College Teaching Hospital.

**Methods:** This is a descriptive study done from July 2012 to June 2015. All the cases with the diagnosis of ovarian dermoid cyst managed laparoscopically during the study period were enrolled in the study. Thorough history, clinical examination finding and diagnostic modalities were noted. Three port laparoscopy was done for the management of dermoid cyst. Thorough peritoneal lavage with warm saline was done at the end of the procedure in the cases with spillage. Variables like preoperative diagnosis, postoperative diagnosis, and type of surgery performed, rate of spillage, features of chemical peritonitis if any and duration of hospital stay were noted and analyzed.

**Results:** Total 52 cases with the preoperative diagnosis of dermoid cyst were managed with laparoscopy during the study period. Of these, only 46 cases (88.46%) were dermoid cyst on laparoscopy. In majority of the cases (45.65%) diagnosis was incidental by Ultrasound scan done for other indications. Cystectomy was performed in 42 cases (91.30%) and in 4 cases (8.69%) oophorectomy was done. Spillage occurred in approximately 89% of the cases but there were no cases of chemical peritonitis. Duration of hospital stay ranged between 2 to 5 days.

**Conclusion:** Laparoscopic management of ovarian dermoid cyst is a safe procedure.

**Key words:** Dermoid, Laparoscopy, Peritonitis, Spillage

## INTRODUCTION

Benign cystic teratoma commonly also known as dermoid cyst accounts for 95% of germ cell tumors and 25-40% of all ovarian tumors. These tumors are common in younger age group of women accounting for up to 70% of benign ovarian masses in the reproductive years and 20% in postmenopausal women<sup>1-2</sup>.

A dermoid cyst may present to emergency department as an acute abdomen due to torsion of its pedicle but are asymptomatic in most of the cases and its diagnosis is incidental during a routine pelvic examination or by ultrasound scan done for other indications<sup>3</sup>.

In ultrasound scan, ovarian dermoid cyst may have a variety of appearances characterized by echogenic

sebaceous material and calcification and typically contain a hypo echoic attenuating component with multiple small homogeneous interfaces<sup>4</sup>.

The definitive treatment for ovarian dermoid cyst is surgical removal of cyst. The fate of untreated dermoid cyst can vary from remaining asymptomatic to developing complications like torsion, rupture, peritonitis. The cyst may develop into malignant transformation in rare instances<sup>3,5,6</sup>. Traditional approach of treating dermoid cyst has been cystectomy or oophorectomy through a laparotomy with strict instruction to avoid spillage of the content of the cyst in the peritoneal cavity. In recent times with advent of laparoscopic techniques, more and more of these cysts are being managed by laparoscopic approach<sup>7-10</sup>. However, the safety of laparoscopic approach has been a big concern and there are controversies regarding the best surgical approach to manage ovarian dermoid cyst. Concerns like risk of chemical peritonitis following spillage of content of dermoid cyst which is very likely in laparoscopic approach and possible risk of recurrence if

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cyst wall was incompletely removed were raised on the safety of laparoscopy for management of dermoid cyst<sup>11</sup>.

Over the years, laparoscopic approach has become increasingly acceptable as several studies showed it to be safe for the management of dermoid cyst<sup>7-10</sup>. A recent Cochrane review also favored laparoscopic approach over laparotomy for the management of benign ovarian cyst including ovarian dermoid cysts<sup>12</sup>. Kathmandu Medical College Teaching Hospital started gynecological laparoscopic surgery almost a decade ago and since then it is providing various laparoscopic surgical services including advanced gynecological laparoscopic surgery. This center serves as a referral centre in the country for providing gynecological laparoscopic surgery and thus gets various challenging cases for laparoscopic management. This study was done with the aim to analyze the safety of laparoscopic surgery done for ovarian dermoid cyst in Nepalese population at Kathmandu Medical College Teaching Hospital.

## METHODS

This is a descriptive study done at the department of Obstetrics and Gynecology, Kathmandu Medical College Teaching Hospital for the duration of three years from July 2012 to June 2015.

All the cases admitted with the preoperative diagnosis of ovarian dermoid cyst planned for laparoscopic management during the study period were enrolled in the study after taking informed consent. The cases with the preoperative diagnosis of ovarian cyst other than dermoid cyst and the cases of dermoid cyst managed by laparotomy approach were excluded from the study.

Thorough history including demographic details, clinical examination finding and diagnostic modalities were noted. They were given nothing per oral for at least eight hours before they were taken to operation theatre. All the cases were performed under general anesthesia. Ten millimeter supraumbilical port was made by Hasson's technique and carbon dioxide pneumoperitonem was created. Two ipsilateral five mm port was created in left side lateral to rectus muscle under direct vision avoiding the injury to the inferior epigastric vessel. Per operative findings including any complications during the surgery were noted. Laparoscopic cystectomy or salpingoophorectomy were performed depending upon the size of the cyst for which consent was taken prior to the procedure. Large cyst with very little or absent healthy ovarian tissue were considered for oophorectomy. Monopolar coagulation and atraumatic

dissector were used for dissection of the cyst wall and to achieve hemostasis bipolar coagulation was used. Harmonic scalpel was used whenever there was need for oophorectomy. Endobag was used to retrieve the tissue in cases of smaller cyst which was brought out from primary port. Larger cysts were retrieved through the Minilap suprapubic incision in endobag after deliberate controlled spillage of the content of the cyst. Thorough peritoneal lavage with three to five liters of warm saline was done at the end of the procedure in the cases with spillage of the content. The primary port was closed with vicryl at rectus sheath and skin with stapler. Both the accessory port was closed at skin with stapler. All the tissue retrieved was sent for histopathological examination for the confirmation of the diagnosis. The cases were followed up in the post operative period and any complication encountered during the post operative period was also noted. In the absence of any complications, the cases were discharged on second post operative day. They were followed up at outpatient department between seven to ten days and staples were removed.

Demographic data and variables like preoperative diagnosis, postoperative diagnosis and type of surgery performed, amount of blood loss during surgery, rate of spillage, features of chemical peritonitis if any and duration of hospital stay were noted and analyzed. Data is expressed in frequencies and percentage.

## RESULTS

Total fifty two cases with preoperative diagnosis of ovarian dermoid cyst planned for laparoscopic management were included in the study. The mean age of the study group was 28.5 years (range 17-58 years). In 11.46% of the cases, per operative diagnosis was other than dermoid cyst like chocolate cyst and subserosal myoma. One case of pedunculated subserosal myoma was confused as a case of dermoid cyst by Ultrasound scan. In seven (15.21%) cases, dermoid cyst was bilateral (Table 1). Two cases were converted to laparotomy after the peroperative findings of stage IV endometriosis.

Majority (63.04%) of the cyst were of size 5-7cm. Three cysts were of size more than 10cm (Table 2).

Pain in lower abdomen was the most common presentation followed by infertility. In majority of the cases, the diagnosis was incidental by ultrasound scan done for other indication. Torsion of the cyst pedicle was the presenting diagnosis in approximately seven percent of the cases (Table 3).

Cystectomy and conservation of functional ovarian tissue was done in the majority of the cases. Four cysts which were without much functional tissue left were managed by Oophorectomy. These were larger cyst with size equal to or more than 10cm (Table 4). Tissue retrieval was done through umbilical port in majority of the cases (91.30%) after putting it in endobag made up of sterile surgical gloves. For the rest of the cyst (8.69%) tissue retrieval was done through a minilap incision in the suprapubic region of three to four centimeter size (Table 4).

The entire specimen of all the cases were sent for histopathological examination and the diagnosis of mature cystic teratoma were confirmed in all the cases.

Spillage occurred in 41(89%) cases but there were no cases of chemical peritonitis. Post operative fever occurred in 3 (6.52%) cases and umbilical port infection occurred in 5 (10.8%) cases. Majority of the patient were discharged after 24 to 48 hours of surgery. Three patients with postoperative fever stayed longer.

**Table 1: Per operative diagnosis**

Per operative diagnosis	N (%)
Dermoid Cyst	46 (88.46)
Endometrioma	5 (9.61)
Subserosal myoma	1 (1.92)
<b>Total</b>	<b>52 (100)</b>

**Table 2: Size of the dermoid cyst**

Size	N (%)
<5cm	8 (17.39)
5-7cm	29 (63.04)
8-10cm	6 (13.04)
>10cm	3 (6.52)
<b>Total</b>	<b>46 (100%)</b>

**Table 3: Clinical presentation of dermoid cyst**

Clinical Presentation	N (%)
Pain	17 (36.95)
Infertility	5 (10.86)
Torsion	3 (6.52)
Incidental diagnosis	21(45.65)
<b>Total</b>	<b>46 (100%)</b>

**Table 4: Surgical procedure related variables**

Variables	N (%)
<b>Type of Surgery</b>	
Cystectomy	42 (91.30)
Oophorectomy	4 (8.69)
<b>Tissue retrieval</b>	
Through Umbilical port	38 (82.60)
Through minilap incision	8 (17.39)
<b>Problems during/after Surgery</b>	
Rate of spillage	41(89.13)
Port site infection	5 (10.8)
Post operative fever	3 (6.52)
Peritonitis	0 (0)
Duration of hospital stay	2-5 days

## DISCUSSION

Laparoscopic surgery has become very popular method for almost all kinds of gynecological surgery in the developed world; however, in developing countries, it is yet to become the method of the choice for the majority of the gynecological procedure.

Although laparoscopy for the management of benign ovarian tumors including ovarian dermoid cyst is an established and recommended technique in present time, management of ovarian dermoid cyst by laparoscopic method raised several questions in past<sup>12</sup>. These questions are still raised in the developing countries like Nepal where even today gynecological laparoscopic surgery is performed in few selected institutions only and most of the patients are managed by laparotomy across the country. Studies done across the world have proven its superiority over laparotomy. Laparoscopy is better than laparotomy as it is associated with reduced post-operative pain, reduced febrile morbidity, reduced post operative complications, overall cost and shorter hospital stay<sup>13-15</sup>.

One of the questions raised on laparoscopic management of dermoid cyst was higher possibility of spillage of content of dermoid cyst during laparoscopic approach in comparison to laparotomy. This further raised a very serious question about the resulting chemical peritonitis following the spillage of the content. Studies have shown to have spillage rate during laparoscopy to be significantly high when compared with laparotomy with some studies having the spillage rate as high as 100%<sup>16,17</sup>.

This study has 89% spillage rate comparable with the findings of earlier studies and there were no cases of chemical peritonitis in this study as thorough peritoneal

lavage with 3-4 litres of warm saline was done in all the cases with spillage<sup>7,8,10</sup>.

This finding is also similar with the studies done by Albini et al. where there was no chemical peritonitis in laparoscopy group despite having higher spillage rate<sup>18</sup>. Findings were similar in two recent retrospective studies with >50% cyst content spillage rate but no case of chemical peritonitis<sup>19,20</sup>.

Possibility of long term sequel of spillage like chronic pelvic pain also have been raised but in the study by Albini et al. no cases had persistent pelvic pain after 11-month follow-up in the laparoscopy group despite having higher spillage rate<sup>18</sup>.

In almost 9% of the cases oophorectomy was performed when the cyst size was large without any functional ovarian tissue left and the smaller cyst were managed by cystectomy in this study. Operating time was found to be much less with oophorectomy in comparison to cystectomy. There is no evidence till date as regards to which is the best procedure. The RCOG recommends that the possibility of removing an ovary should be discussed with the woman preoperatively and elective oophorectomy should be considered only if the patient chooses it after knowing the pros and cons of the procedure<sup>12</sup>.

Tissue retrieval for larger cyst was done after deliberate controlled spillage of its content as it would fit inside the relatively small endobag made out of surgical gloves. The reason for using surgical glove endobag was difficulty in getting standard endobag in the local market and also to cut down on the cost. Safety of controlled spillage of dermoid content was shown in study by Hessami et al

and Zanetta et al<sup>21,22</sup>. Approximately 36% of the women in this study group had come with the complaints of pain abdomen and upon investigation, Ultrasound scan diagnosed the cases as dermoid cyst. This finding is comparable with the findings of study done by Kamil et al<sup>11</sup>.

Only approximately 88% of the cases diagnosed preoperatively as ovarian dermoid cyst were actually dermoid as confirmed by intra operative and histopathological findings in this study. This finding is consistent with the findings of study done by Mais et al and Ekici et al where sensitivity of USG in diagnosing dermoid cyst was approximately 60% and 94% respectively<sup>23, 24</sup>. All of the dermoid cysts in the current study were mature cystic teratoma on histopathological study. The question of possibility of malignancy also been raised on safety of laparoscopy for dermoid cyst management. Although dermoid cysts are benign tumors with the very low risk of malignant transformation, a thorough preoperative evaluation with MRI to rule out the possibility of malignancy is recommended in selected cases with presence of high risk factors like post-menopausal status of the patient and larger cyst size<sup>25</sup>. In such cases, with high suspicion of malignancy a laparotomy should be considered if technical expertise to avoid spillage of the content is not available.

## CONCLUSION

Laparoscopic approach is a safe procedure for the management of ovarian dermoid cyst when thorough peritoneal lavage is done in the cases with spillage. It should be considered as the method of choice for the management of ovarian dermoid cyst if expertise for the advanced laparoscopy is available.

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