

## Implementation of Laparoscopic Bilateral Salpingo-Oophorectomy for Breast Cancer Patients in a Surgical Oncology Setting: A Report from Nepal.

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### Abstract

**Introduction:** Breast cancer is one of the common malignancy among women in Nepal, with a rise in incidence among younger, premenopausal patients. A significant proportion are hormone receptor positive (HR+), where ovarian function suppression (OFS) remains a cornerstone of systemic therapy. Bilateral salpingo-oophorectomy (BSO) provides a permanent, compliance-free method of OFS, particularly relevant for metastatic disease, recurrence, or risk reduction in BRCA mutation carriers. Traditionally considered the domain of gynaecologists, laparoscopic BSO can also be safely performed by surgical oncologists with laparoscopic skills, thereby avoiding interdepartmental delays and maintaining continuity of care. This study reports the experience of implementing laparoscopic BSO for breast cancer patients in a surgical oncology unit.

**Methods:** All consecutive patients undergoing laparoscopic BSO between January 2020 and December 2024 in a surgical oncology unit at Bhaktapur Cancer Hospital were included. Data were extracted from a prospectively maintained departmental database. Clinical variables, indications, perioperative details, complications, and histopathology findings were analysed. Data analysis was descriptive, using Microsoft Excel (Microsoft Corporation, Redmond, WA, USA).

**Results:** Thirty patients underwent laparoscopic BSO, with a median age of 37 years (IQR: 32–43). The most common indications were metastatic disease (n=14), recurrence (n=8), BRCA mutation pathogenic status (n=5), high-risk disease (n=2) and progression on neoadjuvant chemotherapy (n=1). The median operative duration was 60 minutes (IQR: 53–80). There were no conversions to open surgery, re-explorations, or readmissions. The mean hospital stay was 2.6 days. Histopathological evaluation revealed ovarian metastases in six cases (20%), fallopian tube tuberculosis in one case, mature cystic teratoma in one case, and unremarkable findings in the remaining 22 patients.

**Conclusion:** Laparoscopic BSO performed by surgical oncologists is a safe, feasible, and effective procedure in the continuum of care for breast cancer. It provides definitive ovarian suppression with low morbidity, avoids delays associated with referrals, and ensures continuity of care. These findings support the role of surgical oncologists in integrating laparoscopic BSO into comprehensive breast cancer management.

**Keywords:** Bilateral salpingo-oophorectomy, carcinoma breast, ovarian suppression.

### Introduction

Breast cancer remains the most common malignancy among women worldwide and is a leading cause of cancer-related mortality, particularly in low- and middle-income countries. Hormone receptor positive (HR+) tumours account for a significant proportion of breast cancer cases, and their growth is driven by estrogen and progesterone signalling.<sup>1</sup> The suppression of ovarian function, thereby

reducing circulating estrogen levels, has long been recognized as an effective therapeutic approach in premenopausal women with HR+ disease.<sup>2</sup>

The concept of endocrine manipulation in breast cancer dates back to 1896, when Sir George Beatson first reported tumor regression following bilateral oophorectomy in a patient with advanced breast cancer.<sup>3</sup> Over subsequent decades,

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endocrine therapy evolved with the introduction of pharmacological agents such as selective estrogen receptor modulators (e.g. tamoxifen), aromatase inhibitors, and gonadotropin-releasing hormone (GnRH) analogues. Current international guidelines endorse ovarian function suppression (OFS) as a key component of systemic therapy in premenopausal women with high-risk early breast cancer, recurrent disease, or metastatic hormone receptor positive breast cancer.

OFS can be achieved medically, radiologically, or surgically. Among these, bilateral salpingo-oophorectomy (BSO) offers a definitive, one-time intervention, eliminating compliance issues associated with long-term use of GnRH analogues.<sup>4</sup> Surgical oophorectomy is particularly indicated in women with metastatic HR+ disease, those at high risk of recurrence, and carriers of germline BRCA mutations who require prophylactic risk-reducing surgery. The choice of surgical approach has shifted markedly with the advent of minimally invasive surgery, and laparoscopy is now the preferred method for performing BSO owing to its shorter recovery time, reduced postoperative pain, and low complication rates.<sup>5</sup>

Traditionally, oophorectomy has been performed by gynaecologists, but there is growing recognition that trained surgical oncologists can safely and effectively carry out laparoscopic BSO as part of a comprehensive breast cancer treatment strategy.<sup>6</sup>

It eliminates delays caused by interdepartmental referrals, spares the patient the need to adapt to a new medical team, and fosters continuity of care, enhancing comfort and trust for both patient and treating surgeon when making new clinical decisions. Furthermore, it helps prevent patients from feeling abandoned particularly in the metastatic setting, if care is transferred to a different team. Moreover, in surgical oncology units where laparoscopic skills are routinely applied for gastrointestinal, hepatopancreaticobiliary, or other oncologic procedures, the technical demands of laparoscopic BSO fall well within the operative capabilities of trained surgical oncologist.

In Nepal, there is limited published literature on the implementation of laparoscopic BSO in the context of breast cancer management, and to our knowledge,

there are no reports describing its performance by surgical oncologists in a surgical oncology setting.

The aim of this study is to describe the implementation of laparoscopic BSO for breast cancer patients in a surgical oncology unit and to demonstrate its safety as a means of enhancing overall patient care.

## Methods

All consecutive patients who underwent laparoscopic BSO between January 2020 to December 2024 as a part of breast cancer care in one of the surgical oncology units of Bhaktapur Cancer Hospital were taken in the study. Data were obtained from the prospectively maintained database of the unit. The indication for the procedure, medical history, previous abdominal surgery, complications, surgical details and histopathological reports were analysed. Decision for surgery was made after discussion in tumor board of the hospital. If there was a reason for removing uterus along with BSO then the patients were sent to gynae-oncology clinic for further management.

Data were entered and analysed using Microsoft Excel (Microsoft Corporation, Redmond, WA, USA). Descriptive variables were evaluated using frequency and percentages, while continuous variables were characterised by mean and standard deviation.

This report is a descriptive account of laparoscopic bilateral salpingo-oophorectomy procedures performed as part of routine clinical management within the Surgical Oncology Unit. The study did not involve any experimental interventions, randomization, or deviation from standard of care, and all patient data were anonymized prior to analysis. This is a departmental audit. Written informed consent for the surgical procedure was obtained from all patients.

## Surgical technique

All procedure were carried out under general anaesthesia with endotracheal intubation. Foley's catheter was kept in all cases. The procedure was performed in a head-down position, with right or left tilt applied as needed. The legs were slightly abducted and secured with straps at the pelvis and shoulder guards were used to prevent patient movement. Pneumo-peritoneum was created with

open technique after infra-umbilical camera port insertion and two other metallic ports (10mm and 5mm) were inserted in right lower abdomen. Energy devices used included Harmonic Scalpel® and ENSEAL® (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) and LigaSure™ (Medtronic, Minneapolis, MN, USA) whichever were available at that point of time were used to secure ovarian vessels and other attachments. Ligaclips® (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) were used to secure vessels in case of non-availability of vessel sealing devices. The ovaries and tubes were removed intact as far as possible via umbilical port using a makeshift retrieval bag fashioned from a cut surgical glove and sent separately for histopathological examination. Patients were shifted to ICU after the surgery, oral started after 6 hours and increased as tolerated. Post operative orders included IV fluids and analgesic; no antibiotics were prescribed. Uterine manipulator and drains were not used in any case.

## Results

Thirty patients underwent surgery during the study period; with a median age of 37 years, IQR (32-43). The most common indication is metastatic breast cancer followed by recurrence of disease as shown in table 1.

Table 1 : Clinical profile of patients and indication of surgery

Age	37 years, IQR (32-43)	
Previous lower abdominal surgery		7
Indication of Lap BSO	Metastatic	14
	Recurrence of disease	8
	Risk reducing surgery (BRCA pathogenic)	5
	High risk disease	2
	Progression on NACT	1

The median duration of surgery is 60mins, IQR (53-80), the most common complication being surgical site infection in two patients and there was no readmission as shown in table 2.

Table 2: Surgical and post-operative details

Duration (minutes)	60, IQR (53-80)	
Complications	SSI	2
Hospital stay (mean)	2.6 days	
Readmission	None	
Conversion to open	None	
Re-exploration	None	

There were six cases of metastases found in final histopathological examination and in majority of

cases the final biopsy is unremarkable as shown in table 3.

Table 3 : Histopathological examination

Tuberculosis of fallopian tube	1 (3.33%)
Metastases to ovary	6 (20%)
Mature cystic teratoma of ovary	1 (3.33%)
Unremarkable (Normal)	22 (73.33%)

## Discussion

Breast cancer is one of the common cancers treated in our hospital, with 345 and 260 new breast cancer patient registration in 2019 and 2020 respectively. <sup>7</sup>

There is a rising trend of disease over years and our median age is less than that reported from western world.

Endocrine manipulation forms one of the strong and important means of treating patients with breast cancer. Ovarian suppression can be done by medically, by radiation or by surgically removing the ovary. Surgical removal is the most dependable means and a one-time procedure but carries a difficulty of undergoing the operative procedure.

There have been reported known complications of laparoscopic BSO with some serious complications ranging from blood transfusions to hemoperitoneum requiring laparotomy. <sup>8</sup>

Multiple series have demonstrated low intraoperative blood loss, short operative times, minimal postoperative morbidity, and rapid return to normal activity as in other laparoscopic procedures. Complications such as injury to adjacent organs, port-site infection, or conversion to open surgery are rare when the procedure is performed by experienced laparoscopic surgeons. <sup>6</sup>

Importantly, the procedure does not necessitate specialized gynaecologic equipment beyond standard laparoscopic instrumentation, making it feasible even in surgical oncology units without dedicated gynaecologic services. The most common complications encountered in our series in surgical site infection in 2 patients; both on umbilical port which resolved after stapler removal and dressing in few weeks' times.

It is necessary to send specimen for histopathological examination as studies have shown that the chance of malignancy range from 15 to 20%. <sup>9</sup>

We have sent all specimen to histopathological examination (HPE). Six (20%) patients had metastatic breast disease and 1 (3.33%) patient had fallopian tube tuberculosis. This possibility underlines the importance of careful dissection, handling and removal of specimen using bag and mandates careful pathological assessment. We have used makeshift bag by cutting surgical gloves in all cases for removal of specimen to prevent possible contamination in cases of rupture.

In our series, the majority of patients were metastatic at presentation, a group in which counselling is straightforward and acceptance rates are high. The second most common group comprised patients with recurrent disease, where counselling and acceptance are similarly favourable. The remaining cases involved individuals with pathogenic BRCA mutations or those at high risk. Laparoscopic BSO was not performed at the time of breast cancer surgery in our study, as genetic testing was offered only after primary treatment completion in our set up and recommendation does not clearly select patients with possible adverse histology who benefits from risk-reducing oophorectomy.<sup>10</sup>

The limitations of this study include its single-unit, single-center design and the relatively small sample size, which may limit the generalizability of the findings.

### Conclusion

Our findings indicate that laparoscopic bilateral salpingo-oophorectomy is a safe and feasible procedure when performed by surgical oncologist involved in the comprehensive management of breast cancer, with low complication rates and favourable perioperative outcomes.

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