

■ P-CX-CLI-FEL-001.....

EVALUATION OF RETROPERITONEAL PARAAORTIC LYMPHADENECTOMY IN PATIENTS WITH LOCALLY ADVANCED CERVICAL CANCER

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Objectives: To evaluate the indication of retroperitoneal paraaortic lymphadenectomy in patients with locally advanced cervical cancer, with or without abnormal pelvic or common iliac nodes on imaging.

Study Methods: This retrospective descriptive study included all patients undergoing a retroperitoneal paraaortic lymphadenectomy for locally advanced cervical cancer between January 2005 and December 2011. Descriptive statistics, Kaplan-Meier analysis, Fisher exact test and chi-square test were used.

Results: Fifty-seven patients were included. All had at least a stage 1B2 tumor and squamous carcinoma was present in 79% of cases. Mean age at diagnosis was 48.3 years (29–77). An average of 12 paraaortic nodes were removed (2–33) and 12% of patients had confirmed metastatic nodes on histopathologic analysis. Intra-operative complication rate was 5%. Post-operative complications included 4 simple and 3 infected lymphoceles. Every patient had preoperative imaging (CT-scan 79%; PET-CT 18%; MRI 60%). Abnormal pelvic ($p=0.002$) or common iliac nodes imaging ($p=0.001$) were statistically associated with metastatic paraaortic disease on histopathologic analysis. No metastatic paraaortic node was identified when both pelvic and common iliac imaging were normal. Mean follow up was 33 months (1–69) and 5-year progression free survival was 79%.

Conclusions: Abnormal pelvic or common iliac nodes on imaging are strongly associated with metastatic involvement of the paraaortic nodes. In the presence of normal pelvic and common iliac imaging, our data suggests that there is no indication to the retroperitoneal paraaortic staging in patients with locally advanced cervical cancer.

■ P-CX-CLI-MD-001.....

ADVERSE OBSTETRICAL OUTCOMES ASSOCIATED WITH TREATMENT FOR CERVICAL INTRAEPITHELIAL NEOPLASIA

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Objectives: The objective of this study was to quantify the relationship between adverse obstetrical outcomes and cervical excisional procedures (CEP) [cold knife conization, loop electrosurgical procedure, cryotherapy, laser conization and ablation] as treatment for CIN.

Study Methods: ICES databases containing information on health care utilization were analyzed for the period January 1, 1992 until March 31, 2010. An inception cohort of women with one or more deliveries following exposure to CEP was compared to women referred to colposcopy with a cytologic abnormality not exposed to a CEP. Logistic regression analysis was undertaken to determine odd ratios for adverse outcomes.

Results: For the periods under study, 381,617 women were eligible for study inclusion, of which 180,586 had a delivery. A total of 12,533 women underwent a CEP compared to 14,502 in our comparison cohort – women exposed to colposcopy but no CEP. Distribution of ages at inception was 13 to 19, and follow-up data was available up to age 37. Cohorts were similarly distributed

according to age at first delivery, chronic disease status, urban versus rural distribution and socioeconomic status. Of all CEP performed, 63.3% occurred by age 25. A CEP increased the risk of cervical incompetence (OR 2.55 $p<0.01$), PROM (OR 1.25 $p<0.01$), preterm birth (OR 1.46 $p<0.01$) and the risk of cervical stenosis in a subsequent pregnancy (OR 3 $p<0.01$).

Conclusions: Cervical excisional procedures increase the risk of adverse obstetrical outcomes. Caution must be taken to avoid overtreatment in young women with mild CIN.

■ P-CX-CLI-MD-002.....

IS PREOPERATIVE ROUTINE IMAGING USEFUL FOR DECISION MAKING IN EARLY STAGE CERVICAL CANCER?

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Objectives: To determine circumstances where preoperative CT/MRI would be most useful to direct management in early stage cervical cancer.

Study Methods: All early cervix cancers between 2005–2010 at two tertiary care centers, ages 18–75, tumor size <4cm, and planned for possible surgery after clinical assessment, were analyzed to determine characteristics where MRI and/or CT had a role in changing management. Clinical exam and imaging were compared to final pathology. Statistical analysis included Student t test and chi-square test for continuous and categorical data.

Results: 352 patients (FIGO stage 1B1 or less) were included. 283 (80%) were planned for surgery, while 69 (20%) had undetermined plans after clinical exam. 172 (49%) had a preoperative MRI/CT or both. After imaging, 18 (5%) initially planned for surgery changed to primary chemoradiation, while the 69 undetermined were split between surgery (9%) and chemoradiation (10%). Characteristics where imaging influenced management were tumors >2 cm ($p<0.0001$), visible lesions ($p<0.0001$), and suspicious pelvic/rectal findings ($p<0.0001$). Among 265 patients initially planned for surgery, 32% had imaging which did not change management. MRI had a sensitivity of 35% for outer cervical invasion, and compared to clinical exam 14% FN rate vs 11% for LN involvement ($p=0.49$), and 6% FN rate vs 2% for parametrial disease ($p=0.18$).

Conclusions: MRI and CT scans should not be ordered routinely for all early stage cervix cancers, as a limited number have a change in management based on test results. Preoperative imaging is most useful for those with tumors >2 cm, visible lesions, and suspicious findings on clinical exam.

■ P-CX-CLI-OTH-001.....

OUTCOMES FROM A RADICAL HYSTERECTOMY TRAINING PROGRAM IN A LOW-RESOURCE SETTING

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Objectives: To evaluate the safety of radical hysterectomy surgery in a low-resource setting in Africa.

Study Methods: Data from thirty-three radical hysterectomies performed over 18 months was reviewed. Intraoperative complications, postoperative complications and postoperative voiding were used as surrogate measures to assess the safety of this surgical procedure. These results were compared with published data on complication rates in both a low- and high-resource setting using chi-square analyses.

Results: At presentation, 18 of the radical hysterectomy patients had operable lesions (FIGO Stage IIA or below); 15 more received neoadjuvant chemotherapy for downstaging prior to surgery. Of 33 radical hysterectomies performed, 3 (9.1%) resulted in one or more complications. One patient had a major intraoperative hemorrhage requiring 8 units of blood and ligation of the external iliac vein. Postoperative complications included 1 fascial dehiscence, 1 deep vein thromboembolism, 1 wound infection and 1 fistula. 31 (93.9%) patients voided on their own by postoperative day 5 and all others by postoperative day 10. The complication rates were not statistically different ($p > 0.05$) to those documented in either a high-resource or low-resource setting.

Conclusions: Radical hysterectomy in this setting is a high risk but high reward procedure. If complication rates are too high, continuing with the program may not be justified. This preliminary analysis shows the surgical procedure can be completed safely in this setting. As screening increases in low resource settings, more early stage cancers will be identified and more women will be eligible for curative surgery.

■ P-CX-HPOL-MD-001.....

TEMPORAL TRENDS IN THE RELATIVE SURVIVAL AMONG WOMEN WITH CERVICAL CANCER IN CANADA: A POPULATION-BASED STUDY

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Objectives: Cervical cancer is estimated to affect about 1300 women in Canada in 2011 and 350 are expected to die from this disease. We estimated the trends in the relative survival ratio for patients diagnosed with cervical cancer in Canadian population between 1992–2005.

Study Methods: A flexible parametric model was used to estimate the relative survival ratio. Relative survival ratio is defined as the observed survival among cancer patients divided by the expected survival in the general population. We incorporated age group, histology of tumour, geographical region, and year of diagnosis in the model to predict two- and five-year relative survival ratios.

Results: In total 13424 patients diagnosed with epithelial invasive cervical cancer were included in this analysis with the mean age of 49.3 (SD=16.0) years at the time of diagnosis. The relative survival ratio substantially decreased with age. The histology of the cervical tumour was squamous for 75.4% of cases followed by glandular (18.5%). Other epithelial tumour accounted for only 6.2% of cases. The same pattern was observed for all regions. The glandular cancers had the best survival and the worst survival was observed for other epithelial cancers. Fifty percent of all cases were diagnosed in Ontario.

Conclusions: This is the first report that compares relative survival ratio for cervical cancer among geographic regions of Canada. The relative survival significantly decreased with age. The work indicates that advances in management of women with cervical cancer has improved two- and five-year relative survival ratio.

■ P-ENDO-CLI-FEL-001.....

THE USE OF ADJUVANT CARBOPLATIN AND DOSE-DENSE PACLITAXEL CHEMOTHERAPY FOR THE TREATMENT OF UTERINE PAPILLARY SEROUS CARCINOMA

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Objectives: Uterine papillary serous carcinoma (UPSC) shares histological and clinical features with serous ovarian carcinoma.

It has an aggressive clinical course and can be diagnosed in advanced stage. Evidence is emerging from ovarian carcinoma studies that support the use of carboplatin and dose-dense (weekly) paclitaxel. Patients with UPSC at the Tom Baker Cancer Centre (TBCC) who require chemotherapy are now offered this regimen. The objective of our study was to determine the tolerance/efficacy of dose-dense chemotherapy compared to traditional q21day chemotherapy for the treatment of UPSC.

Study Methods: A retrospective review of all patients with UPSC at the TBCC was performed between 2009 and 2011. Data examined included surgical staging, cycles completed, chemotherapeutic delays, toxicities, recurrence, and survival (standard statistical comparisons were performed).

Results: UPSC patients who received the q21day regimen (group A) were compared to those who received the dose-dense regimen (group B). During this time, 43 patients were diagnosed with UPSC. Twenty-six were either excluded from analysis (8) or did not receive chemotherapy (18). Twelve were in group A, and 5 in group B, corresponding to 72 and 29 chemotherapy cycles, respectively. Most patients completed their regimen; however, there were 11 delays in group A and 1 in group B ($p = 0.13$). Most delays were due to hematologic toxicities. Recurrence and survival data is pending.

Conclusions: Dose dense chemotherapy for UPSC is well tolerated and has a low rate of chemotherapeutic delay. This study supports the use of an alternative adjuvant chemotherapy regimen for patients diagnosed with this aggressive form of uterine carcinoma.

■ P-ENDO-CLI-FEL-002.....

CAN WE SAFELY OMIT PARA-AORTIC LYMPHADENECTOMY FROM THE SURGICAL STAGING OF WOMEN WITH INTERMEDIATE AND HIGH-RISK ENDOMETRIAL ADENOCARCINOMA?

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Objectives: To characterize clinical outcomes in patients with intermediate or high-risk endometrial carcinoma who underwent surgical staging with or without para-aortic lymphadenectomy.

Study Methods: This is a retrospective cohort study of patients with intermediate or high-risk endometrial adenocarcinoma who underwent surgical staging with (PPALN group) or without (PLN) para-aortic lymphadenectomy. Data were collected from hospital charts, Kaplan-Meier curves were generated and univariate and multivariate analyses performed to compare differences in adjuvant therapy, disease recurrence, disease-free survival (DFS) and overall survival (OS).

Results: 118 patients were included in the PPALN group and 139 in the PLN group. Patients in the PPALN group were more likely to receive adjuvant vaginal brachytherapy (25.4% vs 11.5%, OR=2.5, $p = 0.03$) and less likely to receive adjuvant multi-modal combination therapy (17.81% vs 28.8%, OR=0.28, $p = 0.002$). DFS was improved in the PLN group as compared to PPALN (80% vs 62%, $p = 0.02$). OS was equivalent ($p = 0.93$). Patients in the PPALN group who had less than 10 para-aortic nodes removed were twice as likely to recur than patients who had 10 or more para-aortic nodes or patients in the PLN group (HR 2.08, CI 1.20–3.60, $p = 0.009$).

Conclusions: Patients in the PLN group were more likely to receive multi-modal adjuvant therapy and had better DFS than the PPALN group. Pelvic lymphadenectomy followed by adjuvant radiation and chemotherapy may represent an effective treatment option for patients with intermediate or high-risk disease. If systematic para-aortic lymphadenectomy is performed and less than 10 para-aortic lymph nodes are obtained, multi-modality adjuvant therapy should be strongly considered to improve DFS.

■ P-ENDO-CLI-MD-001
FROZEN SECTION CANNOT RELIABLY EXCLUDE LYMPH NODE INVOLVEMENT IN EARLY STAGE ENDOMETRIAL ADENOCARCINOMA

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Objectives: Intraoperative frozen section (FS) may be performed in early stage endometrial carcinoma to exclude features that confer an increased risk of lymph node (LN) metastases, with the aim of identifying patients in whom lymphadenectomy may not be necessary. The objective of this study was to assess the reliability of FS in this setting.

Study Methods: Intraoperative frozen section (FS) may be performed in early stage endometrial carcinoma to exclude features that confer an increased risk of lymph node (LN) metastases, with the aim of identifying patients in whom lymphadenectomy may not be necessary. The objective of this study was to assess the reliability of FS in this setting.

Results: The rates of FIGO grade 1 and 2 carcinoma were comparable between the two groups ($p=0.97$ for FS and $p=0.52$ for PS). The rates of outer MI and LVI were significantly higher in the LN positive group on FS ($p=0.001$) and PS ($p=0.0008$). However, compared to PS, FS underestimated the number of cases with FIGO grade 2, outer MI and LVI both in the LN positive ($Kappa=0.25, 0.69$ and 0.06) and in the LN negative ($Kappa=0.42, 0.70$ and 0.31) groups. At time of FS, LVI was either not reported or accurately perceived in a large proportion of cases.

Conclusions: While outer half MI invasion and LVI are more frequent in cases with positive LNs, inability to reliably recognize LVI in a large proportion of cases on FS renders FS an unreliable method for excluding LN involvement in early stage endometrial adenocarcinoma.

■ P-ENDO-CLI-MD-002
HEALTH-RELATED QUALITY OF LIFE (HRQL) IN WOMEN FOLLOWING ROBOTIC SURGERY FOR ENDOMETRIAL CANCER

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Objectives: Prospective evaluation of surgical and health-related quality of life (HRQoL) outcomes of women with endometrial cancer undergoing robotic-assisted surgery to determine the relationship between BMI and age, and the physical, functional, and psychosocial areas of HRQoL, and patient satisfaction.

Study Methods: During the first two years of the robotics program, data concerning patient demographics and surgical outcomes was collected prospectively. At the first post-operative visit, all participants completed an HRQoL questionnaire. The association between BMI and age, as well as the different HRQoL areas was examined using chi-square and ANOVA.

Results: Overall 109 patients were investigated, 41 patients were 70 years or older and 51 had a BMI of 30 or greater. Following surgery, the mean hospital stay was $1.9 (\pm 1.5)$ days and reported pain level was highest on day 2 with a score of $3.4 (\pm 2.1)$ on a scale of 7. Moreover, two thirds of women reported no pain by the post-operative visit and only 18.2% of women in the 70 years or older cohort used any narcotic for pain control. Results indicated there was little influence of the surgery on HRQoL and women

resumed typical activities within an average of 11 days. Lastly, participant average rate of satisfaction was 6.7 on a scale of 7.

Conclusions: Patients benefited from robotic surgery regardless of age or BMI. This pilot study demonstrates the HRQoL advantages of robotic-assisted surgery for endometrial cancer.

■ P-ENDO-CLI-OTH-001
SENTINEL LYMPH NODE DETECTION AND ACCURACY FOLLOWING INTRA-OPERATIVE CERVICAL INJECTION IN ENDOMETRIAL CANCER

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Objectives: Detection rate and diagnostic accuracy of sentinel lymph node (SLN) mapping using intra-operative cervical injection of patent blue and filtered 99mTc-sulfur colloid (99mTc-SC) in endometrial cancer patients.

Study Methods: Prospective evaluation of all endometrial cancer patients undergoing SLN mapping using patent blue (0.8 mL) and filtered 99mTc-SC (250 μ Ci in 0.2 mL) combined in 1 ml syringes (4 in total) in the O.R.. Two syringes were injected at the 3 o'clock and 2 at the 9 o'clock position in the cervix, one stromal and one submucosal. Patients underwent robotic-assisted lymphatic mapping with frozen section, hysterectomy, BSO, and complete lymphadenectomy, including peri-aortic nodes in grade 2 and 3 tumors.

Results: Between December 2010 and January 2012, 84 endometrial cancer patients underwent SLN mapping. No complications or anaphylactic reactions were noted. 77 of the 84 (92%) patients had at least one SLN detected, 54 out of 84 had bilateral SLN detected and in 14 cases the SLN was in the peri-aortic area. 9 of the 84 (11%) patients had lymph node metastases. The SLN was the only positive node in 33% of the cases with positive nodes. Sensitivity was 80% with 1 false-negative result, yielding a negative predictive value of 99% (95% CI 91–100), and negative likelihood ratio of 0.2 (95% CI 0.036–1.21).

Conclusions: Sentinel lymph node biopsy using intra-operative cervical injection of patent blue and filtered 99mTc-SC in endometrial cancer patients is feasible, safe, and yields encouraging detection rates. Further investigations are planned by the GOC SLN Communities of Practice group.

■ P-ENDO-HPOL-FEL-001
BRIEF FAMILY HISTORY QUESTIONNAIRE FOR IDENTIFICATION OF LYNCH SYNDROME IN WOMEN WITH NEWLY DIAGNOSED ENDOMETRIAL CANCER

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Objectives: Endometrial cancer (EC) is often the sentinel cancer for women with Lynch Syndrome (LS). The Brief Family History Questionnaire (bFHQ) was developed to identify women with EC with family histories suggestive of LS. Our objective was to compare bFHQ with an Extended Family History (eFHQ) and medical records in identifying women with EC for hereditary cancer risk assessment.

Study Methods: All women with newly diagnosed EC were eligible for a prospective screening protocol which included two questionnaires: bFHQ uses 4 self-report items, while eFHQ requires a research assistant and 37 items. bFHQ, eFHQ and medical records were compared for families meeting Amsterdam

II, Society Gynecologic Oncologist (SGO) 20–25% or Ontario Ministry of Health (MOH) testing criteria for LS, using generalized estimating equation logistic regression models.

Results: 119 of 182 eligible patients (65%) consented to the study. Median age was 61 (26–91). Seventeen (16%) met testing criteria by eFHQ while 33 (31%) were flagged by bFHQ. The sensitivity, specificity, PPV and NPV of bFHQ was 88.2%, 79.8%, 45.5% and 97.3%, respectively. There was no significant difference in those meeting Amsterdam II or SGO 20–25% testing criteria between bFHQ, eFHQ and medical records ($p>0.05$) while more women met MOH criteria using bFHQ and eFHQ compared to medical records ($p=0.011$; $p=0.006$).

Conclusions: The patient-administered bFHQ is a highly effective tool in identifying women who meet MOH LS testing criteria and a good screening tool to identify women with EC for further genetic assessment.

■ P-ENDO-HPOL-MD-001

LONG-TERM TRENDS IN THE SURVIVAL OF WOMEN WITH ENDOMETRIAL CANCER IN CANADA: A POPULATION-BASED STUDY

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Objectives: Annually in Canada, uterine cancer affects approximately 4500 women and 790 are expected to die of their disease. To better understand survival trends across the country we undertook this population based study of Canadian women diagnosed with uterine cancer. Long term trends in relative survival were evaluated by age and geographic region of residence.

Study Methods: Women with an ICD-10 code of C54 and endometrial cancer were identified from the Ontario Cancer Registry. They were included if the incident diagnosis occurred between 1992 and 2005, and they were 16 years and older at diagnosis. A flexible parametric model was used to determine relative survival ratio (i.e., the observed survival rate among cancer patients divided by the expected survival rate in the general population).

Results: 18,486 women were diagnosed with endometrial cancer. Mean age was 63.4 (SD=11.8) year. Relative survival decreased with each successive age group cohort of patient. When relative survival was adjusted for age, women in British Columbia had the best outcomes. Five-year survival outcomes improved for each age group cohort during the 1992 to 2005 time frame.

Conclusions: Regional variations in relative survival were identified across Canada for women with endometrial cancer. This suggests that other factors related to the patient or processes of care are involved. Examining these factors in further detail may provide opportunities to improve the care of women with endometrial cancer in Canada.

■ P-OTH-CLI-MD-001

PRELIMINARY EXPERIENCE WITH IMPLEMENTATION OF MULTISPECIALTY ROBOTIC ASSISTED SURGERY (RAS) PROGRAM

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Objectives: Implementation of a multispecialty RAS program in both Gyn Oncology and Urology in a large teaching hospital with limited previous MIS is presented.

Study Methods: A multidisciplinary steering committee and 4 sub committees established. Standardization protocols for all services implemented, including credentialing, anesthesia, and procedure specific steps. Implementation and use of a balanced score card to evaluate performance (including bench marks) which includes the

following domains: financial, patient focused elements, system and individual learning, and internal business processes.

Results: 42 cases have been done to date (Gyn 21/Urology 21). Performance metrics include: mean total OR time (3.41 hrs) for gyn, mean console time (2 hrs), docking time (10 mins). Clinical metrics including major complication rates in Gyn (one vaginal tear), urology (0), transfusion rates in Gyn (1), Urology (0). Length of stay averages in Gyn (< 1 day), Urology (1.5). LOS savings 63. Significant improvement of time performance metrics occurs at 20 cases with 2 hours of console time for each specialty. Reduction in total OR time of 2 hours achieved in the first 20 cases. Updated results will be presented. Training and implementation procedures for the program including training for the surgeons will be presented.

Conclusions: The successful implementation of RAS across disciplines with a team concept and disciplined business processes is possible. We project given the current rate of adoption that our MIS rate endometrial and cervical cancer will go from 15% to 80% in the first year of adoption of this platform.

■ P-OTH-CLI-MD-002

LAPAROSCOPIC OVARIAN SUSPENSION FOR THE PRESERVATION OF OVARIAN FUNCTION IN PREMENOPAUSAL WOMEN RECEIVING PELVIC RADIOTHERAPY

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Objectives: Transposing the ovaries out of the radiation field is an option for preserving gonadal function in patients receiving pelvic radiation. The ovarian follicles are sensitive to DNA damage from ionizing radiation. Laparoscopic ovarian suspension prior to pelvic radiotherapy is effective in the preservation of ovarian function in premenopausal women. It will have lower postoperative morbidity and will not delay time to initiate treatment in women undergoing radiation to the pelvis for various indications. Performing oophorectomy the radiation exposure to ovaries dose is reduced to 5–10%. In terms of ovarian exposure to radiation in 40 years and younger up to 1–50 cGy there is no harm, but with 500 cGy exposure up to 60% of the follicles could be damaged

Study Methods: Prospective cohort study, it also included retrospective data from charts of patients who underwent oophorectomy from September 2005 to September 2011.

Results: Oophorectomy was performed in 13 patients and 11 of them required pelvic radiation treatment for cervical cancer, which was initiated within 2–3 weeks of the procedure. One patient did not need radiation treatment. Three out of 12 patients are deceased. Only one patient required ovarian cystectomy for abdominal pain and another had right oophorectomy done at the time of surgery for recurrent disease. Two women complained of postmenopausal symptoms and one required hormonal therapy.

Conclusions: Ovarian transposition did not delay initiation of treatment in these women undergoing radiation to the pelvis. Our data is small and incomplete to provide meaningful information about ovarian function preservation.

■ P-OTH-CLI-MD-003

THE DEVELOPMENT OF AN INHERITED GYNECOLOGIC CANCER PREVENTION CLINIC: A REPORT ON THE FIRST 100 PATIENTS

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Objectives: Newfoundland has one of highest rates of inherited colorectal cancer in the world and a well-characterised MSH2 founder mutation. Gynecologic cancers are an important part of the Lynch Syndrome. This is a first report from a database of the Newfoundland and Labrador Inherited Gynecologic Cancer Prevention Clinic. The goal of the project is to explore the characteristics of this clinic population and determine how the needs of these patients can be better served as the program develops.

Study Methods: Data was collected on each women referred to the gynecologic oncology service for consultation regarding inherited gynecologic cancer risk. Information regarding mutation testing, screening tests and uptake of prophylactic oophorectomy was collected.

Results: This service has seen gradually increasing numbers over the past 8 years. 107 women have been assessed to date. 42% have a proven mutation: 22 Lynch Syndrome mutations and 23 BRCA 1/ BRCA 2 mutations. Specific mutations in MSH2 (15 cases), MLH1 (5 cases) and MSH6 (2cases) were observed. Twenty-four women are awaiting Lynch Syndrome testing. 27 women underwent prophylactic gynecologic surgery. Surgery in BRCA carriers detected one endometrial hyperplasia and one abnormal tubal p53 signature. No occult cancers were found at the time of 17 surgeries for Lynch Syndrome. One endometrial cancer was detected on screening.

Conclusions: The demand for this service has increased dramatically in the past 4 years. This supports continued efforts to build a co-ordinated system of preventive care for individuals at high risk. The value of gynecologic cancer screening appears limited.

■ P-OTH-CLI-OTH-001

VAGINAL VAULT DEHISCENCE AFTER ROBOTIC HYSTERECTOMY

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Objectives: Vaginal vault dehiscence following robotic-assisted hysterectomy has been attributed to patient characteristics and surgical techniques. Our aim was to analyze risk factors in our patient population, and complement this with a literature review.

Study Methods: We analyzed all robotic surgeries at Jewish General Hospital, in Montreal, Canada between 19 December 2007 and 30 November 2011, and extracted data for patients with vaginal vault dehiscence following robotic-assisted hysterectomy for gynecologic oncology indications. The PubMed literature was reviewed for articles relevant to “gynecologic oncology” and “robotics” with “vaginal cuff dehiscence”. Authors were contacted to obtain missing information.

Results: We identified 6 dehiscences at our institution out of 443 cases. The closures in these 6 were performed using interrupted 1-Vicryl (3 dehiscences out of 156), combination of interrupted 1-Vicryl and 1-Biosyn (2 out of 155), and V-lock (1 out of 95). Associated risk factors included low BMI, adjuvant chemotherapy and/or radiation, and early resumption of sexual activity. Dehiscences occurred regardless of suturing by staff or trainees. Review of operative videos did not reveal a specific etiologic factor, such as excessive cautery. Risk factors from the 15 papers identified in the medical literature, included low BMI, post-operative treatment, and post-coitus triggers. Dehiscences were reported with both interrupted Vicryl and continuous V-lock sutures, but were more common with Vicryl.

Conclusions: Post-operative chemotherapy and radiotherapy, and early resumption of sexual activities are risk factors for vaginal vault dehiscence. Surgical technique, particularly the use of interrupted Vicryl sutures alone deserves further evaluation.

■ P-OV-BSC-FEL-001

MULTI-CENTER GENE EXPRESSION ANALYSIS OF MULLERIAN LOW-GRADE AND HIGH-GRADE SEROUS CARCINOMA HIGHLIGHTS GENES POTENTIALLY INVOLVED IN CHEMOTHERAPY RESISTANCE

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Objectives: Gene expression profiles of mullerian low-grade serous carcinoma (LGSC) and high-grade serous carcinoma (HGSC) were examined to identify differentially expressed genes involved in carcinogenesis and chemotherapy response.

Study Methods: 27 LGSC and 44 HGSC from publicly available datasets were analyzed. All specimens were laser-capture microdissected and were analyzed on Affymetrix U133plus2 gene-chip microarray platform. Differentially expressed genes were filtered and subjected to a t-test with a Benjamini and Hochberg multiple testing.

Results: Unsupervised hierarchical cluster analysis showed segregation of LGSC from HGSC. HGSC tumors previously classified as primary ovarian carcinoma or primary fallopian tube carcinoma clustered together irrespective of their designated origin. 475 probe sets were at least 2-fold different between the LGSC and HGSC. LGSC were found to overexpress KLF4 and its target p21/WAF1 relative to HGSC. These proteins have both tumor suppressive and oncogenic effects.

Conclusions: Our findings support the hypothesis that serous mullerian carcinoma may develop through two different pathways yielding two distinct malignancies—LGSC and HGSC. Furthermore, gene expression analyses demonstrated overexpression of KLF4 and p21/WAF1 in LGSC. The key role of these proteins in proliferation inhibition may contribute to the differential response of LGSC to standard chemotherapy. Similarly, a novel LGSC-associated gene, Clusterin, encodes for a secreted protein previously shown to prevent paclitaxel-induced apoptosis of ovarian cancer cell lines. Suppressing the levels of these proteins may increase clinical response to standard chemotherapy in patients with LGSC. In addition, the genetic profiles identified in this study may potentially be used in developing disease-specific, targeted therapy for LGSC and HGSC.

■ P-OV-BSC-MD-001

NOTCH3 CONFERS RESISTANCE OF OVARIAN CANCER CELLS BY INHIBITING CARBOPLATIN-INDUCED MEK ACTIVATION

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Objectives: The Notch signalling pathway determines cell fate by regulating multiple cellular processes, including apoptosis and epithelial-mesenchymal transition (EMT). Among the 4 Notch receptors, Notch3 is shown to be frequently overexpressed in human ovarian cancer tissues; its expression is associated with chemoresistance of ovarian cancer and poor survival of patients. To understand the molecular mechanisms by which Notch3 render ovarian cancer cells more chemoresistant to carboplatin.

Study Methods: We stably overexpressed the intracellular domain of Notch3 (NICD3, the constitutively active form of Notch3). We treated OVCA429/NICD3 and OVCA429/vector cells with increasing concentrations of carboplatin and examined the viability of cells using the neutral red uptake assay.

Results: Our results showed that stable expression of NICD3 induced the expression of mesenchymal markers and reduced

the expression of epithelial marker E-cadherin compared to the vector control, indicating that activation of Notch3 induces EMT of OVCA429 cells. EMT is shown to be associated with the chemoresistance of cancer cells. The neutral red uptake assay, which showed that OVCA429/NICD3 cells are more resistant to carboplatin than OVCA429/vector cells. Immunoblotting data showed that carboplatin induced more apoptosis in OVCA429/vector cells as demonstrated by more pronounced cleaved PARP and cleaved caspase-3 compared to OVCA429/NICD3 cells. We also found that activation of Notch3 reduced phosphorylation of MEK and ERK induced by carboplatin treatment. Interestingly, an MEK inhibitor (U0126) reduced the carboplatin-induced PARP cleavage in OVCA429 cells

Conclusions: The activation of Notch3 increases the chemoresistance of OVCA429 cells likely by inhibiting the carboplatin activation of MEK/ERK pathway.

■ P-OV-CLI-FEL-001

DOSE-DENSE PACLITAXEL WITH CARBOPLATIN FOR THE TREATMENT OF ADVANCED OVARIAN CANCER: EXPERIENCE AT THE TOM BAKER CANCER CENTRE

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Objectives: Ovarian cancer is the leading cause of death from gynecologic cancers in the Western world. If possible, initial cytoreductive surgery is the treatment of choice, followed by adjuvant chemotherapy, usually with a platinum/taxane combination. Other tumour groups including breast cancer and small cell lung cancer have found success with dose-dense therapies. In 2009 Katsumata authored a phase 3 randomized controlled trial examined the benefit of a dose-dense regimen for treatment of ovarian cancer. Median progression-free survival was longer in the dose-dense treatment group, compared to conventional chemotherapy. At the Tom Baker Cancer Centre, we have been treating patients with advanced ovarian cancer with a dose-dense protocol similar to that described by Katsumata since March 2010. This is noteworthy, as most other centres in North America have not yet established a similar regimen. Our study objective was to determine the feasibility of a dose-dense chemotherapy protocol for treatment of advanced ovarian cancer.

Study Methods: We performed a retrospective chart review of 46 patients undergoing treatment with dose-dense chemotherapy for advanced ovarian cancer. Demographic information, patient characteristics, adverse events and treatment endpoints were recorded.

Results: Fifty-nine percent of women were able to complete the six-cycle protocol as planned with minimal delay. The most common serious adverse events associated with the protocol were fatigue, neuropathy and neutropenia.

Conclusions: A dose-dense paclitaxel with carboplatin chemotherapy protocol for the treatment of advanced ovarian cancer shows promise in terms of progression-free and overall survival. We have shown this protocol to be practical and applicable to our population.

■ P-OV-CLI-MD-001

THE EFFECTS OF ANEMIA AND BLOOD TRANSFUSION ON PATIENTS WITH STAGE III-IV OVARIAN CANCER

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Objectives: The objective of this study was to examine the overall and recurrence free survival in patients with advanced ovarian cancer based on hemoglobin and blood transfusion status.

Study Methods: A retrospective review was performed at the Tom Baker Cancer Centre between 2003 and 2007 on patients with stage 3-4 ovarian, fallopian tube or primary peritoneal cancers. Data was collected on date of diagnosis, recurrence and death, stage, grade, age, type of surgery, optimal debulking, estimated blood loss, hemoglobin (nadir and average levels) and blood transfusions.

Results: 216 patients were included in the final analysis. In the peri-chemotherapy, peri-operative and total groups: 88%, 81% and 95% of patients were anemic, and 9%, 22% and 26% had severe anemia. After adjusting for age, cancer stage, and optimal debulking status, the peri-chemotherapy hemoglobin level as a continuous variable was weakly associated with recurrence-free survival (adjusted hazard ratio (AHR)=0.98 and p=0.03), and as a categorical variable with both recurrence-free survival (AHR=2.49; p=0.003) and overall survival (AHR=1.91; p=0.02). Total number of blood transfusion was also weakly associated with poor recurrence-free survival (AHR=1.06; p=0.03).

Conclusions: Our study is the first retrospective analysis of the effects of anemia and blood transfusion on ovarian cancer. The rates of anemia are higher than previously reported. Although maintaining average hemoglobin above 80 g/L during chemotherapy portends an improved overall survival, blood transfusion does not seem to have any effect. The role of transfusion should therefore be limited to symptomatic patients while giving one unit at a time.

■ P-OV-CLI-RES-001

GEOGRAPHIC VARIATIONS IN TREATMENT AND OUTCOMES OF OVARIAN CANCER IN BRITISH COLUMBIA

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Objectives: There are significant regional differences in survival outcomes across British Columbia among women with ovarian cancer. The age-adjusted hazard ratio for mortality is 1.27 (95% CI 1.08-1.49) in one health authority region compared to the provincial mean.

Study Methods: This was a population-based retrospective cohort study of all incident cases of epithelial ovarian cancer diagnosed in British Columbia from 2005-2008. Health authority regions were compared with the chi-square test for demographic and disease characteristics, as well as treatment practices including assessment by a gynecologic oncologist, rate of optimal debulking, and proportion receiving platinum-based combination chemotherapy. Multivariable Cox regression analysis evaluated the effect of covariates on survival.

Results: There were 854 evaluable patients. Across health authority regions there was a significant difference in the proportion with serous histotype (62.9% to 82.1%, p=0.0434) and Stage IIIC/IV disease (50.3% to 69.4%, p=0.0048). The proportion of patients assessed by a gynecologic oncologist ranged from 58.5% to 80% (p=0.0003). The proportion of patients optimally debulked ranged from 40% to 79.6% (p=0.0036) and the rate of combination chemotherapy ranged from 61.5% to 81.6% (p<0.0001). Cox regression revealed that stage, grade, optimal debulking and combination chemotherapy were significantly associated with survival. Age, histotype, and assessment by a gynecologic oncologist were not significant. The health authority region with the highest mortality had the lowest rate of optimal debulking and combination chemotherapy.

Conclusions: Differences in survival rates for ovarian cancer across British Columbia can be attributed to variations in treatment, particularly rates of optimal debulking and combination chemotherapy.

■ P-OV-CLI-RES-002

UTILITY OF A GYNECOLOGIC DIAGNOSTIC ASSESSMENT UNIT IN THE MANAGEMENT OF PATIENTS WITH ADNEXAL MASSES

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Objectives: To evaluate the efficacy in triaging gynaecology patients referred with adnexal masses incorporating a formal Gynecologic Diagnostic Assessment Unit (DAU).

Study Methods: A DAU has been established at the Ottawa hospital using an accepted protocol incorporating a Risk of Malignancy Index (RMI) score. Patients were triaged to general gynecologists or gyne-oncologists for subsequent management based on the DAU assessment. Patient demographics and pathologic outcomes were abstracted from medical records. The associations between categorical variables were assessed by chi-square tests. Logistic regression models were built to evaluate the predictive value of RMI score, menopausal status, and CA125 on final histologic diagnosis.

Results: 173 patients were evaluated from February 2010 to July 2011. We observe a significant association between cancer diagnosis and surgical treatment by a gynecologic oncologist (chi-square >18, p<0.001). Of the 70 cancer patients triaged by the DAU to a subspecialty service, 63 (90%) were operated on by gyne-oncologists. Of the 33 patients who were referred back to general gynecologists and surgically evaluated, 26 had final benign pathology (79%). Logistic regression models predicting malignancy in this data produced an odds ratio of 8.6 (95% CI of 3.34–22.31, p<0.001) for abnormal CA125, and 5.62 (95% CI of 1.87–16.83, p=0.002) for presentation of 2 or more US abnormalities. In addition, abnormal RMI score of >200 supported an odds ratio of 14.51 (95% CI 5.46–38.50, p<0.001).

Conclusions: Our DAU was effective in triaging most patients with a malignant diagnosis to be managed by gynecologic oncologists.

■ P-OV-HPOL-FEL-001

QUALITY OF GYNECOLOGIC CANCER CARE: TRENDS IN THE POPULATION-BASED LITERATURE

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Objectives: The concept of quality of care as first described by Donabedian in 1966 relies on the measurement of outcomes in relation to the structure and processes of health services. We undertook a review of the population-based literature to identify trends in articles reporting on the quality of health services for gynecologic cancers.

Study Methods: A search strategy was developed to identify all population-based literature published from January 1, 2000, to July 26, 2011, reporting clinical outcomes in relation to structure or process of care. 980 articles were identified, of which 159 full-text articles were retrieved for possible inclusion. Reference lists of included articles were searched. Forty-two articles representing 40 unique studies met inclusion criteria and were reviewed by two gynecologists.

Results: There were 30 studies on ovarian cancer, 9 on uterine cancer, 7 on cervical cancer and 2 on vulvar cancer. Structural

variables were associated with clinical outcomes in 14/18 (78%) studies in ovarian cancer, 1/4 (25%) in uterine cancer, 0/3 in cervical cancer and 1/1 in vulvar cancer. Processes of care were linked to survival in 12/12 studies on ovarian cancer, 4/5 on uterine cancer, 1/4 on cervical cancer and 1/1 in vulvar cancer.

Conclusions: In ovarian cancer, increasing volume and specialization of physicians and hospitals improves survival. The benefit of increasing centralization is less clear for other gynecologic cancers. More population-based studies on uterine, cervical and vulvar cancers will allow for an improved understanding of the impact of structure and process variables on outcomes for these diseases.

■ P-VUL-HPOL-FEL-001

SENTINEL LYMPH NODE BIOPSY IN VULVAR CANCER: A HEALTH TECHNOLOGY ASSESSMENT

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Objectives: Inguinofemoral lymphadenectomy for vulvar cancer is associated with a high incidence of groin wound complications and lymphedema. Sentinel lymph node biopsy (SLNB) is a morbidity-reducing alternative to lymphadenectomy. The objective of this health technology assessment (HTA) is to review the literature to determine clinical effectiveness, cost effectiveness, and organizational feasibility of SLNB in Canada.

Study Methods: A review of the English-language literature from January 1992 to October 2011 was performed across five databases and six grey literature sources. Predetermined eligibility criteria were used to select studies, and results in the clinical, economic and organizational domains were summarized. Included studies were evaluated for methodologic quality using the Newcastle Ottawa Scale (NOS).

Results: Of 825 reports identified, 89 observational studies met eligibility criteria. Overall study quality was poor with a median NOS score of 2 out of 9 stars. Across all studies, the detection rate of the sentinel lymph node (SLN) was 82.2% per groin and the false-negative rate (FNR) was 6.3%. The groin recurrence rate after negative SLNB was 3.6% compared to 4.3% after negative lymphadenectomy, and complications were reduced after SLNB. No economic evaluations were identified comparing SLNB to lymphadenectomy. Safe implementation of SLNB requires appropriate patient selection, detection technique, and attention to the learning curve.

Conclusions: Although study quality is poor, available data suggests implementation of SLNB may be safe and feasible in Canadian centres with adequate procedural volumes, given careful patient selection, technique, and ongoing quality assessment. Cost effectiveness remains to be elucidated.

■ W-OTH-INN-MD-001

DEVELOPMENT OF COMPUTERIZED TEACHING MODULES IN COMMUNICATION SKILLS FOR FELLOWS IN GYNECOLOGIC ONCOLOGY

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Objectives: Studies have demonstrated positive correlation between clinicians' communication skills and patients' experience of their disease. The development of computer-assisted communication skills training modules, to complement formal CanMEDS communicator role instruction, will be described.

Study Methods: GOcomSKIL utilizes a mixed educational model by combining small-group tutorials on challenging communication issues with accessible computerized case-based learning modules. The modules were developed by the staff clinical psychologist and palliative care specialist affiliated with the gynecologic oncology training program at the University of Ottawa, with input from the multidisciplinary clinical team. The cases were constructed to represent challenging clinical scenarios, and were linked within the module to current literature on communication competency. Impact of this training model will be assessed through pre- and post-evaluations and short questionnaire.

Results: Each module focuses on an aspect of effectively communicating bad news and dealing with difficult emotions (setting, perception, information giving, knowledge, empathy, strategy), based on the SPIKES model.

The modules' content will be presented.

Conclusions: Computer-assisted communication skills training modules specific to Gynecologic Oncology are an important part of post-graduate training program. In combination with intensive small group teaching, it is expected to improve fellows' ability to manage challenging clinical situations. These modules are amenable to updates from evolving literature and adaptation to other clinical areas.