Please join us for the trainee paper presentations on
Wednesday May 8, 2019
in the Chan Auditorium
(visit the posters during the breaks and
enter to win a coffee card!)

Reception and Awards Ceremony
at 5:00 pm

All poster and paper presentation awards will be presented during the Awards Ceremony
The Evaluating Maternal and fetal Markers of Adverse placental outcomes (EMMA) clinic – A Clinical Audit

Yan, Ryan; Liauw, Jessica; Boutin, Amélie; Robertson, Julie; Mayer, Chantal

BACKGROUND: The EMMA clinic at BCWH assesses women at-risk for placental disease. Women are stratified by risk factors in early pregnancy. We aim to assess the ability of our referral tools to identify women who develop abnormal placentas and the ability of our clinical assessments to predict placenta-mediated complications.

METHODS: A retrospective chart review was performed on patients seen at the EMMA clinic between April 2014-March 2018. Women were referred based on ≥1 major-risk-factor (MajRF) or ≥3 minor-risk-factors (MinRF). Proportions of normal/abnormal assessments based on placental and uterine artery Doppler characteristics were estimated and compared between RF categories.

Preliminary outcome data were obtained for women who delivered at BCWH. Proportions of complications were compared between normal/abnormal EMMA assessment, stratified by RF. c² and Fisher exact tests were conducted.

RESULTS: Of 725 patients seen during the study period, 321 with MajRF and 158 with MinRF had a complete placental assessment. 54 (16.8, 95%CI 12.7-20.9%) of MajRF patients and 23 (14.6, 95%CI 9.1-20.1%) of MinRF patients had abnormal EMMA assessments (p=0.53).

In MajRF patients who delivered at BCWH, 8/129(6.2%, 95%CI 2.7-11.9%) developed a complication among those with a normal assessment vs. 10/31(32.3%, 95%CI 16.7-51.4%) among those with an abnormal assessment (p=0.0003). In MinRF patients, 2/68(2.9%, 95%CI 0.4-10.2%) vs. 4/15(26.7%, 95%CI 7.8-55.1%) of those with normal and abnormal EMMA assessments, respectively, had complications (p=0.009).

CONCLUSIONS: There were no significant differences in the rates of placental abnormalities in women referred for MajRF or MinRF. Our preliminary outcome data suggests our in-clinic assessments differentiate placenta-mediated complication risks in both groups.
Non-Visualized Pregnancy Losses (NVPLS): Diagnostic Factors and Reproductive Outcome in a Cohort of 1064 Patients with Recurrent Pregnancy Loss (RPL)

Sharma, Sunaina; Lews, M.S.; Elgendi, M; Abdel Kareem, A; Abdelhafez, F; Hashem, A; Bloomenthal, D; Williams, C; Bedaiwy, M.A.

BACKGROUND: Non-Visualized Pregnancy Loss (NVPL) is a recognized category in Recurrent Pregnancy Loss (RPL). It is defined as spontaneous pregnancy loss based on decreasing serum or urinary beta-human chorionic gonadotrophin (hCG) in absence of ultrasonographic or histopathological evidence of pregnancy. The objective of this study is to evaluate the prevalence of couples who experienced only NVPLs in RPL cohort attending tertiary centre and their causes compared to couples who experienced only visualized pregnancy losses (VPLs).

METHODS: Retrospective Chart review was done of 1064 couples referred to BC women's RPL clinic (January 2011-March 2016). Analysis was done using student t-test, Fisher’s exact and chi-squared test. Significance was detected when p<0.05.

RESULTS: 151 (14.19%) couples were found to have only VPLs. The remaining couples 641 (61.28%) had mixture of both. In couples with NVPL group, the total number of losses achieved was 443; 347 (78.33%) were biochemical losses and 96 (21.67%) were Pregnancy of Unknown Location (PUL). Uterine abnormalities were found significantly more often in the VPLs compared to NVPLs (26% vs 12%). There was no significant difference in other systems evaluations between both groups. Patient with NVPLs are more likely to have pregnancy continuation beyond 12 weeks in this cohort compared to VPLs patients (P<0.05).

CONCLUSIONS: Pure NVPLs are frequently encountered in a tertiary referral RPL program. This specific group share the same causes with patients with VPLs. However, they are less likely to be associated with uterine anatomic defects. A larger study is suggested to further characterize NVPLs.
A Retrospective Study on the Use of Dose-Dependent Letrozole to Decrease Cancer Recurrence and Adverse Events in Patients Undergoing Ovarian Stimulation

Harjee, Rahana; Roberts, Jeffrey

BACKGROUND: Cure rates for cancers in young women and men have never been higher, but treatment commonly comes at the cost of their fertility [1,2]. Assisted reproductive technologies can be employed for the banking of gametes and embryos; however, they are associated with supraphysiologic sex hormone levels, which in the case of breast cancer presents the theoretical risks of disease progression [1,3]. In order to minimize the risk of ovarian stimulation, anti-estrogen medications like letrozole have been used as an adjuvant to exogenous gonadotropins to minimize serum estradiol levels [3,4].

METHODS: A retrospective chart review of cancer patients undergoing ovarian stimulation with no letrozole (group A, n=10), and adjuvant use of daily letrozole at 5.0 (group B, n=34) and 7.5 mg (group C, n=61), at a private IVF facility from 2014 to 2018. The primary outcomes were total FSH dose, peak estradiol levels, and oocytes/embryo yield. ANOVA with a post hoc two-tailed t-test assuming equal variance were the statistical methods used to compare outcomes.

RESULTS: Patient age and AFC count was not different between groups. The yield of mature eggs was not statistically different at each letrozole dose; 9.2 ± 6.0, 13.9 ± 6.5 and 12.7 ± 7.2 for groups CA to C respectively (p=0.18). Group C had a lower embryo yield compared to group B (5.2 ± 8.4 vs. 9.2 ± 4.3, p<0.01), however, there was no difference in the number of mature embryos cryopreserved. Total FSH requirements was higher in group C (3740 IU +/- 1351) compared to that of B (2735 IU ± 11202), p<0.001. Mean estradiol levels (pmol/L) were reduced in a dose-response manner with increasing letrozole dose, 7432 ± 4553 for group A, 2072 ± 1656 for group B, and 1445 ±1238 for group C (p<0.00001), and group C lower than group B (p<0.04).

CONCLUSIONS: In fertility preservation for cancer patients, the use of daily letrozole during controlled ovarian stimulation did not have an impact on egg yield. Letrozole did appear to successfully reduce serum estradiol levels in a dose-dependent manner, with lowest levels achieved at 7.5 mg daily. FSH requirement did increase with the highest letrozole dose which we suspect was related to changes in clinical practice.

Higher Blastocyst Implantation Rates in Fresh Versus Frozen Embryos in Good Prognosis, OCP Pretreated Antagonist Cycles

Korkidakis, A; Au, J; Albert, A; Havelock, J

Objective: To compare the outcomes of fresh versus frozen embryo transfers in good prognosis patients undergoing an oral contraceptive pill (OCP) pretreated, antagonist protocol.

Design: Retrospective cohort study.

Materials & Methods: Subjects undergoing their first or second IVF cycle <38 years of age in an OCP pretreated GnRH antagonist protocol with supernumerary embryos available for blastocyst cryopreservation were eligible for analysis. The cohort was divided into two groups based on whether they underwent a fresh vs. frozen primary transfer. Implantation rates were compared using mixed-effects logistic regression to account for the event dependence. Logistic regression was employed to analyze clinical pregnancy rates.

Results: A total of 494 subjects were included in the study. There were no differences in the two groups with respect to age, BMI, baseline ovarian reserve testing, total gonadotropin dosage used, and duration of stimulation. The implantation rate was higher in the frozen-embryo group as compared fresh-embryo group (59.5% and 47.5% respectively; OR 1.62; 95% CI 1.00-2.71; p=0.05). There was a trend towards a higher clinical pregnancy in the frozen-embryo group however it did not reach statistical significance (OR 1.61; 95% CI 0.98-2.71; p=0.06). Despite comparable total gonadotropin dose and days of stimulation, the frozen-embryo group had higher levels of peak estradiol, number of oocytes collected, and number of embryos cryopreserved.

Conclusions: Among good prognosis patients undergoing IVF with an OCP pretreated antagonist protocol, frozen-embryo transfer was associated with improved implantation rates. Consideration should be given to a primary frozen blastocyst transfer in good prognosis patients undergoing OCP pretreated GnRH antagonist IVF treatment.
**Caesarean Section Rates in Medically Complex Mothers at St. Paul’s Hospital**

Bjurman, Natalie; Teng, Flora

**BACKGROUND:** Caesarean section (CS) can be an important life-saving procedure, however, the associated complications can pose significant morbidity. The World Health Organization (WHO) has recommended that CS rates should be <15% for any population. In Canada, the rate of caesarean section has increased from 18.2% in 1992 to 28.2% in 2017. The rising rate of CS is attributed to multiple factors. It has been proposed that the relatively high CS rate at St. Paul’s Hospital (SPH) may be due to its high proportion of complex medical maternity patients.

**METHODS:** Retrospective chart review of one year of deliveries at SPH (2014-1015) assessing the rate of CS. The charts were reviewed extracting data for maternal demographics, obstetrical history, medical history, pregnancy-associated conditions and delivery outcomes.

**RESULTS:** Of the 1501 deliveries, 581 (39%) were CS. After excluding planned/elective CS, there were 1203 deliveries, 23.5% of which were via CS. In this group, those mothers with preexisting maternal medical disorders were associated with a higher emergency CS rate or 34.4% compared to 22.2% of those with no recorded maternal medical disorder (OR 1.85, 95% CI1.24 to 2.73). In a subgroup analysis, individuals with one of select conditions were associated with increased odds of CS. Those who had 2 or more of these conditions had approximately double the odds of CS as those with one disorder.

**CONCLUSIONS:** Preexisting maternal medical disorders are associated with increased rates of CS at this site. Maternal medical history and risk factors should be considered in the efforts to improve intrapartum care and set reasonable expectations for patients.

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**The Three Delays Framework for Understanding Maternal Mortality Determinants Revisited**

Kinshella, Mai-Lei Woo

**BACKGROUND:** Globally, 830 women die from pregnancy or childbirth related complications every day and almost all of these deaths occur in low-resource settings. In seeking to understand factors that contribute to maternal death, Thaddeus and Maine (1994) published the landmark Three Delays Framework, which identified the delays in deciding to seek care, reaching care and adequate treatment at the facility. The objective of this study is to map the development of the Three Delays Framework to better understand its assumptions and implications.

**METHODS:** A literature review was undertaken to examine the body of theory accumulated in regards to the Three Delays Framework. A citation reference search between 1994-2018 was conducted in the Web of Science Core Collection and snowballing approach was employed explore to reference lists. Findings were narratively synthesized and graphically mapped using Microsoft Word and Excel.

**RESULTS:** The citation reference search found 983 publications, with each five year period doubling the previous period. The Three Delays Framework contains four implicit assumptions that 1) women are giving birth at home, 2) all pregnant woman are at risk for serious complications, 3) the vast majority of deaths are due to direct causes, and 4) time is the key factor.

**CONCLUSIONS:** A review of the development of the Three Delays Framework reveals its sustained impact on how determinants of maternal mortality are conceptualized. There is a gap in considering what may have changed in the last two decades that may impact these assumptions.
Prevalence of Thyroid Autoimmunity and Effect of Levothyroxine Treatment in a Cohort of 1064 Patients with Recurrent Pregnancy Loss

Leduc-Robert, Geneviève; Iews, Mahmoud; Abdelkareem, Amr O; Williams, Christina; Bloomenthal, Dena; Abdelhafez, Faten; Bedaiwy, Mohamed A.

BACKGROUND: The risk of pregnancy loss due to hypothyroidism is reduced when treated with levothyroxine to a target Thyroid Stimulating Hormone (TSH) < 4 mIU/L. Treatment to a target TSH < 2.5 mIU/L, or based on thyroid autoimmunity, may further reduce this risk, although evidence remains mixed.

METHODS: We conducted a retrospective cohort study of 1064 RPL patients. Subjects were classified as either euthyroid (TSH 0.1 - ≤ 2.5 mIU/L), borderline-subclinical hypothyroid (borderline-SCH, TSH 2.5 – ≤ 4 mIU/L), or subclinical hypothyroid (SCH, TSH 4 – ≤ 10 mIU/L). Pregnancy continuation past 10 weeks was compared between those who had: (1) ≥ 2 unexplained pregnancy losses; (2) a subsequent pregnancy with known outcome (3) were either borderline-subclinical hypothyroid (n = 98) or euthyroid (n = 303). Of this cohort, 59% had a thyroid peroxidase antibody (TPOAb) test and 21% pursued treatment.

RESULTS: 72% were euthyroid (721/992), 19.4% (192/992) were borderline-SCH, and 5.4% (54/992) were subclinical hypothyroid (SCH). Prevalence of TPOAb positivity was 41.75% (167/400) in euthyroid, 51.9% (69/133) in borderline-SCH, and 55.9% (19/34) in SCH subjects. Treatment did not improve pregnancy continuation rates in borderline-SCH subjects (p = 0.392). There was no difference in pregnancy outcomes based TPOAb status or treatment for borderline-SCH subjects (p = 0.868), or based on TPOAb status for euthyroid subjects (p = 0.268).

CONCLUSIONS: Thyroid autoimmunity is common and does not confer additional risk for pregnancy loss. There is no benefit of treating RPL patients to a target TSH of ≤ 2.5 mIU/L, irrespective of TPOAb status.

Establishing the Immune Profile of the Ovarian Microenvironment in Endometriosis-associated Ovarian Cancers

Mason, Madeline; Nazeran, Tayyebeh; Gibson-Wright, Bronwyn; Milne, Katy; Ho, Julie; Senz, Janine; Nelson, Brad; Shen, Hui; Anglesio, Michael

Background/objectives: Endometriosis associated ovarian cancers (EAOCs) include clear cell and endometrioid ovarian carcinomas (CCOC and ENOC respectively). EAOCs are typically refractory to standard platinum/taxane chemotherapy, necessitating an alternative strategy. Our objective is to describe the ovarian microenvironment in women with EAOCs. Our focus will be on the immune-environment as it is potentially targetable.

Methods: Multi-color IHC is on-going for quantitative analysis of immune cell populations in EAOC tissue microarrays. Populations being investigated include B-cells (CD79/CD20), macrophage (CD68/PDL1/PD1), NK cells (CD56/CD16/PD1), cytotoxic T-cells (CD8/CD3) and regulatory T-cells (FoxP3/CD25/CD8). Data from tumor and stromal compartments are analyzed separately. Whole-transcriptome sequencing in tumor epithelium and stromal compartments is also ongoing. Results will be used to directly cross-validate mcIHC results.

Results: In ENOC samples, macrophage populations (both CD68+ and CD68+/PDL1+), as well as as Foxp3+/CD25+/CD8- and presumed cytotoxic T-cells (Foxp3-/CD25-/CD8+) appear restricted to the stroma (p = 0.0001, 0.004, 0.0001, and 0.04 respectively). In CCOC samples Foxp3-/CD25-/CD8+ cells and Foxp3+/CD25-/CD8- are again significantly confined to the stroma (p = 0.036 and 0.009 respectively), whereas presumed regulatory T-cells (Foxp3+/CD25+/CD8-) are significantly elevated in tumor epithelium (p = 0.0032). We have generated preliminary transcriptome data with CCOC samples. Using CIBERSORT, we found the presence of NK cells appeared to be restricted to the stroma (p = 0.017).

Conclusions: We have been able to identify stromally restricted immune cell populations, including macrophage, NK cells and presumed cytotoxic T-cells. We have also been able to identify tumor infiltrating regulatory T-cells. However, cross-validation between transcriptome profiles and mcIHC are pending.
Evaluation of Surgery Based Adjunct Course to Year 2 Obstetrics and Gynaecology Residency Training

Verma, Pretty; Binding, Carmen; Mehra, Neeraj; Ubhi, Jagdeep

BACKGROUND: Junior learners often feel unprepared transitioning from rotating internship to core clinical duties. Bootcamp-style courses are evidenced as effective preparation. Our aim was to evaluate a novel course developed for Obstetrics and Gynaecology residents in PGY1 training. A 4-week curriculum was developed for essential surgical and clinical skills. We hypothesized that PGY2 residents who completed an adjunct surgical training program the previous year, would report higher rates of confidence with surgical and clinical management than residents who did not receive additional training.

METHODS: A retrospective cohort study design was used to evaluate residents’ self-perceived confidence with surgical skills. Participants included a cohort of residents who completed the surgical adjunct course (trained), and a cohort who did not (untrained). At the conclusion of PGY2, participants completed a 12-question Likert Scale Survey, and provided a qualitative description of their PGY2 surgical and clinical experiences.

RESULTS: Both cohorts had 100% survey response. Mode values were calculated per question for trained and untrained residents. Trained residents reported a higher mode for 9/12 questions. This indicates increased self-rated confidence in these areas. Qualitative analysis was completed on freeform survey feedback, with independent coding completed by two researchers. For trained residents, ‘comfortable’ was coded 10x more often for trained residents. Untrained residents’ dialogues centered on ‘limited exposure’. Statistical analysis with Chi-Square testing showed one question with significance <0.05.

CONCLUSIONS: Junior residents who completed a 4-week surgical bootcamp course reported higher levels of surgical and clinical confidence than those who did not.

Works Cited:

Outcomes of Adjuvant Therapy for Advanced Stage Endometrial Cancer in Lynch Syndrome

McRae, Kathryn; Kwon, Janice

BACKGROUND: Lynch Syndrome is a hereditary cancer syndrome characterized by a high lifetime risk of endometrial cancer due to inheritance of a mutation in one of the mismatch repair (MMR) genes. Deficiency of the corresponding MMR protein could impair the tumour cells’ ability to repair damage caused by chemotherapy and radiation. The hypothesis is that these women may survive longer than those without a mutation.

The objective was to review outcomes of women with Lynch Syndrome diagnosed with advanced stage or high risk early stage endometrial cancer who received adjuvant chemotherapy and/or radiotherapy.

METHODS: This is a retrospective population-based cohort study including patients who received treatment in BC from 2010 to 2017. Kaplan-Meier method estimated survival probabilities.

RESULTS: There were 21 patients in this study, including 3 with Stage IVB, 5 with Stage IIIC, and the remainder with Stage I or II disease. For those with Stage IVB disease, median duration of survival was 53 months. Overall survival probability at 4 years and 9 months was 66% compared to 5 year overall survival in the general population of 15%. For those with Stage III disease, median survival in this group was 83 months, and 5 year overall survival was 80% compared to 50% in the general population.

CONCLUSIONS: Although limited by the low prevalence of advanced stage and high-risk early stage endometrial cancer in Lynch syndrome, there appears to be longer progression free and overall survival in this group compared to expected rates in the general population.
Effects of Endotoxin-induced Inflammation on Uterine Natural Killer Cell Function in Pregnant Mice

St-Germain, Lauren; Castellana, Barbara; Beristain, Alexander

BACKGROUND: In early pregnancy, uterine natural killer cells (uNK) play an important role controlling central processes to pregnancy success such as uterine neo-angiogenesis, spiral artery remodeling, and promoting tolerance towards the fetal antigens. Unlike their peripheral blood counterparts, uNK display a low cytotoxic phenotype. However, recent work has shown that abnormal inflammation during pregnancy can program uNK to acquire cytotoxic properties, similar to peripheral blood NKs, which could promote placental dysfunction and/or fetal death.

While acute bacterial infections are causal to unsuccessful pregnancies, the cellular mechanism(s) that subclinical forms of bacterial infection contribute to adverse pregnancy outcomes is poorly understood. In rodents, exposure to low levels of lipopolysaccharide (LPS), an endotoxin found on the membrane of Gram-negative bacteria, in mid pregnancy results in abnormal uterine inflammation that leads to impairments in uterine artery remodeling, trophoblast invasion, and decreased fetal growth.

METHODS: Low-dose LPS exposure on embryonic day (E)7.5 of mouse pregnancy, and two experimental endpoints (E17.5, E9.5) facilitate examination of placentation and pregnancy outcome and uNK biology. In addition, a smaller cohort of pregnant mice were injected with a high-dose of LPS to benchmark a positive control.

RESULTS: Preliminary results showed increased resorption rates and decreased fetal weights at E17.5 of mice treated with high-dose LPS compared to control, confirming effects of high-dose LPS on mouse pregnancy.

CONCLUSIONS: A murine model of inflammation in early pregnancy was established and will be used to dissect the roles of NK cells in pregnancy, and how they function under inflammatory insult.

University Students Presenting to a Specialized Contraception Clinic: An Analysis of the First Year of the UBC IUD Clinic

Cameron, Brianna; Sachedina, Aalia; Nelson, Marna; Tsang-Cheng, Joyce;Todd, Nicole

BACKGROUND: Intrauterine devices (IUDs) are highly effective, long-acting, reversible forms of contraception (LARCs). The SOGC states that IUDs are as effective as permanent contraception methods.

A 2016 study showed that only 55% of American college students at risk for pregnancy use contraception, and they primarily choose less effective, non-LARC methods. Cost and insurance were the most commonly-stated barriers to their preferred method.

In 2017, the UBC IUD clinic was opened to increase access to LARCs. This study aimed to review the cases of clinic patients thus far, in hopes of increasing understanding of the patient population, their needs, and ways to improve the clinic.

METHODS: The study is a retrospective chart review. Charts of UBC IUD clinic patients were identified and obtained from UBC student health services, and reviewed in detail to identify the study outcomes.

RESULTS: 53 patients were booked for insertion. The mean age of the patients was 25, and all were nulliparous. 47% previously used the OCP, 26% barrier or withdrawal methods, and 15% LARCs. 46 IUDs were inserted, with over 80% classified as ‘easy’ insertions. There were 4 unsuccessful attempts and 1 expulsion. There were no infections or uterine perforations.

CONCLUSIONS: The UBC IUD clinic opened last year, and 46 patients underwent successful IUD insertions. They were generally well-tolerated and there were no significant complications. This equivalent-cost model could be adopted by post-secondary institutions across Canada to increase LARC access for Canadian students. Further prospective studies will aim to identify barriers to, motivations for, and satisfaction with using LARC methods amongst our patients.