The 34th Annual Assembly of General Surgeons

An Annual Celebration of General Surgery Training and Research

May 26, 2011
The Sutton Place Hotel
955 Bay Street
Toronto, Ontario

2011
E. Bruce Tovee Invited Lecturer
Michael J. Solomon
MB Bch (Hons) BAO LRCPI LRCSI MSc (Tor) FRACS
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<th>Year</th>
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<td>2011</td>
<td>Michael Solomon</td>
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<td>Murray F. Brennan</td>
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The 34th Annual Assembly of General Surgeons

An Annual Celebration of General Surgery Training and Research

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London Suite – 2nd Floor
7:00 – 8:00 CLOSED SESSION BY INVITATION ONLY
PGY 4-5, Fellows

General Surgery Fellows Symposium
With Professor Michael J. Solomon
Chair: Dr. Amy Gillis - Chief Administrative Fellow

Queen Victoria Foyer (2nd Floor)
7:30 General Registration
With Continental Breakfast

Queen Victoria Ballroom (2nd Floor)
8:15 Welcome
Dr. Andrew J. Smith
The Bernard & Ryna Langer Chair
Division of General Surgery
Dr. Jim Rutka
R.S. McLaughlin Professor and Chair
Department of Surgery

8:30 Paper Session 1
Chair: Dr. Sean Cleary

Queen Victoria Foyer (2nd Floor)
9:15 Poster Session 1 and Break
Dr. Shiva Jayaraman

Queen Victoria Ballroom (2nd Floor)
9:45 Paper Session 2
Chair: Dr. Carol-anne Moulton

Queen Victoria Foyer (2nd Floor)
10:45 Poster Session 2 and Break
Dr. Tim Jackson

Queen Victoria Ballroom (2nd Floor)
11:15 Introduction of the Bruce Tovee Lecturer
Dr. Robin McLeod

“Training Academic Surgeons in Australia”
Professor Michael J. Solomon
Clinical Professor of Surgery, University of Sydney
Head, SOuRCe (Surgical Outcomes Research Centre), University of Sydney
Chairman, Post fellowship Training Board in Colorectal Surgery
RACS & Colorectal Surgical Society of Australasia
Academic Head, Department of Colorectal Surgery, Royal Prince Alfred Hospital, Sydney, Australia

PROGRAM
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<td>Educational Symposium on Fellowship</td>
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<td>Panelists: Drs. Michael Solomon, Paul Grieg, Jon Caulfeild, Frances Wright &amp; Zane Cohen</td>
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<td>Scientific Awards: Dr. Michael J. Solomon</td>
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<td>Graduation Ceremony: Dr. Najma Ahmed</td>
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Paper Session

Chair:
Dr. Sean Cleary

SURGICAL ONCOLOGY FELLOWS 2011
Introduction/Objectives: Malignant peritoneal mesothelioma (MPM) has a dismal prognosis. With current therapies survival is limited. Oncolytic viruses are a promising new therapy for cancer because of their ability to kill tumour cells with minimal toxicity to normal tissues. Our objective was to evaluate the potential of vaccinia virus (VV) to treat MPM when administered alone or as an adjuvant treatment to surgery.

Methods: AC29, AB12 (murine mesothelioma) and NIH/3T3 cells (murine fibroblasts) were used to study the cytotoxicity of VV using MTS and crystal-violet assays. Immunocompetent CBA/J and BALB/c mice were injected intraperitoneally (i.p.) with murine MPM cells, and administered i.p. VV alone or following surgical debulking.

Results: The cytopathic effect of VV on MPM cell lines was significantly increased (viability: 10.5% [AC29], 26.1% [AB12], 73.3% [3T3]) compared to the control. In an orthotopic model, VV induced tumour regression and prolonged median (+9 days [AB12]) and long term survival (33.3% [AC29]). Adjuvant treatment after debulking was not superior to VV alone.

Conclusions: VV selectively kills MPM cells in vitro and leads to improved survival in immunocompetent murine models. Adjuvant treatment to debulking surgery does not increase survival compared to VV alone. These results justify further studies of VV as a novel treatment for MPM.
Introduction: Targeted molecular therapy has become increasingly important in the personalized treatment of metastatic cancer. Recent studies have identified a group of signature genes in cancer metastases that predicts treatment failure. One of these genetic markers is Polo-like Kinase 4 (Plk4), a cell cycle regulator that upregulates RhoGTPase activity. We hypothesize that Plk4 acts as an oncoprotein by increasing cancer cell motility and invasion.

Objective: To determine the effect of decreased level of Plk4 on cell migration rate.

Methods: Real-time migration rates were compared between non-treated Plk4+/+ and Plk4+/- murine embryonic fibroblasts (MEFs). Early passage Plk4+/+ MEFs were transfected with Plk4 SiRNA and real-time migration rates were compared to buffer-only and non-treated controls. Suppression of Plk4 expression by SiRNA was confirmed by real time RT-PCR.

Results: In three independent experiments using different MEF lines of each genotype, Plk4+/- MEF migration was consistently reduced by approximately 40% as compared to Plk4+/+ MEFs. Plk4+/+ MEFs were successfully transfected with Plk4 SiRNA and the expression of Plk4 confirmed to be 60-70% lower than buffer-only controls. The migration rate was lower in the SiRNA treated cells in two consecutive experiments. Fluorescence microscopy demonstrated the specific localization of Plk4 to the protrusions of migrating MEFs, suggesting that it acts in focal microdomains to regulate actin remodelling at the cell perimeter.

Conclusion: Suppression of Plk4 significantly impairs cell migration in MEFs. We are currently examining the effect of reducing Plk4 activity on colorectal cancer cell migration. Plk4 may represent an important molecular target in metastatic cancer therapy, and its inhibition may overcome resistance to other treatment modalities.
Physiologic Evaluation of Donor Lung Injury During Protective Ex Vivo Lung Perfusion in a Porcine Brain Death Model

Jonathan Yeung, Terumoto Koike, Manyin Chen, Matthew Rubacha, Douglas J. Cook, Masaaki Sato, Yasushi Matsuda, Thomas K. Waddell, Arthur S. Slutsky, Mingyao Liu, Shaf Keshavjee

Purpose
Normothermic Ex vivo lung perfusion (EVLP) is a novel method of donor lung preservation for transplantation. Since cellular metabolism is preserved, further evaluation can occur during EVLP. We explored EVLP lung evaluation using a brain-death injury model.

Methods
Brain death was induced and maintained for 10h in 30-35kg pigs and then the lungs cold stored for 24h. EVLP was then performed for 12h in these lungs and in non-injured controls. PO2, lung compliance, airway pressures, and pulmonary vascular resistance (PVR) were measured during EVLP. The left lungs were subsequently transplanted.

Results
Control lungs had stable physiologic parameters. Injured lungs had decreased compliance and increased airway pressures over 12h EVLP. PVR started high in injured lungs then dropped to near control levels. PO2 was high in both groups during EVLP but the injured group had poor oxygenation post-transplant. Lack of PO2 change with injury during EVLP was due to the linear PO2-O2 content curve of an acellular solution. Fall in PVR was due to reduced vascular reactivity.

Conclusion
While PO2 is the de facto in vivo standard for lung function, the EVLP strategy alters this response. This data suggests that transplantation should be performed only when all physiological parameters are stable or improve over at least 4h of EVLP.
Poster Session

Hosted by:
Dr. Shiva Jayaraman

Please refer to “Poster Presentations” section for all poster listings.
Paper Session

Chair:
Dr. Carol-anne Moulton

HPB & TRANSPLANT FELLOWS 2011
Clinical and Economic Comparison of Laparoscopic and Open Liver Resections Using a 2 to 1 Matched Pair Analysis: An Institutional Experience

F. D. Bhojani, A. Fox, K. B. Pitzul, C. Moulton, A. Wei, A. Okrainec, and S. Cleary

**Introduction:** Laparoscopic liver resection (LLR) is an option for patients requiring hepatectomy. The purpose of this study was to review our institutional experience, and perform a cost analysis, compared to Open Liver Resection (OLR).

**Methods:** We evaluated all LLR matching each to 2 OLR for number of segments resected, demographics, and liver histology. Pathology, peri-operative, and cost outcomes were compared including and excluding converted cases.

**Results:** 57 patients underwent attempted LLR. Median blood loss was lower for LLR vs. OLR at 250mL and 500mL respectively (P<.001). Median OR time was lower for LLR at 240min vs. 270min for OLR (p=.141). Median length of stay (LOS) was lower for LLR at 5 days vs. 6 days for OLR (p<.001) with no difference in frequency of complications, ICU admission, or re-operation. Total cost for LLR was lower at $11,376 vs. $12,523 for OLR (p = 0.077). When cases converted to open were excluded, median OR time for LLR shortened to 229min (p=.007) and median LOS shortened to 4 days for LLR (p<.001). Total cost for LLR reduced to $10,857 (p = .003).

**Conclusion:** Our experience highlights clinically and statistically significant reductions in OR time, blood loss, LOS, and overall costs favouring implementation of LLR when feasible.
Trauma Triage in Toronto: The Impact of Distance and Patient Characteristics on Triage to Trauma Centre Care in an Urban Trauma System

Barbara Haas, Aristithes G. Doumouras, David Gomez, Charles de Mestral, Donald M. Boyes, Laurie Morrison, Alan M. Craig, and Avery B. Nathens

Introduction/Objectives: Urban trauma systems are characterized by high population density, availability of trauma centres (TC) and short transport times. Small changes in triage practices might significantly impact lives saved. We evaluated triage practices in Toronto to identify opportunities for improving care delivery.

Methods: This is a retrospective cohort study of adults meeting field trauma triage criteria in Toronto (2005-2010). Travel distances between the site of injury, the closest non-trauma centre (NTC) and the closest TC were estimated using geographic information systems. For patients transported to NTCs, we estimated “differential distance” (DD): the additional travel distance required to transport directly to a TC. Logistic regression was used to analyze the effect of DD and other patient characteristics on triage.

Results: Inclusion criteria identified 898 patients; only 53% were transported to a TC. Falls, female gender and age >65 were associated with transport to NTC. Increased DD was associated with a significantly decreased likelihood of triage to a TC.

Conclusions: Differential distance between the closest NTC and closest TC was associated with lower compliance with triage protocols, even in an urban setting where TCs can be accessed in an acceptable time. These findings suggest a need to explore EMS provider perspectives to understand how triage guidelines are interpreted in the field.
Introduction/Objectives
For patients with curable gastric adenocarcinoma, gastrectomy with D2 lymphadenectomy is accepted as oncologically appropriate. Laparoscopic gastrectomy has been shown to reduce length of stay (LOS) compared to open surgery, but is also associated with decreased lymph node (LN) retrieval. The purpose of this study was to examine the safety and technical outcomes of laparoscopic gastrectomy with D2 lymphadenectomy in a community setting.

Methods
All cases of curative intent laparoscopic gastrectomy performed at two community hospitals from 07/08 to 02/11 were identified, and charts reviewed retrospectively. Patient demographics, LN retrieval, operative time, LOS, morbidity and mortality were examined.

Results
Twenty-nine cases were identified; 69% of patients were male and the median age was 69 (Range=28-84). 65% of cases were subtotal gastrectomy and 35% were total gastrectomy. Median operative time was 230 minutes (Range=132-313). Median LOS was 4 days (Range=2-49). Median number of LNs retrieved was 32 (Range=15-62) and all patients had adequate lymph node assessment according to AJCC staging criteria; 69% of patients had nodal metastases. There were seven major complications including two post-operative deaths.

Conclusions
Laparoscopic gastrectomy with D2 lymphadenectomy can be performed in a community setting with LN retrieval and complication rates comparable to published open and laparoscopic literature. Morbidity was predominantly related to total gastrectomy and a learning curve was seen associated with the method of anastamosis.
Outcomes for Deep Melanoma (>4 mm): An analysis of 1731 cases

Moises Cukier, Calvin H.L. Law, Natalie G. Coburn, and Frances C. Wright

Introduction/Objective: Outcomes and optimal surgical treatment for patients with deep melanoma (>4 mm) have not been well studied. The purpose of our study is to describe the clinicopathological features of this population and analyze predictive factors for survival.

Methods: We performed an analysis of the Surveillance, Epidemiology, and End Results (SEER) database, selecting patients age 18-80, diagnosed 2004-2007, who had truncal or limb melanoma, with a Breslow depth of >4.0 mm. Overall survival (OS) was calculated with Kaplan-Meier methodology and adjusted for prognostic factors using a Cox proportional hazards regression model.

Results: We identified 1731 patients with deep melanoma, 63% were male and the median age was 61. At presentation, 90% had no evidence of metastatic (M0) disease and of these patients, only 11% had clinically positive lymph nodes (LN) and 22% had micrometastasis. The 3-year OS was 60.2%. Multivariate Cox analysis demonstrated that improved survival was associated with age < 60 years [HR 0.599, p < 0.001], no ulceration [HR 0.656; p 0.0003], clinically negative LN [HR 0.339; p < 0.0001], M0 disease [HR 0.335; p < 0.0001] and Breslow 4-8 mm (compared to > 8 mm) [HR 0.667; p 0.0002].

Conclusions: Ulceration, nodal status, metastases, and melanoma depth negatively predict survival; however, thickness was the least influential. Overall, we found that patients with deep melanomas have encouraging outcomes. We advocate that in the absence of metastatic disease, these patients should be offered the same surgical treatment as those with intermediate thickness melanomas.
Please refer to “Poster Presentations” section for all poster listings.
The E. Bruce Tovee Lecture

“Training Academic Surgeons in Australia”

Professor Michael Solomon is a consultant surgeon and Academic Head of the Department of Colorectal Surgery at the Royal Prince Alfred in Sydney. He is a Clinical Professor of Surgery and Director of Colorectal Research, both for Royal Prince Alfred Hospital and the University of Sydney and is a past the President of the Colorectal Surgical Society of Australia & New Zealand (CSSANZ). He is the current Chairman of the Post-FRACS Training Board in Colorectal Surgery of RACS & CSSANZ.

Professor Solomon has extensive experience in clinical surgical research and has published over 150 papers. He is the Founding Director and Head of the Surgical Outcomes Research Centre (SOuRCe) at the University of Sydney which was established as a multidisciplinary, academic research unit dedicated to the advancement of evidence-based surgical practice through the conduct of outcomes-orientated surgical research. He teaches clinical epidemiology and research methods to postgraduate students and surgical fellows and currently supervises three PhD students and 6 Masters students, all of whom are academic surgeons. He has obtained over 9 million dollars in peer-reviewed funding for colorectal research and is actively involved as principal investigator in 9 RCT’s. Professor Solomon is a member of many national and international colorectal advisory committees. He chaired the Australian NHMRC guidelines for the prevention, early detection and treatment of colorectal cancer in 2006. Professor Solomon is on the Editorial Board for the Colorectal Disease, the International Journal of Colorectal Diseases and Diseases of the Colon & Rectum. Professor Solomon’s surgical expertise is in multi-disciplined complex pelvic surgery for advanced and recurrent malignancy, inflammatory bowel disease and pelvic floor disorders as well as laparoscopic colorectal surgery.

2011
E. Bruce Tovee Invited Lecturer
Michael J. Solomon
MB BCh (Hons) BAO LRCPI LRCSI MSc (Tor) FRACS
Paper Session 3

Chair: Dr. Jean Francois Boileau

COLORECTAL FELLOWS 2011
Do MRI Reports Contain the Information Necessary to make Appropriate Decisions for Preoperative Chemoradiation (pre-CRT) for Rectal Cancer?

Eisar Al-Sukhni, David Messenger, Laurent Milot, Mark Fruitman, Selina Schmocker, Charles Victor, Robin McLeod, and Erin Kennedy

Introduction/Objective
Allocation of preoperative chemoradiation (preCRT) for rectal cancer increasingly relies on MRI. This study aimed to determine whether MRI reports contain the information necessary for rectal cancer preCRT treatment decision-making (TDM).

Methods
This population-based study was performed in two parts. Part 1 was a cross-sectional survey of clinician end users’ opinions on specific MRI criteria used in rectal cancer preCRT TDM. Part 2 was an audit of a convenience sample of MRI reports to determine if criteria required by end users are routinely reported.

Results
T-stage, nodes, and CRM were considered “absolutely necessary” for preCRT TDM by 97%, 94%, and 77% of 243 survey respondents, respectively. The audit revealed that 57% (54/94) of reports explicitly stated T-stage and 43% commented on CRM. A third of descriptions were insufficient to estimate CRM. CRM reporting increased with advanced tumor stage (p=0.001), but not with tumor location or level above the anal verge. Although 96% of reports commented on lymph nodes, size was the only criterion used to describe nodes in 54% of cases.

Conclusions
There appears to be a gap between what end users require and what they receive on MRI reports for rectal cancer. Strategies to improve communication between radiologists and end users are warranted.
In the minds of surgeons: understanding their reactions to error

Shelly Luu, Glenn Regehr, Lucas Murnaghan, Steven Gallinger, and Carol-anne Moulton

Introduction/Objectives
Adverse patient events are common yet many surgeons are unprepared for the resulting psychological reactions. This study explored surgeon’s reactions to develop a framework for understanding these reactions.

Methods
Semi-structured 60-minute interviews were conducted with 18 surgeons across specialties, experience levels, and gender to explore recollections of their reactions to adverse events using a reflexive and constructivist grounded theory approach. 28 brief interviews were conducted exploring immediate experiences following adverse events. Saturation of major themes was achieved after purposive and theoretical sampling.

Results
Surgeons perceived themselves to have unique reactions, yet a consistent pattern emerged. Initially, surgeons experience intense feelings of failure and self-doubt, followed with assessments of their contribution towards the event. Lastly, a recovery phase occurred, where coping strategies involving judgment biases and behavioural modification were used. Cumulative effects over several years on the surgeon were also noted.

Conclusions
Surgeons are more consistent in the depth and pattern of their reactions than they realize. Errors are experienced by the surgeon as a personal affront and might be considered best as a form of immediate performance feedback. Our framework also offers a language for surgeons to discuss and reflect on their role in adverse events, providing better teaching and learning opportunities.
Introduction: The clinical benefit of resection for locally recurrent rectal cancer (LRRC) in the presence of distant metastatic (M1) disease is unproven. We evaluated the long-term survival of patients who underwent surgical resection for LRRC, comparing patients with and without M1 disease.

Methods: A retrospective chart review of 55 consecutive patients who underwent resection of LRRC from March 1995 through January 2006. Patients were grouped based on M1 disease: MET group included patients who had distant mets at primary presentation, prior to or synchronous with their LR; NON-MET had no M1 disease prior to their resection for LRRC. The primary end-points were disease-free survival (DFS) and overall survival (OS).

Results: Of the total cohort of 55 patients, 10 patients (18%) were in the MET group and 45 (82%) in the NON-MET. Gender and age were distributed evenly between the two groups. All 55 patients underwent multivisceral resection with microscopically-negative margins. In the MET group, 5-year DFS and OS rates were 10% and 10% respectively with a median survival time of 39 months from the time of LRRC resection. In the NON-MET group, 5-year DFS and OS were 17% and 25% (p < 0.05) with a median survival time of 53 months from the time of LRRC resection. TN stage at the time of primary, preoperative treatment, and interval from primary to recurrence did not predict survival. Of the 45 patients in the NON-MET group, 21 did go on to develop distant metastatic disease following resection for LRRC, with 5-year DFS and OS rates of 0% and 14% respectively. The remaining 24 patients in the NON-MET group had an overall 5-year DFS and OS of 33%.

Conclusions: In this series of patients who underwent resection of LRRC, presence of metastatic disease was a significant predictor of OS and DFS. Although not statistically significant, survival data does trend towards longer OS in patients whose metastases presented metachronously after the diagnosis of LRRC. Carefully selected patients with distant metastases may benefit from resection of LRRC and aggressive metastectomy in addition to conventional adjuvant therapies.
Association of HER2 Status and Ipsilateral Breast Tumour Recurrence after Breast Conservation Therapy for Invasive Breast Carcinoma

Patrick O. Roberts, Robert Tasevski, Nicholas Hwang, Ellen Maki, and David R. McCready

Background
Ipsilateral breast tumor recurrence (IBTR) occurs in approximately 5-10% of patients with invasive breast cancer 5 years following breast–conservation surgery (BCS) with radiotherapy (RT). The impact of HER2 status on the local control of breast cancer is unclear. The purpose of this study was to examine the association of HER2 status and IBTR.

Methods
287 BCS for invasive breast cancer from a prospective database were reviewed. All had negative margins, adjuvant breast radiotherapy and known HER2, estrogen receptor (ER) and progesterone receptor (PR) status. Patients with positive lymph nodes or high risk node negative disease were given third generation chemotherapy regimens. Standard endocrine therapy was given to patients with ER positive tumors. IBTR rates were calculated using the Kaplan-Meier method. Cox proportional hazards models were fit to explore associations of HER2 status and IBTR after adjustment for patient and pathological characteristics.

Results
Twenty-eight (9.7%) of the cancers were HER2 positive, 234 (81.5%) ER positive, and 161 (56.1%) PR positive. Seventeen (60.7%) HER2 positive patients received Trastuzumab. After a median follow-up of 3.6 years (range 0.6-8.9 years), 10 (3.5%) patients had IBTR, five were HER2 positive. HER2 positive patients had a significantly higher 5-year IBTR rate compared to HER2 negative patients (19.1% versus 1.6%, respectively; p=0.0001). Three of the 5 HER2 positive patients with IBTR received trastuzumab. After adjusting for ER status, size of invasive tumor, grade, margin distance and age at surgery, HER2 receptor positive patients continued to have a higher risk of IBTR (hazard ratio [HR] 0.16; p= 0.013).

Conclusion
HER2 receptor positive breast cancer patients who undergo BCS with RT have a higher risk of IBTR compared to HER2 negative patients.
Poster Presentations

in alphabetical order by first author


5. Ileocolic resections for Crohn’s disease: Is there a difference according to the complexity of the disease? Felipe Bellolio, Helen MacRae, Zane Cohen, Brenda O’Connor, Harden Huang, Robin S. McLeod.


7. Evaluation of a patient held record for post-operative surveillance of patients with colorectal cancer. Danielle A. Bischof, Barbara-Ann Maier, Andy J Smith, Margaret Fitch, Frances C. Wright

8. The Effect of Plk4 on cell migration and invasion: A role for MMP expression. Olga Brashavitskaya, Carla O Rosario, James W Dennis, Carol J Swallow


11. Facilitating Bayesian Analyses of Clinical Trials of Novel Lipid Based Approaches to Paediatric Intestinal Failure Associated Liver Disease - An Expert Belief Elicitation Study. Ivan Diamond, Robert Grant, Brian Feldman, George Tomlinson, Paul Pencharz, Simon Ling, Aideen Moore, Paul Wales


13. Outcomes and costs of laparoscopic distal pancreatectomy. Comparison to open resection in a single centre. Adrian Fox, Kristen Pitzul, Faizal Bhojani, Max Kaplan, Carol-anne Moulton, Alice Wei, Ian McGilvray, Sean Cleary, Allan Okrainec


17. Genetic Variants in Carcinogen Metabolizing Enzymes, Cigarette Smoking and Pancreatic Cancer Risk. Ji-Hyun Jang, Michelle Cotterchio, Ayelet Borgida, Steven Gallinger, Sean P. Cleary

19. ‘Dropping the Ball’ in the Surgical Juggling Act: Exploring the Unspoken at Quality Assurance Rounds. Shuk On Annie Leung, Glenn Regehr, Steven Gallinger, Carol-anne Moulton

20. The safe implementation of a multidisciplinary bariatric surgery program in the absence of a formal accreditation system at a tertiary care center in Canada. Carmen Mueller, Chris Daigle, T. Swanson, Allan Okrainec, K. Pitzul, Todd Penner, David Urbach, Tim Jackson

21. A systematic review of the anal fistula plug (AFP) for patients with Crohn’s and Non-Crohn’s related fistula in ano. JM O’Riordan, I Datta, NN Baxter.

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