

Canadian Journal
of **Surgery**

Journal canadien
de **chirurgie**

Vol. 60 (3 Suppl 1) June/juin 2017
DOI: 10.1503/cjs.005717

CSSO 2017

**Canadian Society of Surgical Oncology
Annual Scientific Meeting**

**Eaton Chelsea Hotel
Toronto, Ontario**

April 28, 2017

Abstracts

Diagnostic delays: A problem for young women with breast cancer? *Janice L. Austin, MD¹; Mantaj S. Brar, MD¹; May Lynn Quan, MD².* From the ¹Department of Surgery, University of Toronto, Toronto, Ont.; and the ²Department of Surgery and Oncology, University of Calgary, Calgary, Alta.

Background: Breast cancer in young women is aggressive. Delays in diagnosis and treatment may contribute to the worse outcomes observed in the treatment of breast cancer in young women. The purpose of this study is to determine if there was diagnostic delay for women younger than 40 years with breast cancer in Alberta. **Methods:** We conducted a retrospective review of all women younger than 40 years treated for breast cancer between 2007 and 2010. Patient demographic characteristics, diagnostic modality, time to diagnosis and treatment (surgery or chemotherapy), recurrence and survival were abstracted. Diagnostic delay was defined as 90 or more days from first imaging to pathological diagnosis. **Results:** A total of 344 patient charts were identified and reviewed. The median time from imaging to pathological diagnosis was 5 days (range 0–1825 days). Nineteen (5.5%) women experienced diagnostic delay. Diagnostic delay was associated with age 35 years or younger ($p = 0.025$). Most commonly, delays were attributed to benign imaging ($n = 6$, 31.6%) or to recommendations for follow-up imaging ($n = 5$, 26.3%). Delays were associated with sequential rather than simultaneous imaging ($p < 0.01$). There was no difference in stage at diagnosis ($p = 0.5$). The effect of delay on survival and recurrence varied with follow-up time. **Conclusion:** In total, 5% of women with breast cancer who were 40 years old or younger experienced a diagnostic delay. Diagnostic delays were often attributed to imaging reporting and were associated with variations in preoperative imaging. Future work could focus on assessing the processes of diagnostic workup to decrease rates of delay in young women.

The changing face of thyroid cancer in the province of Manitoba. *Natasha K. Klemm, BSc¹; Andrea Mazurat, MD¹; Richard W. Nason, MD²; K. Alok Patbak, MD².* From the ¹Max Rady College of Medicine, University of Manitoba, Winnipeg, Man.; and ²Head and Neck Surgical Oncology, CancerCare Manitoba, Winnipeg, Man.

Background: Thyroid cancer is the most commonly observed malignant endocrine tumour, representing a diverse group of cancers with variable outcomes. In North America, the incidence of thyroid cancer is increasing by more than 6% per year. Our objective is to determine the trends, clinical presentation, factors influencing thyroid cancer incidence and treatment outcomes in Manitoba from 1970 to 2015. **Methods:** Our study involved a population-based cohort of 3077 consecutive thyroid cancer cases in Manitoba from 1970 to 2015. Disease-specific survival (DSS) and disease-free survival (DFS) were estimated using the Kaplan–Meier method, and the independent influence of various prognostic factors was evaluated using Cox Proportional Hazards models. Cumulative incidence of deaths resulting from thyroid cancer was calculated by competing risk analysis. We considered results to be significant at $p < 0.05$. **Results:** During the study period the age at diagnosis, sex distribution, tumour size and initial tumour stage did not change significantly. The proportion of papillary thyroid cancers increased significantly from 58% (1970–1980) to 88.1% (2011–2015) ($p < 0.001$), whereas that of anaplastic cancer

fell from 5.7% to 1.3% ($p < 0.001$). Ten-year DSS improved from 85.4% to 95.6% (2010) and was adversely influenced by anaplastic histology, male sex, TNM stage IV, incomplete surgical resection and age at diagnosis. **Conclusion:** The incidence of thyroid cancer, particularly papillary cancer, continues to increase in Manitoba, while factors including age at diagnosis, sex distribution, tumour size and initial tumour stage have not changed significantly. Improvements in disease survival are largely attributed to the declining proportion of anaplastic thyroid cancers.

Considering the economic impact of a simultaneous versus staged approach to resection of colorectal cancer with synchronous liver metastases in a publicly funded health care model. *Emily B. Le Souder, BSc¹; Arash Azin, MD²; Dbruvin Hirpara, BHSc¹; Richard Walker, BSc²; Sean Cleary, MD MSc, MPH²; Fayez Queresby, MD, MBA².* From the ¹Faculty of Medicine, University of Toronto, Toronto, Ont.; and the ²Division of General Surgery, University Health Network, Toronto, Ont.

Background: Simultaneous resection for colorectal cancer with synchronous liver metastases (SLM) is an established alternative to a staged approach in select patients. There is a paucity of literature comparing the cost of these 2 surgical approaches. The aim of this study was to compare the simultaneous and staged approach with regard to economic parameters and short-term clinical outcomes in a publicly funded health care model. **Methods:** A retrospective chart review was conducted at a tertiary academic hospital between February 2005 and February 2016. The primary exposure was surgical approach: 1) simultaneous resection and 2) staged resection. The primary outcome was cost per episode of care. Secondary measures included 30-day clinical outcomes. **Results:** Fifty-four cases were identified; 28 in the staged approach and 26 in the simultaneous group. Patient demographic characteristics, including age ($p = 0.49$), sex ($p = 0.20$), body mass index ($p = 0.74$) and American Society of Anesthesiologists class ($p = 0.44$) were comparable between groups. Total (\$20 297 v. \$27 522), operating room (\$6830 v. \$10 376), postanesthesia care unit (\$675 v. \$1182), ward (\$7586 v. \$11 603) and pharmacy (\$728 v. \$1075) costs were significantly less for the simultaneous group than the staged resection group ($p < 0.05$). Total length of stay was shorter in the simultaneous group than the staged resection group (12 ± 8.3 days v. 22 ± 6.9 days, $p < 0.01$). The groups were comparable with regard to Clavien–Dindo scores ($p = 0.96$), 30-day readmissions ($p = 0.44$), morbidity ($p = 0.22$) and mortality ($p > 0.99$). **Conclusion:** Our study confirms equivalent short-term outcomes between a simultaneous and staged surgical approach. The simultaneous approach was associated with significantly lower total cost and a significantly shorter hospital stay.

Long-term outcomes of resection for locoregionally recurrent colon cancer: a multi-centred retrospective descriptive cohort study. *Tyler R. Chesney, MD, MSc¹; Jeffrey J. Metz, BSc (medical student)²; Ashlie Nadler, MD³; Fayez A. Queresby, MD, MBA^{1,4}; Shady Ashamalla, MD, MSc^{1,5}; Sergio A. Acuna, MD^{6,7}; Carol J. Swallow, MD, PhD^{1,8}.* From the ¹Division of General Surgery, Department of Surgery, University of Toronto, Toronto, Ont.; the ²Faculty of Medicine, University of Toronto, Toronto, Ont.; the ³Department of Surgical Oncology, Fox Chase Cancer

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Background: Local recurrence of colon cancer (CC) is less common than that of rectal cancer, and the available literature on patient outcomes is limited. We evaluate short- and long-term outcomes of resection for local recurrence of CC at University of Toronto hospitals. **Methods:** All patients undergoing curative-intent resection for local recurrence of CC were identified from prospective databases (1993–2016). Follow-up included serial colonoscopy and cross-sectional imaging. Overall survival (OS) and time to re-recurrence were estimated using the Kaplan–Meier method and cumulative incidence function. The effect of resection margin on OS was estimated using a Cox proportional hazards model. Mean value imputation was used for missing data: 0% OS, 2.7% re-recurrence. **Results:** Seventy-two patients met the inclusion criteria: 29 (40%) were women, and the median age was 63 years (interquartile range [IQR] 55–72 years). Half of the patients ($n = 37$) underwent multivisceral resection, and R0 margins were achieved in 82% of all patients (59 of 72). There were no postoperative deaths, but morbidity was frequent (30 of 72, 42%). Median follow-up was 36.3 months (IQR 23.2–61.2 months). OS at 5 years was 64% (95% CI 49%–78%). R0 resection was associated with improved OS compared with R1 resection (74% v. 28%, hazard ratio 3.37, 95% CI 1.35–8.41). Re-recurrence following R0 resection occurred in 56% of patients within 5 years. Use of chemotherapy and radiotherapy was limited. **Conclusion:** In a cohort of patients who underwent curative-intent resection of local recurrence of CC, OS at 5 years was greater than 60%. These results compare favourably with the limited outcomes literature on local recurrence of CC. Survival may be further improved by including multimodality therapy in the treatment paradigm.

What is the adequate margin of excision in intermediate-thickness head and neck cutaneous melanoma? *Das Anupam, MS¹; Kristyn Buchko, BSc(Med)²; K. Alok Patbak, MS, FRCSC³.* From ¹Head and Neck Surgical Oncology, CancerCare Manitoba, Winnipeg, Man.; ²Faculty of Medicine, University of Manitoba, Winnipeg, Man.; and the ³Department of Surgery, University of Manitoba, Cancer-Care Manitoba, Winnipeg, Man.

Background: Head and neck cutaneous melanomas (HNCM) are unique owing to their proximity to critical functional and cosmetic units; as a result, achieving wide margins may not be possible. We analyzed the effect of margins of excision on the oncological outcome in a population-based cohort of HNCM. **Methods:** A total of 745 patients with HNCMs that were diagnosed and registered in the Manitoba Cancer Registry between Jan. 1, 1970, and Dec. 31, 2012, constituted our population-based cohort. Patient and tumour parameters and oncological status on July 1, 2016, were assessed. Cause-specific survival (CSS) and

disease-free survival (DFS) were calculated using the Kaplan–Meier method and compared with a log-rank test. Multivariable analysis of patients with intermediate thickness (T2 and T3 tumours) without nodal and distance metastasis were done to determine the impact of margins on disease-specific survival (DSS) using SPSS version 24.0. **Results:** Our cohort included 306 (41.1%) women and 439 (58.9%) men, and the mean age was 67 ± 17.9 years. In total, 381 (51.1%) had stage I disease, 202 (27.1%) had stage II, 56 (7.5%) had stage III and 13 (1.7%) had stage IV disease; 93 (12.5%) couldn't be staged. The CSS was 83.5% and DFS was 69.3% at 5-year follow-up. In intermediate-thickness melanoma, T stage, age and sex didn't have any significant impact on recurrence. Completeness of resection with clear margins had an independent influence on the CSS ($p = 0.007$); however, it was independent of this distance of the margin from the primary tumour. **Conclusion:** The distance of margin from the primary tumour did not seem to have any significant influence on the risk of death from HNCM.

Is there an opportunity for prevention or early diagnosis of peritoneal malignancy from appendiceal neoplasms? An analysis of initial patient presentations. *Matthew J. Furman, MD; Emily Taylor, BSc (medical student); Danielle Bischoff, MD; J. Andrea McCart, MD; Anand Govindarajan, MD.* From the Mount Sinai Hospital, University of Toronto, Toronto, Ont.

Background: Early recognition of peritoneal malignancy from appendiceal neoplasms can facilitate curative-intent surgery. The objective of this study was to evaluate the initial presentation of patients with appendiceal-based peritoneal malignancies to determine if any presentations deserve more focused examination. **Methods:** We conducted a retrospective cohort study using a prospectively collected database at the single referral centre for all peritoneal malignancy cases in the province. All patients with a diagnosis of appendiceal mucinous neoplasms between July 2007 and January 2015 were included. Age, sex and etiology of initial presentation were evaluated. **Results:** A total of 235 patients were identified, 67.3% of whom were women. The mean age of the cohort was 57 years. Overall, 27.7% (65 of 235) initially presented with perforated appendicitis without suspicion of an appendiceal neoplasm, and 32.9% (52 of 158) of the female patients presented with suspected ovarian cancer. Of the patients with perforated appendicitis, 43% (28 of 65) were managed non-operatively. The majority of these patients were age 50–69 years (58.7%), 3.4% were younger than 40 years, 30.2% were 40–49 years and 7.7% were 70 years or older. Of the patients who presented initially with ovarian masses, all were treated with surgery/debulking for suspected ovarian cancer before an appendiceal primary was diagnosed. **Conclusion:** More than one-third of all patients in whom peritoneal malignancy developed from an appendiceal primary initially presented with an ovarian mass or perforated appendicitis managed nonoperatively. Recognition of these presentations may facilitate earlier diagnosis and treatment. Additionally, in patients with perforated appendicitis, discussion of interval appendectomy may be warranted as a means to prevent the development of peritoneal disease.

The impact of surgical modality on self-reported body image, quality of life and survivorship in patients with rectosigmoid

cancer — a mixed-methods study. *Dbruvin H. Hirpara, BHSc¹; Arash Azin, MD²; Virginia Mulcaby, RN³; Ahmed Sami Chadi, MD, MSc^{2,3}; Fayez A. Qureshy, MD, MBA^{2,3}.* From the ¹Faculty of Medicine, University of Toronto, Toronto, Ont.; the ²Division of General Surgery, University of Toronto, Toronto, Ont.; and the ³Division of General Surgery, University Health Network, Toronto, Ont.

Background: The objective of this study is to assess the impact of surgical modality on body image and quality of life (QOL) in surgical patients with rectosigmoid cancer (RSC). **Methods:** We used a mixed-methods approach, with semistructured interviews with 30 patients with RSC between January 2015 and July 2016. Cosmetic outcomes and QOL were assessed using validated body image, and European Organization for Research and Treatment of Cancer (EORTC) QLQ-30 and QLQ-CR29 questionnaires. **Results:** Thirty patients with comparable sociodemographic characteristics ($p > 0.05$) were interviewed and stratified into open ($n = 8$), laparoscopic ($n = 12$) and robotic ($n = 10$) groups. Mean body image scores were significantly lower in patients receiving open surgery ($p < 0.001$). Open surgery was also detrimental to physical function, such as engaging in strenuous activities, prolonged ambulation and self-care ($p = 0.021$). Laparoscopic patients reported superior role ($p = 0.01$) and social function ($p = 0.04$), including the ability to enjoy hobbies, family life and social activities. Surgical modality did not impact emotional and cognitive function, global QOL, sexual enjoyment or function, or symptoms scales assessing micturition, pain and defecation. **Conclusion:** Open surgery for RSC has a detrimental impact on self-reported body image and physical function. While laparoscopic surgery is protective in preserving role and social function, prospective randomized studies are required to validate these findings.

Squamous cell carcinoma with regional metastases to inguinal or axillary lymph nodes: an analysis of outcomes. *George Pang, BSc¹; Nicole J. Look Hong, MD, MSc²; Daniel Kagedan, MD, MSc¹; Frances Wright, MD, MEd².* From the ¹University of Toronto, Toronto, Ont.; and the ²Department of Surgical Oncology, Sunnybrook Health Sciences Centre, Toronto, Ont.

Background: Cutaneous squamous cell carcinoma (cSCC) is increasing in incidence. A minority of cases of cSCC arise on the trunk and extremities and develop isolated regional metastases. Treatment patterns and outcomes of these patients are poorly documented. **Methods:** Demographic and clinical variables were extracted from a single centre's prospectively maintained database of patients with cSCC with lymph node metastases to the axilla or groin. Primary outcomes were overall survival (OS), disease-free survival (DFS) and locoregional recurrence. **Results:** Twenty patients who underwent curative-intent treatment of nodal metastasis were retrospectively reviewed. Fourteen were men, and the cohort median age was 76 years. Median follow-up was 30 months. Median primary lesion size was 30 mm, and median time to nodal metastasis was 24.6 months. Of the 15 patients with axillary nodal metastasis, 12 underwent level 1–3 dissection, and 3 underwent level 1–2 dissections. Of the 5 patients with groin metastasis, 4 underwent superficial dissection, and 1 underwent combined superficial and deep dissec-

tion. Fourteen patients received locoregional adjuvant radiotherapy, and 1 received neoadjuvant radiotherapy. No patient received adjuvant chemotherapy. Following nodal surgery, 5 patients experienced recurrence: 3 had ipsilateral nodal recurrence alone, 1 had nodal and distant metastasis, and 1 had distant metastasis. Of the 4 patients with nodal recurrences, 2 had prior adjuvant radiotherapy after nodal surgery. Median OS was 3.5 years and median DFS was 1.8 years. Actuarial 5-year OS was 48%, and 5-year DFS was 36%. **Conclusion:** Contemporary outcomes remain poor for patients with nodal metastases from cSCC, pointing to a need for new systemic agents.

Abdominal wall reconstruction after oncologic resection: a systematic review. *Cindy Gobeil, MD¹; Sergio A. Acuna, MD²; Jeff Metz, BSc (medical student)³; Stefan O.P. Hofer, MD, PhD^{1,4}; Rebecca Gladdy, MD, PhD^{1,4,5}; Carol J. Swallow, MD, PhD^{1,4,5}; Savtaj Brar, MD, MSc^{1,4,5}.* From the ¹Department of Surgery, University of Toronto, Toronto, Ont.; the ²Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ont.; the ³Faculty of Medicine, University of Toronto, Toronto, Ont.; the ⁴Department of Surgical Oncology, Princess Margaret Cancer Centre, University of Toronto, Toronto, Ont.; and the ⁵Division of General Surgery, Mount Sinai Hospital, Toronto, Ont.

Background: Management of tumours involving the abdominal wall often requires full thickness resection, and restoring integrity can be challenging. Available reconstruction options include synthetic and biologic meshes and autologous tissue grafts. However, no consensus exists regarding which reconstructive method should be used. This systematic review synthesizes the current literature describing outcomes of different approaches for full-thickness abdominal wall reconstruction after oncologic resection. **Methods:** A systematic review of articles involving abdominal wall reconstruction after resection of abdominal wall neoplasms was completed. Databases including MEDLINE and EMBASE were searched through June 2016. Two reviewers independently screened citations, extracted data and assessed quality using the checklist for case series studies by the Institute of Health Economics. A narrative synthesis is presented for early wound complications and incidence of hernias. **Results:** Thirty-three of 529 records were included. None were comparative. Eight studies used synthetic mesh, 3 used biologic mesh, 10 used myocutaneous flaps, and 7 used mixed reconstruction (myocutaneous flaps and mesh). Desmoid tumour was the most frequent indication for full-thickness abdominal wall resection. For synthetic mesh, early wound complications were rare (0%–2%), with no hernias observed. However, early wound complications were more common with concomitant visceral resection. Biologic mesh alone was infrequently described and the rate of seroma was reported to be as high as 33%, with no hernias at follow-up. For myocutaneous flaps, partial flap necrosis was frequent (5%–75%), with hernias in 3 of 67 patients, and wound infections in 8%–33% of patients. **Conclusion:** Hernia rates are low with all reconstruction methods. Early wound complications were more common among patients reconstructed with synthetic mesh after concomitant visceral resection and in those with myocutaneous flaps. These conclusions must be confirmed with direct comparative studies.