

greater in the "no omentum" group (16/28 patients, 57.14%), compared with the "omentum" group (5/15 patients, 33.33%) ($P < 0.01$). No differences were observed regarding age, stage, incidence of radiotherapy, blood loss, length of stay, or mortality.

Conclusion: Use of the omentum as a primary flap, or in combination with a myocutaneous flap, in the reconstruction of complex perineal defects, is associated with a decreased incidence of postoperative complications, strongly supporting the use of the omentum in pelvic floor reconstruction. This work has been supported by a UICC International Cancer Technology Transfer Fellowship granted in 2010.

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POSTER

Strategy for Synchronous and Multiple Liver Metastasis

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Surgical indications for resection of synchronous metastasis from colorectal cancer (CRC) and the optimal timing of hepatectomy are still controversial and widely debated.

Patients: Synchronous and multiple metastatic liver tumours were detected in 57 since May/2005. Our treatment policy has been to perform hepatectomy first, if the resection can be done with no limit on size and number of tumours. However, if curative resection is not, chemotherapy is begun first and timing for the possibility of a radical operation is planned immediately.

Results: (1) In 37 patients whose tumours were located only in the liver, primary tumour resection was performed first in 16 patients, and after tumour-decreasing by chemotherapy, operation was performed in 7 patients. In 20 patients in whom chemotherapy was performed first, after controlling the distant metastasis, hepatectomy was performed in 3 patients, and staged hepatectomy was performed in 10 patients.

(2) Recurrence was detected after hepatectomy in 75.0% of simultaneous resection cases and in 70.0% of staged cases. In the recurrence cases, early detection (within 6 months) after tumour resection occurred in 58.3% of the simultaneous and 14.2% of the staged.

(3) No differences in results of pre- and postoperative liver function tests were found between these groups, and duration of hepatectomy and blood loss were also similar. No deaths occurred, and one incidence of bile leakage was detected in each group.

(4) Median survival time (MST) and 2-year survival rate were significantly better in the hepatic resection cases than in the non-operated cases. There was no significant difference in MST or 2-year survival rate between simultaneous and staged cases.

(5) In 10 staged cases, length of chemotherapy had no effect on pre- or postoperative liver function test results, and survival curves.

(6) Repeat operation was performed for recurrence in 75% of the simultaneous and 14.3% of the staged cases. The average time between first and second operation was 13.1 ± 7.7 months, and 2-year survival was 100%.

Conclusion: Neoadjuvant chemotherapy does not increase the risk of postoperative complications or the surgical difficulties of hepatectomy for colorectal metastases. Treatment strategies for these clinical conditions should include consideration of responsible administration of chemotherapy and surgery.

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POSTER

Right Kocher's Incision – a Feasible and Effective Incision for Right Hemicolectomy

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Background: The choice of surgical incision in the abdomen is determined by access to the surgical field. The purpose of this study is to compare the right subcostal (Kocher's incision) and the midline incision, for patients undergoing right hemicolectomy, by focusing on either short- or long-term results.

Materials and Methods: Between January 1995 and December 2009, hospital records for 213 patients that had undergone a right hemicolectomy for a right-sided colonic carcinoma were retrospectively studied. 113 patients had undergone a right hemicolectomy via a right subcostal (Kocher) incision and 100 via a midline incision. Demographic details, operative data, recovery and oncological parameters were analysed. Wound complications, postoperative complications and the incidence of incisional hernias were also recorded.

Results: Demographic data were similar. The median length of the midline incision was slightly longer than the right subcostal incision (12 cm vs. 10 cm, $p < 0.05$). No significant difference was noted regarding analgesia requirements. The duration of the surgery for the right subcostal incision

group was significantly shorter (median time 70 minutes vs 85 minutes, $p < 0.001$), despite the fact that in four patients the right hemicolectomy was combined with segmentectomies of the right hepatic lobe for preoperatively diagnosed metastatic lesions. The Kocher incision group had a significantly shorter hospital stay (median time 5 days vs 8 days). All patients underwent wide tumour excision. According to the histopathological reports, clear resection margins were obtained in all cases (minimum length of resection margins was 5.7 cm distally for the right subcostal incision group and 5.8 cm for the midline incision group), whereas the median number of lymph nodes harvested was 14 for both groups. There was no significant difference in terms of early postoperative complications between the two groups. With regards to late postoperative complications, incisional hernias were recorded in two patients from the Kocher incision group (1.8%), and in six patients from the midline incision group (8%).

Conclusions: The right subcostal incision approach for right-sided colon cancer is technically feasible, safe and overall very well tolerated. It can achieve the same standards of tumour resection and surgical field accessibility as the midline approach, while reducing postoperative recovery.

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POSTER

Stroma Production Within the Primary Tumour Correlates With Poor Survival for Stage I-II Colon Cancer Patients

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Background: Recent models on metastatic invasion focus on the tumour-"host" interface, in particular the role of the stromal tissue. There is a strong emphasis that CAF's (cancer-associated fibroblasts) are important promoters for tumour growth and progression. We anticipate that changes in the proportion of stroma in the primary tumour reflect progression. The intra-tumour stroma percentage has previously been reported by our group as a strong independent prognostic parameter. CRC patients with a high stroma percentage within the primary tumour have a poorer prognosis. Validation of this parameter in an independent series was necessary, and it has therefore been tested in a cohort of patients from the VICTOR trial (Vioxx in colorectal cancer therapy: definition of optimal regime as anticancer intervention involving selective COX-2 inhibitors).

Methods: Tissue samples from 710 patients participating in the VICTOR trial were analyzed for their stroma percentage using conventional microscopy. Each sample was analyzed by two individual observers in a blinded manner. Tissue samples consisted of 5 µm Haematoxylin and Eosin (H&E) stained sections from the most invasive part of the primary tumour. Stroma-high (>50% stroma) and stroma-low (≤50% stroma) groups were evaluated with respect to survival time.

Results: Overall and disease free survival times (OS and DFS) were lower in the stroma-high population (OS $p < 0.0001$, HR = 1.96; DFS $p < 0.0001$, HR = 2.15). Within the total patient population the five year OS was 69.0% versus 83.4% and DFS 58.6% versus 77.3% for stroma-high versus stroma-low patients. For patients with stage II CRC, OS and DFS were also lower for the stroma-high group (OS $p = 0.034$, HR = 1.95; DFS $p = 0.005$, HR = 2.04). The 5 year OS for this group was 79.8% versus 89.1% and for DFS 71.1% versus 83.3% for stroma-high versus stroma-low patients. Within the stage III CRC group, 5 year OS of 61.7% versus 76.1% was observed and for DFS 50.2% versus 69.4% (OS $p = 0.019$, HR = 1.61; DFS $p < 0.0001$, HR = 1.86) for stroma-high versus stroma-low patients.

Conclusions: This study validates the intra-tumour stroma ratio as an independent prognostic factor of CRC in an independent patient series. Patients with a high intra-tumour stroma percentage have a poorer prognosis. This parameter could be a valuable addition to current high-risk parameters such as TNM-status and MSI status used in routine pathology reporting.

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POSTER

Modified Pseudocontinent Perineal Colostomy – a Special Technique

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Background: Innovative techniques created to restore gastrointestinal perineal continuity after abdominoperineal resection in patients with anorectal cancer include pseudocontinent perineal colostomy, in which the colon is pulled to the perineum and wrapped with a sleeve of stretched colon segment to act as a new sphincter.

Objective: We investigated perineal reconstruction with a modified pseudocontinent perineal colostomy technique.

Design: Prospective cohort study.

Settings: Tertiary care university hospital in Egypt.

Patients: Patients with T2 or T3 anorectal cancer invading the sphincter who underwent Miles abdominoperineal resection and immediate total pelvic reconstruction between 2003 and 2007.

Intervention: Pelvic floor reconstruction by a vertical rectus abdominis myocutaneous flap with modified perineal colostomy pulled through the flap in order to add the high-pressure zone of the flap to that of the colostomy and to create a persistent new anorectal angle.

Main outcome measures: Early and late complications were recorded. Functional results were evaluated at regular intervals by questionnaire, physical examination, and balloon manometry. Continence was graded according to Kirwan. Satisfaction with continence was assessed by questionnaire.

Results: A total of 14 patients (3 women) were included. Tumours were adenocarcinoma (n = 11), squamous cell carcinoma (n = 2), and melanoma (n = 1).

Complete (R0) resection was achieved in all patients without perioperative deaths, major postoperative morbidity, or conversion to permanent iliac colostomy. Early postoperative complications (perineal wound infection, flap dehiscence, and partial perineal stoma necrosis) occurred in the first 4 patients. Late complications occurred in 7 patients, with mucosal prolapse in 3, stomal stricture in 4, and tumour recurrence in 1. Fecal continence progressed consistently with time, and by the end of the first year 8 patients (57%) had complete continence (grade A), 5 (36%) were continent with minor soiling (grade C), and 1 (7%) still had major soiling (grade D). After 6 months, 9 patients (64%) were satisfied with continence; after 1 year, 13 patients (93%) were satisfied. Regular enemas were necessary during the first year to improve soiling, and 8 patients (57%) were not in need after that. At 37 months median follow-up, 8 of 9 evaluable patients (89%) were satisfied with continence (grade A) without regular enemas.

Limitations: This was a preliminary observational study with no control group.

Conclusions: Total orthotopic pelvic reconstruction with autologous tissues transposition to rebuild the principle anorectal continence elements is feasible with minor complications and oncologically safe. This new technique offered high continence satisfaction independent of regular enemas and electrical stimulation.

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POSTER

Results of Salvage Abdominoperineal Resection After Failed Chemoradiation Therapy for Epidermoid Anal Canal Carcinoma – Retrospective Analysis at a Single Institution

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Background: Epidermoid anal cancer represents a rare clinical entity that requires a multidisciplinary approach in order to achieve optimum results. The standard approach to anal canal cancer consists of combined radiation and chemotherapy. Although disease control has been reported to have excellent results, as many as 40% of patients would develop locoregional disease progression. The treatment of choice for patients with persistent or recurrent disease is salvage abdominoperineal resection (APR). The purpose of this study is to review our experience with salvage surgery in this group of patients.

Materials and Methods: Medical records of all patients with anal canal cancer treated from January 1997 to December 2010 in our department were retrospectively reviewed. Nine patients who presented with persistent or locally recurrent anal canal cancer received salvage surgery. Before surgery, all of the patients had received chemoradiation therapy.

Results: A total of 9 patients (7 women, 2 men) with a median age of 59 years (range 40 to 79 years) underwent radical salvage surgery. Six patients were classified as having persistent disease, whereas three patients were classified as having recurrent disease. All of the patients underwent an abdominoperineal resection, including three women who underwent APR with a total salpingoophorectomy and hysterectomy due to vaginal invasion. There were no deaths attributable to operation. The median follow-up time was 31.75 (range 3–108) months after salvage surgery. At the time of the last follow-up, two patients died as a result of disease progression, with a mean survival time of 24 (range 12–36) months. In these patients, one presented with persistent disease, whereas one developed lung metastases. The median follow-up time among survivors was 34.3 (range 3–108) months. One patient has survived for 9 years. One female patient presented with a solitary liver metastasis 12 months after salvage APR and underwent a liver segmentectomy. She remains alive with disease 60 months following her last operation.

Conclusions: Long-term survival can be achieved in the majority of patients who undergo radical salvage abdominoperineal resection after failed chemoradiation therapy for epidermoid carcinoma of the anal canal.

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POSTER

Preliminary Experience of Radical Surgery for Locally Advanced Lower Rectal Cancer – Cylindrical Versus Conventional Abdominoperineal Resection

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Background: An alternative treatment for low rectal cancer is the extended posterior perineal approach with reconstruction of the pelvic floor (cylindrical technique). We compared the outcomes of patients undergoing conventional abdominoperineal resection (APR) versus the cylindrical APR and report the results of pelvic floor reconstruction using human acellular dermal matrix (HADM) on patients after cylindrical APR for rectal cancer.

Materials and Methods: A prospective trial was conducted in patients who underwent conventional and cylindrical APRs between January 2008 and March 2010. Pre-operatively, patients underwent digital rectal examination, MRI and/or endoscopic ultrasonography for staging of the rectal cancer. Forty-eight patients with T3–4 rectal cancer were identified during the study period (conventional n = 21, cylindrical n = 27).

Results: Patients who received cylindrical APR had shorter operative time ($p = 0.000$), larger perineal defect ($p = 0.000$), less intra-operative blood loss ($p = 0.000$), larger total cross sectional tissue area ($p = 0.000$) and larger cross sectional tissue area outside the internal sphincter or muscularis propria ($p = 0.000$) when compared with those who received conventional APR. The incidence of circumferential resection margin involvement in the cylindrical APR group was lower than in the conventional APR group ($p = 0.028$). Cylindrical APR with HADM showed more incidence of perineal pain ($p = 0.004$). The local recurrence of cylindrical APR group was improved statistically compared with that of conventional APR group ($p = 0.028$). Overall survival and disease-free survival between the two groups were not statistically significant.

Conclusions: Cylindrical APR has the potential to reduce the risk of local recurrence without increased complications when compared with conventional APR for the treatment of low rectal cancer. HADM was safe for the reconstruction of large pelvic defect in patients after cylindrical APR.

Table 1. Postoperative complications

Complications	Cylindrical APR, n (% of total)	Conventional APR, n (% of total)	p value [†]
Urinary retention	12 (44.4)	6 (28.6)	0.260
Chronic perineal pain	15 (55.6)	1 (4.8)	0.000
Perineal wound infection	3 (11.1)	5 (23.8)	0.435
Urinary system infection	2 (7.4)	2 (9.5)	1.000
Pulmonary infection	3 (11.1)	2 (9.5)	1.000
Perineal seroma	3 (11.1)	0	0.329
Peristomal hernia	8 (29.6)	7 (33.3)	0.784
Abdominal wound infection	2 (7.4)	2 (9.5)	1.000
Perineal herniation	1 (3.7)	4 (19)	0.211

APR, abdominoperineal resection; [†] chi-squared analysis.

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POSTER

Liver Abscess After Liver Metastasectomy is a Poor Prognostic Factor in Patients With Colorectal Cancer

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Purpose: More and more complications of extensive hepatic resection are being encountered in patients treated for liver metastases from colorectal cancer. This study aimed to determine the impact of liver abscess after hepatic resection on overall survival (OS) and the role of adjuvant chemotherapy.

Methods: A retrospective study of 252 patients treated by liver metastasectomy between 2001 and 2010.

Results: The 5-year survival rate was 55.8%. Twenty-one (8.3%) patients developed liver abscess after liver metastasectomy. Multivariate analysis identified the size of liver metastasis, surgical margin, and the presence of liver abscess as significant prognostic factors. Patients (whether or not they developed liver abscess after hepatic resection) had short progression-free survival in trend (median, 9.8 months vs. 12.4 months, $P = 0.476$) but patients who developed liver abscess had significantly shorter OS (26.6 months vs. 76.0 months, $P = 0.004$). Subsequent adjuvant therapy