(11) 大腸直腸癌手術的治療進展

Recent Trends and Advances in Surgery for Colorectal Cancer

時	間:113年6月22日(星期六)09:00~12:00
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地 點:臺北榮民總醫院 中正樓 12 樓胃腸科會議室

09:00-09:05	Opening Remarks	張世慶教授 Shih-Ching Chang
	座長:藍苑慈 教授 (Yuan-Tzu Lan)	
09:05-09:30	在大腸癌的患者中,以機器學習改善中央淋巴結轉移的 偵測 Use of Machine Learning to Increase the Detection of Central Lymph Node Metastasis in Colon Cancer	張世慶教授 Shih-Ching Chang
09:30-10:00	完整結腸繫膜切除之益處及適應症 The Benefit and Indication of Complete Mesocolic Excision	梁金銅教授 Jin-Tung Liang
10:00-10:30	腹內腸吻合之要點及盲點 The Techniques and Pitfalls of Intracorporeal Anastomosis in Laparoscopic Colectomy	陳自諒教授 Tzu-Liang Chen
10:30-10:40	Coffee Break	
	座長:姜正愷 教授 (Jeng-Kai Jiang)	
10:40-11:10	達文西機械手臂手術之近期實證及未來展望 Shaping the Future of Surgery with the Da Vinci Robotic System: Updating Evidence and Looking Beyond	陳建志醫師 Chien-Chih Chen
11:10-11:40	大腸直腸癌微創手術之變革 The Revolution of Minimally Invasive Surgery for Colorectal Cancer	Byung-Soh Min (韓國)
11:40-12:00	Panel Discussion	
12:00	Closing Remarks	姜正愷教授 Jeng-Kai Jiang

Use of machine learning to increase the detection of central lymph node metastasis in colon cancer

在大腸癌的患者中,以機器學習改善中央淋巴結轉移的偵測

張世慶

Shih-Ching Chang

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Complete mesocolic excision (CME) with central vascular ligation (CVL), in which surgeons performed meticulous dissection in the mesocolic plane with ligation of the supplying vessel at its origin to remove all of the lymph nodes in the regional mesocolon proposed by Hohenberger could improve colon cancer patients ' outcome. The systematic review and meta-analysis found that patients operated on by CME had better disease-free survival. Disease-free survival in the CME/D3 group was statistically significantly different compared to the conventional group. The most important indication of CME is LN metastasis. Currently, the most commonly used and reliable assessment method is the evaluation of lymph nodes metastasis and tumor staging through enhanced computed tomography (CT). However, the complex grouping of the lymph nodes leads to technical difficulty in CT evaluation, and false-negative and false-positive (FP) results are inevitable. The accuracy of LN detection was around 50% and limited the indication of CME.

In recent years, steady progress has been made in deep learning technology. Artificial intelligence-assisted image recognition technology is currently able to detect the target area of an image and make classifications according to the detected target features, which is similar to the diagnosis process of the radiologist. This approach also represents a new solution for the above problems. Based on deep learning of medical imaging knowledge and network construction, the medical image artificial intelligence-assisted automatic recognition system, can identify specific lesions through the identification and labeling of lesions, with automatic volume delineation and three-dimensional reconstruction of target areas.

Since 2015, our lab collected 78 patients receiving curative colectomy. After elimination of personal and clinical data, we cooperated with deep learning engineer, Prof. Chang. After extraction of the quantitative CT image features, the patients were randomly separated into two groups by keeping the same distribution of the metastatic and normal LNs in training (80%) and test cohorts (%20). The training cohort consisted of 62 patients with 42 metastatic and 43 normal LNs while 16 patients with 11 metastatic and 12 normal LNs included in the test cohort.

In the clinical model, metastatic LNs were differentiated from normal LNs by evaluating the diameter of the LNs in the direction of the longest axis. 64.87% of the LNs were diagnosed correctly using clinical diagnostic criteria that correspond to correct classification of LNs. the model had an AUC of 0.704 (95% CI: 0.675, 0.733) for training and 0.772 (95% CI: 0.718, 0.825) for test cohorts. The radiomic-derived model demonstrated better performance for training (81.09%) and test cohorts (79.49%) in terms of accuracy with an increase of over 15% compared to the CT-image diagnostic criteria. Our results support that deep learning technology applying in imaging analysis could help the clinical physician to arrange surgical decision.

The benefit and indication of complete mesocolic excision

完整結腸繫膜切除之益處及適應症

Jin-Tung Liang

梁金銅

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Background/aim: To assess surgical outcomes of patients undergoing D3 lymph node dissection and complete mesocolic excision for the treatment of right-sided colon cancer in the context that both procedures were performed laparoscopically.

Methods: 244 consecutive patients with clinically staged III right-sided colon cancer were recruited to undergo the laparoscopic D3 lymph node dissection with complete mesocolic excision. Postoperatively, the patients were stratified as N0, N1, N2, and N3 groups according to the level of lymph node metastasis, prospectively followed up for more than 5 years, and compared.

Results: The 5-year cumulative recurrence rate and the estimated time-to-recurrence [mean (95 % confidence interval)] was 16.6 % (n = 7/42), 113.8 (101.4-126.2) months in N0 group; 21.3 % (n = 17/80), 108.9 (99.1-118.7) months in N1 group; 43.2 % (n = 32/74), 85.4 (73.0-97.8) months in N2 group; and 52.0 % (n = 25/48), 65.2 (49.0-81.4) months in N3 group. When N1 and N0 groups of patients were lumped together, and compared with patients with N2 or N3 metastasis, we found that the latter were with a significantly higher recurrence rate (p < 0.0001). D3 lymph node dissection with complete mesocolic excision could assure the harvest of sufficient number (n = 34.4 ± 8.4) of lymph nodes for precise pathologic cancer staging. Skip lymph node metastasis was detected in 19.8 % (n = 40/202) of patients, and such surgical procedures facilitated up-staging in 4.5 % (n = 11/244) of patients.

Conclusion: The present study encourages the dissemination of such concepts to surgical oncologists dealing with colorectal cancer through didactic education, and international consensus meeting is therefore mandatory to optimize the surgery of colon cancer.

The techniques and pitfalls of intracorporeal anastomosis in laparoscopic colectomy

腹內腸吻合之要點及盲點

Tzu-Liang Chen 陳自諒 China Medical University Hsinchu Hospital, and School of Medicine, China Medical University, Hsinchu, Taiwan, ROC 中國醫藥大學新竹附設醫院及中國醫藥大學 外科學科

Intracorporeal anastomosis, the creation of a surgical bowel connection within the abdominal cavity, has gained traction in laparoscopic colectomy procedures due to its potential advantages. However, this technique requires high technical proficiency and presents unique challenges that surgeons must navigate meticulously.

This presentation explores the intricate techniques involved in intracorporeal anastomosis and highlights the potential pitfalls at each procedural step. Key focus areas include:

Anastomotic techniques: This section provides an overview of various methods, such as stapled, handsewn, and compression anastomoses, detailing their advantages, limitations, and technical nuances.

Instrumentation and equipment: Exploration of specialized instruments like articulating staplers, endoscopic suturing devices, and anastomotic compression devices, including proper selection, handling, and troubleshooting strategies.

Exposure and visualization: Techniques for maximizing the surgical field, such as patient positioning, port placement, and ancillary device utilization, to achieve optimal exposure within the confined abdominal cavity.

Bowel mobilization and preparation: Strategies for meticulous bowel mobilization, vascular control, and bowel stump management as essential prerequisites for successful anastomosis.

Complication management: Potential complications like anastomotic leaks, strictures, bleeding, and intraoperative and postoperative management approaches.

This comprehensive presentation aims to give attendees a deep understanding of the technical nuances, instrumentation, and potential pitfalls associated with intracorporeal anastomosis in laparoscopic colectomy. By mastering these techniques and anticipating challenges, surgeons can enhance patient safety, minimize complications, and optimize outcomes in this technically demanding procedure.

Shaping the future of surgery with the da Vinci Robotic System: Updating evidence and looking beyond

達文西機械手臂手術之近期實證及未來展望

Chien-Chih Chen

陳建志

Department of Surgery, Koo Foundation Sun Yat-Sen Cancer Center Hospital, Taipei, Taiwan, ROC 醫療財團法人辜公亮基金會和信治癌中心醫院 外科部

In recent years, there has been significant progress in the development of robotic surgical system. In addition to well-known features such as wrist functionality, stereoscopic vision, and a stable working environment, robotic surgical system has become an integrated platform for various advanced technologies. These integrated advanced features will usher future surgical procedures into a realm that is safer for patients and more user-friendly for surgeons.

In the presentation, I will provide updates on the latest literature regarding robotic arms in the field of colorectal surgery, including comparative analyses of disease treatments and the impact on the surgical learning process for young surgeons. Additionally, I will introduce the characteristics of the latest generation of surgical robots and present new prospects for clinical practice.