

Report of a fellowship at two “Centers of Excellence in Laparoscopic Colorectal Surgery”: the Cleveland Clinic, Florida, and Mount Sinai Hospital, New York

2007-2008 Major Fellowship of the European Society of Surgical Oncology

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I had the great honor to receive the 2007 Major Fellowship of the European Society of Surgical Oncology, and would like to thank the Society for this privilege. For me this was a unique opportunity. I spent two months at the colorectal service of the Cleveland Clinic in Weston, Florida, with Professor Steven Wexner as chief. I was able to attend the 3rd International Congress of Laparoscopic Colorectal Surgery at the Cleveland Clinic in Florida and the 19th Annual International Colorectal Disease Symposium in Fort Lauderdale. During the first congress I met Professor Barry Salky, chief of the Division of Laparoscopic Surgery of Mount Sinai Hospital in New York, who invited me to spend the third month of my ESSO fellowship in New York.

My aims for the fellowship were to expand my surgical knowledge and to gain an international perspective in the field of laparoscopic colorectal surgery. During my stays in both hospitals I was able to observe multiple colorectal operations and to attend several conferences and meetings. I became familiar with the preoperative, intraoperative and postoperative management of patients undergoing laparoscopic colorectal surgery in both centers. In addition, the different treatment pathways and hospital structures were explained to and discussed with me. Both “Centers of Excellence” are characterized by high-level professionalism and sovereignty. I was also impressed by the outstanding empathy displayed for patients in both hospitals.

Cleveland Clinic Florida

Established in 1988, Cleveland Clinic Florida is a non-profit, multi-specialty group hospital dedicated to provide outstanding, state-of-the-art medical care. Continuing the world-renowned tradition of The Cleveland Clinic, Cleveland Clinic Florida

physicians excel at the diagnosis and treatment of medical problems that are complex or difficult to treat.

The department is internationally renowned for patient care, research and education, teaching, and training. Moreover, numerous publications and presentations, as well as new and innovative techniques, are produced by the department, which is one of the most well-respected academic colorectal units in the world.

Director of the department

Since 1993, Dr. Steven Wexner has been the Chairman of the Department of Colorectal Surgery. He was appointed as Chairman of the Division of Research and Education in 1995. He chaired the Institutional Review Board and the Continuing Medical Education Committee until November 1997, when he resigned from those positions to accept the appointment as Chief of Staff. Dr. Wexner was also appointed Professor of Surgery at The Cleveland Clinic Foundation Health Sciences Center of The Ohio State University, as well as honorary professor at the University of Siena in Siena, Italy, the University of Nanjing, China, University of Belgrade, Serbia, and Tokyo University, Japan. From 2006 to 2007, Dr. Wexner was President of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). Other leadership roles have included membership in the residency review committee for Colon and Rectal Surgery of the American Board of Colon and Rectal Surgeons, the executive council of the The American Society of Colon and Rectal Surgeons (ASCRS), and a governor of the American College of Surgeons. Dr. Wexner is on 19 editorial boards. He has authored or coauthored 26 books, 191 book chapters and 476 manuscripts.

Early discoveries

In 1988, Dr. Wexner and Dr. David Jagelman were among the first surgeons in the world to perform and describe the benefits of a new type of ileal pouch anal anastomosis called the double-stapled technique. This exciting new modification to the pouch procedure revolutionized surgery for mucosal ulcerative colitis. It has been applied in almost 1000 patients in the Cleveland Clinic Florida, and has been adopted by countless surgeons worldwide, to the benefit of their patients.

In 1991, Drs. Jagelman and Wexner began to pioneer laparoscopic colorectal surgery. That program has now developed into one of the most extensive of its type in the world. Thousands of surgeons from throughout the world come to receive training, while over 1000 patients at Cleveland Clinic Florida and hundreds of thousands more worldwide have now been treated with this impressive new technique.

Other new and innovative procedures pioneered in total or in part at Cleveland Clinic Florida in the Department of Colorectal Surgery include:

- Sacral nerve stimulation for fecal incontinence
- Stimulated graciloplasty for fecal incontinence
- The artificial bowel sphincter for fecal incontinence
- The use of a sodium hyaluronate/carboxymethylcellulose bioresorbable membrane for prevention of postoperative adhesions
- A new technique of multilayered sphincter repair for fecal incontinence
- Management of sigmoidoceles for chronic constipation
- Graciloplasty for rectourethral and rectovaginal fistulas
- Scoring systems for both fecal incontinence and chronic constipation developed at Cleveland Clinic Florida have become the most commonly used validated scoring systems

My arrival at the clinic

The Cleveland Clinic Florida is located in Weston, which is about 20 miles away from Miami and Fort Lauderdale. It is ranked among the top American hospitals by *U.S. News & World Report*. On my way to the hospital on highway 75, I saw a huge advertisement pointing out that the hospital is one of the best (unlike in Germany, medical advertising is allowed in the United States). On the poster you can see the faces of Dr. Wexner and Dr. Raul Rosenthal, the famous bariatric surgeon, with the slogan "Better health is a phone call away".

On my first day I was welcomed by the director of the education department of the Cleveland Clinic Florida. I had already sent several letters containing information on my current health status, current immunization status, and certificates to the education department for the registration process. After finishing all my bureaucratic

tasks, which included getting a temporary badge, a coat, a parking license and paying a registration fee, I was introduced to Professor Wexner and his team.

The colorectal surgery team

Professor Wexner's team includes four other attending surgeons, five clinical fellows, and about 12 research residents. Each clinical fellow is assigned to an attending, and each fellow rotates every 5 weeks from one attending surgeon to another. The clinical fellows are fully trained surgical residents, and absolve a one-year colorectal fellowship program before they apply for an attending position.

The research residents come to the Cleveland Clinic to do colorectal research for one or two years. Most of the residents are fully-trained surgeons in their home countries. I met research residents from Russia, Brazil, Korea, China, Japan, Venezuela, Egypt and the USA. In addition to their research activities, they assist in operations and perform physiological examinations, such as manometry studies and defecography, according to a rotation schedule. The results of these physiological examinations are discussed weekly at the anorectal physiology conference.

Research

Research in the department is mostly clinical: only a few projects focus on basic science. The research residents have a large room where every resident has his own working space, which includes a computer with Internet connection. The senior research residents organize and lead the main clinical projects and help the younger or newer residents to get started. Once a week the research residents have to present their data or projects at a research conference at which all attendings are present. The attendings and residents discuss results, set protocols and practice talks, which are to be presented at meetings.

I had the chance to discuss a number of research projects with these residents, which was very inspiring. The projects included examinations of anorectal physiology using 3-dimensional endosonography, the evaluation of surgical techniques in patients with inflammatory bowel disease, the impact of lymph nodes in colorectal

cancer, and the development of new devices for laparoscopy. It was a unique opportunity to speak to so many surgeons from different countries about their research and their clinical practice in their countries.

Observing surgeries

Every day, three to four international surgeons were given the opportunity to observe the operations of Professor Wexner and his team. Several times I counted about 20 persons in the operating room.

The operations were usually started by the clinical fellow and a research fellow, who inserted the trocars and laparoscopically mobilized the colon, including the right and/or left flexure. Prof. Wexner and his team preferred the lateral-to-medial approach. When the preparations were finished, the attending came and did the bowel resection, or assisted the clinical fellow with the procedure. Most cases were performed with laparoscopic assistance, which meant that the anastomoses were often performed extracorporeally, through a small abdominal incision. They were always stapled, not sewn. One of the attendings preferred to operate laparoscopically hand-assisted through a small hand-port. He argued that he can control the operation and the tissue better during teaching operations.

Lectures

Four times a year a visiting professor is invited to give several lectures and to discuss colorectal questions with the staff. I had the chance to get to know Prof. Lester Rosen, the past president of the ASCRS, who gave talks on three topics: rectal spaces, screening for polyps, and colorectal cancer. Between the talks the clinical and research residents presented clinical cases, results of anorectal physiology examinations, and research cases. For one of the talks, the Cleveland Clinic in Ohio was connected via video conference.

Patient examinations and surgeries

Each attending usually had three surgical days and two clinical days per week. In the clinic every patient was seen first by a nurse and one of the research residents. Afterwards the attending came and discussed the examination results.

I spent most of my time in the operating room, observing a broad spectrum of colorectal operations. About 25% of the operations were for cancer, 50% for inflammatory bowel disease, and another 25% for proctology. About 70% of the abdominal operations were performed laparoscopically.

I had the opportunity to observe the whole spectrum of open and laparoscopic colorectal surgery during my two-month stay. On almost every operation day I was able to observe a laparoscopic proctocolectomy with ileoanal J-pouch and protective ileostomy for ulcerative colitis. After proctocolectomy the created ileoanal J-pouch had a length of 20 cm and was created using two GIA 100 staplers. The ileoanal anastomosis was always performed with a CEEA 33 cm stapler in a double-stapling technique. Laparoscopic right or left hemicolectomies for benign polyps or colon cancer, laparoscopic subtotal colectomies, and laparoscopic anterior resections were performed regularly. After anterior resection with total mesorectal excision, the created colonic J-pouch were 6 cm long using a GIA 80 stapler. The colorectal anastomosis was always performed with a CEEA 33 cm stapler in a double-stapling technique. Even operative revisions due to leakage or postoperative bleeding were performed or started laparoscopically. A lot of proctology was performed by Professor Wexner and his team. I observed stapled and open hemorrhoidectomies, anoplasties in patients with chronic fissure and anal stenosis, anal fistulae treated with anal fistula plugs, and the Altmeier operation on a patient with rectal prolapse. I was able to observe a gracilis interposition for a recto-vaginal fistula in a 28-year-old woman. Several artificial bowel sphincters were placed or changed during my stay.

On one day a company presented their new laparoscopic stapler device, on another day a company showed a new biologic mesh, and on a third an Israeli start-up company presented their new closure device for trocars in the operating room.

Attendance at congresses

Laparoscopic colorectal surgery

The 3rd International Congress of Laparoscopic Colorectal Surgery, organized by Professor Wexner and the Cleveland Clinic Florida, was a great experience, and increased my knowledge substantially. There were about 80 attendees at the meetings, which included sessions on operative video, laparoscopic colorectal techniques, potential outcomes with laparoscopic colectomy, avoiding complications in laparoscopic colorectal surgery, and methods for teaching laparoscopic surgery.

The video presentations were especially amazing. I have to mention Prof. Leroy from Strasbourg, Prof. Morino from Torino, and Prof. Li from Hong Kong. They gave wonderful presentations of laparoscopic colon and rectal resections which clearly showed the advantages of laparoscopic surgery if it is performed by a trained laparoscopic surgeon. Prof. Monson from Castle Hill Hospital and Prof. Kim from Seoul presented the oncologic outcomes of published studies in colon and rectal cancer. They concluded that recent results from laparoscopic rectal cancer studies reproduce the results of the published laparoscopic colon cancer studies.

Which new studies for laparoscopic colorectal cancer were presented? In 2008 Kuhry et al. published the long-term results of laparoscopic colorectal cancer resection in the Cochrane database of systematic reviews. They concluded that laparoscopic resection of carcinoma of the colon was associated with a long-term outcome no different from that of open colectomy. Further studies are required to determine whether the incidence of incisional hernias and adhesions is affected by the approach used. Laparoscopic surgery for cancer of the upper rectum was feasible, but more randomized trials need to be conducted to assess long-term outcome. Anderson et al. performed a systematic review and meta-analysis and published the oncologic outcomes of laparoscopic surgery for rectal cancer in the European Journal of Surgical Oncology in 2008. Data on a total of 1403 laparoscopic and 1755 open rectal resections were gathered from 24 publications. Overall survival at 3 years was not statistically different between the two treatment groups. The mean local recurrence rates were 7% for laparoscopic and 8% for open procedures (NS).

Laparoscopic procedures harvested a mean of 10 nodes, as compared to 12 for open procedures ($p=0.001$). The authors found no oncologic differences between laparoscopic and open resections for the treatment of primary rectal cancer.

Colorectal disease

The 19th Annual Colorectal Disease Symposium organized by Professor Wexner and the Cleveland Clinic Florida was held in Fort Lauderdale. About 500 attendees were present at this three-day symposium. The cancer sessions included the themes optimizing the outcome of rectal cancer, colon cancer, and a video session with tips for technical triumph. Prof. Frederick Greene spoke about strategies in staging of colon cancer. He pointed out the importance of lymph node micrometastases, and spoke about several risk factors.

Mount Sinai Hospital, New York

The second part of my fellowship brought me to the famous Mount Sinai Hospital in New York. I had met Prof. Dr. Barry Salky at the 3rd International Congress of Laparoscopic Surgery, and had been very impressed by his video presentation on two laparoscopically performed colorectal operations. After his session I asked him if I could spend the third month of my fellowship in his department, and he agreed immediately.

The hospital

Founded in 1852, the Mount Sinai Hospital is one of the country's oldest and largest teaching hospitals. Mount Sinai is internationally acclaimed for excellence in clinical care, education, and scientific research in medicine. According to *U.S. News's* 2008 list of America's Best Hospitals, the Mount Sinai Medical Center in New York ranks among the best hospitals in 10 specialties. The hospital has 1,171 beds, 2,181 attending physicians, and 689 residents and fellows. The Department of Surgery

includes 10 divisions, with 203 full-time faculty members. The resident training program has 72 residents.

The chief of the division

Prof. Barry Salky is the Chief of the Division of Laparoscopic Surgery. He is internationally recognized as one of the originators of laparoscopic surgery. After joining the Mount Sinai Faculty over 25 years ago, Dr. Salky became active in laparoscopy in the early 1980s. His research interests include antireflux surgery, laparoscopic colon surgery, and the surgical treatment of Crohn's disease.

The fellowship program

The Mount Sinai Clinical Fellowship in Laparoscopic Surgery, founded in 1993, is one of the first formal training programs for laparoscopy established in the United States. Currently, one-year positions are offered to two highly qualified individuals per academic year. With the formation of the Division of Laparoscopic Surgery in 1992, Mount Sinai was one of the first medical schools in the U.S. to recognize the field as a distinct specialty within general surgery. Mount Sinai now boasts one of the nation's most clinically active laparoscopic programs. This provides their laparoscopic fellows with unparalleled exposure to a remarkable spectrum of minimally invasive procedures and techniques.

Settling in

I arrived in New York in August. The weather was quite hot, but acceptable due to the air conditioning, which you find everywhere. The hospital is located directly next to Central Park in Manhattan. Several buildings are connected to the large Mount Sinai Hospital complex. The entrance hall is huge, and connects two main buildings.

Compared to the Cleveland Clinic Florida, the Mount Sinai Hospital is administratively very complicated and complex. It took me 3 days to fulfill all the requirements for registration. For security reasons, there was no possibility to move around the hospital without a temporary ID card. Unfortunately, other international observers experienced these problems as well.

Education of residents and fellows

After completion of all administrative requirements I was allowed to enter the hospital and to observe the work of the division of laparoscopic surgery. I attended several conferences and teaching rounds. I was very impressed during my whole stay by the high motivation of the attending surgeons to teach residents and fellows, both during teaching rounds and in the operating room. It was very interesting to see the differences between education in New York and Florida. At the Cleveland Clinic Florida, Prof. Wexner has only clinical and research fellows on his service. At the Mount Sinai Hospital in New York, not just fellows but also residents work in the laparoscopic division.

It was admirable to watch the education of residents. The residents, especially the chief resident, had to present a talk every week about a surgical topic. Afterwards a lively discussion started between the attendings and the chief resident about specific surgical questions. The chief resident was questioned, and had to try to answer all questions. One of the main aims was to prepare him for his board exams.

Observing surgeries

In the operating room I observed laparoscopic operations performed on the upper and lower gastrointestinal tract. Besides colorectal operations such as ileocaecal resection, right and left hemicolectomy, sigmoid resection, and anterior resection, I observed laparoscopic bariatric operations, Nissen fundoplication, and Heller myotomy.

The operations which I had the opportunity to observe were all performed by the attendings of the division of laparoscopic surgery. The number of operations per day and division was smaller than in the Cleveland Clinic Florida. Operations were performed in 26 operating rooms at the same time, which required perfect organization. All elective patients were admitted to the hospital on the morning of their surgery. In general, the patients were discharged 3 days after operation. Requirements for discharge were that they had no pain and had passed gas.

Compared to the Cleveland Clinic Florida, Prof. Salky and his team performed their operations completely laparoscopically. Residents always performed several steps of the operation under supervision. They were taught how to handle the instruments and how to prepare the tissue layers.

Dr. Salky usually works with the Ligasure[®] in bowel operations, while for the stomach and esophagus he prefers the harmonic scalpel. He sews over the stapled colon anastomosis with 3-0 prolene. His laparoscopic philosophy is that every surgeon who operates laparoscopically should know how to sew and how to knot intraabdominally. He usually preferred the medial-to-lateral approach. These techniques were taught to every resident and fellow. All cameras and monitors work with high-definition (HD) quality.

Interaction with families

After every operation the surgeon either calls the family of the patient personally to inform them about the operation or speaks to the patient's family which wait inside the hospital in the family waiting room. In our hospital, we don't have family waiting rooms. After the operation the patients are transferred to a large interdisciplinary post-anesthesia care unit (PACU). The chief resident gives the postoperative medical orders online in an intranet system, which compared to our system is very fast. The family has access to the patient, and are allowed to stay in the PACU.

Organization of the clinics

Doctors at Mount Sinai Hospital can concentrate completely on their medical activities. Routine non-medical work is performed by non-medical personnel. Nurses have many more duties and responsibilities than in Germany. They carry out work which is performed in Germany by doctors. Satisfaction—not only of the nursing staff—thereby appears to be much higher. Scientific documentation is performed by documentation assistants, which allows continuous recording of data and provides the doctors with their data and analysis.

Scientific activities of the residents and fellows are very high. Especially the fellows travel to all big surgical meetings and present their data. The residents were not allowed to travel so much, because they had to do the work on the wards and to be in the operating room.

What did I learn from the ESSO fellowship?

1. Teaching of residents is a main goal of American surgeons
2. Resident programs and rotations of service according to a fixed schedule allow a surgical education in time
3. While the profession of surgeon is becoming increasingly unattractive in Germany, there are ways to solve this problem, as seen in the USA
4. No operation was performed without assistance for part of the surgery by younger fellows or residents
5. Surgeons in the United States have the possibility to concentrate on their surgical and academic work
6. Non-medical work is performed by non-medical assistants
7. Nurses are much more integrated into medical workflows than in Germany
8. Results of laparoscopic surgery for colon and rectal cancer are equal to those of open surgery in trained and experienced hands
9. Laparoscopic colorectal surgery should be trained in every teaching hospital

In my view, my three-month stay in the USA was a great success. Stepping out of my own surgical work in Munich for such a long time, and having the opportunity to observe the daily routine in two American hospitals, was a unique and valuable experience. Besides offering numerous suggestions for the conduct of laparoscopic resections of benign and malignant colorectal disease, and detailed explanations during operations, Prof. S. Wexner and Prof. B. Salky left me with an impressive picture of directors and their teams all dedicated to surgery. Both professors helped me in every way possible. The multifaceted positive impressions I received in both hospitals led to an expansion of my horizon, and the fellowship experience exceeded my expectations. I would advise every surgeon to visit other surgical units and to learn from different treatment philosophies.

I would like to thank the European Society of Surgical Oncology for awarding me this major fellowship, and for providing me with the unique opportunity to broaden my surgical experience by visiting two internationally renowned hospitals in the United States. In addition, I would like to thank my chief, Professor H. Friess, for his support, and for the exemption from my clinical work which allowed me to travel to the United States. Finally, special thanks go to my colleagues in the Department of Surgery, Klinikum rechts der Isar, Technical University Munich, who had to take over my work at the hospital and who helped make my study travel possible.

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