

## Kurt Semm (1927 – 2003)



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### Inspired advocate

Kurt Semm is not the inventor of laparoscopy. However, he paved the way for a surgical technique which was still in its infancy by the year 1950. Despite much incomprehension and opposition, he perfected and promoted laparoscopy worldwide. Literally translated, laparoscopy means: looking into the abdomen. Through a small incision, the surgeon detects (diagnostic) or treats (therapeutic) a lesion. In the latter case, this is called minimally invasive surgery or keyhole surgery. This type of surgery

has many advantages for the patient. The surgical incision is smaller and will heal faster as compared to conventional open surgery. Postoperatively, the patient will have less pain and will be able to leave the hospital sooner. Only a small scar will remain.

### Kurt as a gynecologist

Kurt Semm was born on March 23, 1927 in Munich. A serious traffic accident at the age of six was his first encounter with medicine. After his recovery, he wanted to become a doctor. He studied at the

Realgymnasium in Munich but was called to join the German Wehrmacht when he was 17 years old. In the apocalyptic last days of the Third Reich, even minors were deployed to fight for “Führer und Vaterland”. He was taken prisoner in Russia,

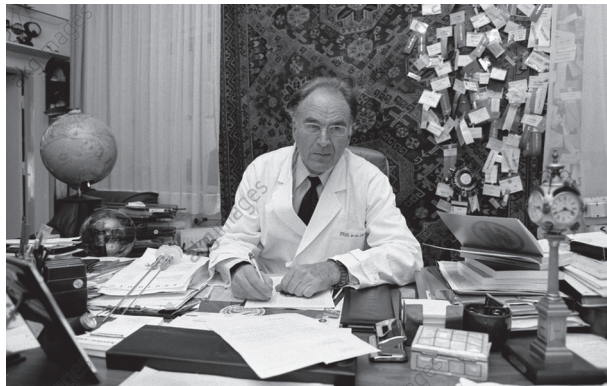


Figure 2 : Kurt Semm at the office

but was released shortly after the war. As for many Germans, his life was in ruins. Studying was not his prime concern. To earn his living, he repaired toys. He proved to be quite proficient at this, a trait he most definitely inherited from his father Karl (a technical engineer). When his life got back on track, Kurt studied at the Ludwig-Maximilian University in Munich and graduated as a physician with *summa cum laude*. He specialized in Gynecology and afterwards in gynecological endocrinology. Under the vigilant eye of Nobel Prize winner Adolf Butenand, he wrote a thesis and a couple of articles on infertility. In 1956, he co-founded the “Deutschen Gesellschaft für Gynäkologie und Geburtshilfe”. In 1964, he was appointed extraordinary professor at the University of Munich and two years later as “Oberarzt” at the Universitätsfrauenklinik.

### **Raoul Palmer**

Around 1940, a Parisian surgeon developed a method that would thoroughly influence Kurt Semm’s life. Raoul Palmer had made many large incisions to remove tumors. But the tumor was sometimes so small it could actually be removed with a less invasive procedure. On the other hand, sometimes Palmer saw tumors which were inoperable. They had invaded surrounding structures or had already metastasized to the liver. Preoperative radiology was still largely inadequate in those days. To avoid an unnecessary large scar, Palmer came up with the idea to have a quick look in the abdomen first. A matter of assessing the size of the process beforehand, and to be able to make the right decision: open surgery or laparoscopic removal. Raoul Palmer knew of the existence of the laparoscope – back then still a rigid tube – which some predecessors had already

experimented with. Very carefully, he inserted such a tube through the umbilicus, blew air into the abdominal space and illuminated the dark interior. Over the years, he became more skilled and more audacious. He started emptying ovarian cysts and cauterizing women’s ovarian tubes for sterilization during his laparoscopies. For women who wanted the opposite – to become pregnant – Doctor Palmer sucked a couple of ripe oocytes from the ovary to unite them with sperm cells *in vitro*. Kurt Semm was fascinated by the articles published by Raoul Palmer and he became interested in the possibilities of this minimally invasive surgery. But Palmer’s technique was not without risk; some patients had died from air embolism due to the air blown into the abdomen to clarify the view. Because air also contains oxygen, and cauterization devices sometimes create sparks, internal explosions occurred, with blue smoke circling from the small wound. When the “old dogs of Surgery” (the ultra-conservative surgeons) found out about this, they lashed out and called laparoscopy “a whimsical and life-threatening practice, deontologically and ethically unjustifiable”.

### **Kurt the craftsman**

Being a skillful surgeon and talented technician, Kurt Semm had a more nuanced view on these matters. Provided some adjustments to the technique, he could see a great future for it. To avoid accidents with the oxygen-rich air, he devised an automatic CO<sub>2</sub>-insufflator. This device would blow non-flammable CO<sub>2</sub>-gas into the abdominal cavity but also stabilized the pressure. The old magnesium light source was replaced by a safer and more powerful quartz lamp. He also lowered the voltage of the cauterization device. Ultimately, he devised new and adapted surgical tools for navigating and operating in such a small-sized space. In short, the laparoscopic procedure, as devised by Semm over time, no longer bore resemblance to what the classical surgeons had called a whimsical and dangerous affair. Once Kurt Semm mastered this minimally invasive technique, he started removing leiomyomas, ovarian cysts and often an extra-uterine pregnancy. From a surgical point of view, the results were excellent. Moreover, his patients were left with just a small scar and they could leave the hospital much sooner, sometimes even on the same day.

### **Skepticism & resistance**

The laparoscopic light didn’t shine for everyone immediately, though. While Semm kept on

performing minimally invasive procedures, the “old dogs of surgery” reared their heads again. They thought that he, as a gynecologist, was fishing in their pond and was unfairly stealing away their patients. Furthermore, they argued again that his technique was deontological unacceptable. But Kurt worked on, assiduously, and refined his technique day after day. He wrote numerous articles on it, made thousands of slides, an abundance of promotional videos, and gave lectures worldwide. One would think that a man this ambitious would be encouraged at his own university, the Kiel University. Or at least would get some kind of recognition. However, the opposite was true. Some of his colleagues even advised him to have his brain scanned. They suspected he was not entirely right in the head. When it appeared Kurt Semm’s brain showed no signs of lesions (at least not radiologically), they went as far as to unplug his projector while he was giving one of his slideshows. Such experimental and controversial surgery was not to be shown to medical students or registrars. At the yearly gynecological convention at Kiel University in 1972, a colleague professor even interrupted his lecture: “My dearest younger colleagues, if you really want to get ahead in the academic world, please do not listen to this utter nonsense.” The president of the Deutsche Gesellschaft für Chirurgie wrote a letter to his honorable members and asked them whether the time had not come to exempt Kurt Semm from all of his medical activities. And even that was not the end of it! At a European meeting in North Italy, Semm was approached by the president of the American Association of Gynecological Laparoscopists. Professor Jordan Philips had no problems with diagnostic laparoscopy, but he thought what Semm was doing was really a bridge too far. He reproached him for taking the technique to the absurd. Even when Kurt Semm became the first surgeon ever to successfully remove an appendix laparoscopically in 1980, he lacked recognition. He described the procedure in an article and sent it to the American Journal of Obstetrics and Gynecology, but it was refused.

### A German device

On one of his many journeys to the United States, Semm gave a lecture for the American Fertility Society. After his lecture, he met the great infertility specialist from Chicago, Dr. Melvin Cohen. Enthusiastically, Semm showed him the opportunities of his automatic CO<sub>2</sub> insufflator, but Dr. Cohen could understand little of it. In order not to disappoint his German colleague, he referred him to his technician, who was more proficient in

these technical issues. Full of enthusiasm, Kurt Semm explained the functioning of his insufflator to the technician, but this technician rejected the idea bluntly: “We are not interested in your German device”. As for many Germans after the war, this remark hit him hard. Kurt Semm bit back immediately and snapped with indignation: “Leck mich am Arsch, du blöde Sau”. Loosely translated: “Kiss my ass, you moron”. Not exactly politically correct, but an understandable emotional remark at that moment. Moreover, in a language unintelligible to an American. You can imagine Semm’s surprise when the technician replied in fluent German: “Was haben Sie gesagt, Herr? Soll ich Sie am Arsch lecken?”. It turned out that Cohen’s technician was a German Jew who had fled the Nazi regime to the United States. Understandably, he had an aversion for all things from Germany, including this German device. After Semm had apologized, he found out the technician was also from München originally. They started a friendly conversation in the Bavarian dialect. After chatting quite a bit about family and the Heimatland, Semm again presented his automatic CO<sub>2</sub> insufflator to him. The man looked at the instrument more carefully now and had nothing but praise for it. He promised to convince his boss of the opportunities of this wonderful German device.

### WISAP

Back in the Heimat, Kurt Semm received a letter from his Jewish friend. Doctor Cohen had tested the CO<sub>2</sub> pneu-insufflator and had conducted some fruitful experiments. He asked for a second insufflator to be sent to him, which Semm did immediately. Kurt had made it himself and had invested a lot of time, energy and money in it. It was never paid for. However, Melvin Cohen did include a picture of Semm’s device in his book on laparoscopy which was published in 1970. That turned out to be good advertisement. Two months later, Semm



Figure 3 - Semm’s electronic insufflator

received a letter from Mr. Wappler, an instruments manufacturer from American Cystoscope Makers Inc., ordering a hundred devices at once. What? A hundred? The company WISAP, which produced the insufflators, was not prepared for such an order. In those days, they only produced around ten a year. No problem. WISAP was a family company, founded by Kurt with his father (engineer) and his brother (technician). And family companies have their advantages. While it can take most investors many years before their theoretical concept is turned into a functional device, Kurt was able to do that in just a few weeks' time. Given recruitment of additional laborers, WISAP could handle no matter which order.

### **Pelvi-trainer**

The always prescient Semm suspected more orders were to come. In time, the indications for laparoscopy would only increase. He was already contemplating a hysterectomy with the help of his device. An LAVH (laparoscopically assisted vaginal hysterectomy) was still unthinkable in those days. According to the "old dogs": even impossible. But Kurt did it. When Jordan Philips heard about this, he withdrew his critical remarks and became Semm's best friend. Because they realized that the success of such minimally invasive surgery depended on a specific training, Kurt designed a didactic tool in

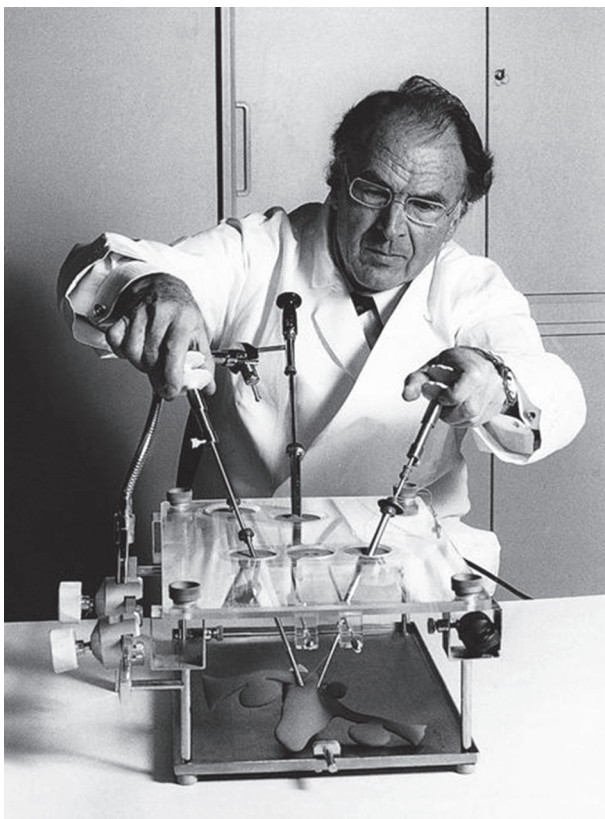


Figure 4 - Kurt Semm with the pelvitainer

1985. He called it the "pelvi-trainer". It was a closed box with a couple of holes in it for the instruments. A camera and some objects to be manipulated were inside the box. The camera projected the inside of the box on a screen, and with the help of this screen, the laparoscopists in training had to get the job done with grippers and scissors. For someone used to working in an open surgical field with the naked eye, this was an entirely new experience. But of course, that was the art of laparoscopy. With Semm's pelvi-trainer, Jordan Philips started organizing hundreds of training workshops all throughout the US from 1986 on. Until today, students practice with similar didactic tools, although they no longer resemble the primitive practice box that Semm had made. It is now replaced by virtual reality simulators, the same way pilots can learn to fly and land a plane in a virtual airspace without wreaking too much havoc in a real life situation.

### **The Magician from Kiel**

The breakthrough of a new technique isn't always dependent on its intrinsic value. Often, it will take a renowned specialist making a statement. Professor John Beerman, president of the American Society of Reproductive Medicine Detroit, visited Kurt Semm one day. He wanted to see the Magic Surgeon and his Magic Surgery. After Kurt had successfully removed an ovarian cyst laparoscopically, Beerman just said: "All I wanted to see was the reality of this surgery. Now, I am ready to go on my planned hunting trip." Where the president of that American Society subsequently went hunting, and on which game, is unknown. We do know that such a remark from such a prominent authority in the field of reproductive medicine gave laparoscopic surgery in the US an enormous boost.

### **Legacy**

Throughout his life, Kurt Semm published more than a thousand articles in scientific journals. He also produced an impressive collection of slides (>20.000 slides) and produced around 30 endoscopic promotion videos. With the pelvi-trainer in his hand luggage, he crossed the Atlantic several times to spread the laparoscopic gospel. He also published a colored atlas in 1976 that would become the bible for endoscopic surgery for over 30 years: "Pelviskopie und Hysteroskopie." One year before his death, he wrote an autobiography titled: "Operationen ohne Skalpell; ein Gynäkologe als Wegbereiter der Minimal Invasiven Medizin." It was an audacious title, but completely justified. As a gynecologist, he had developed a surgical technique that has become

the gold standard for numerous surgeries. In that sense, Semm's laparoscopic technique can safely be called the largest revolution in 20th century surgery.

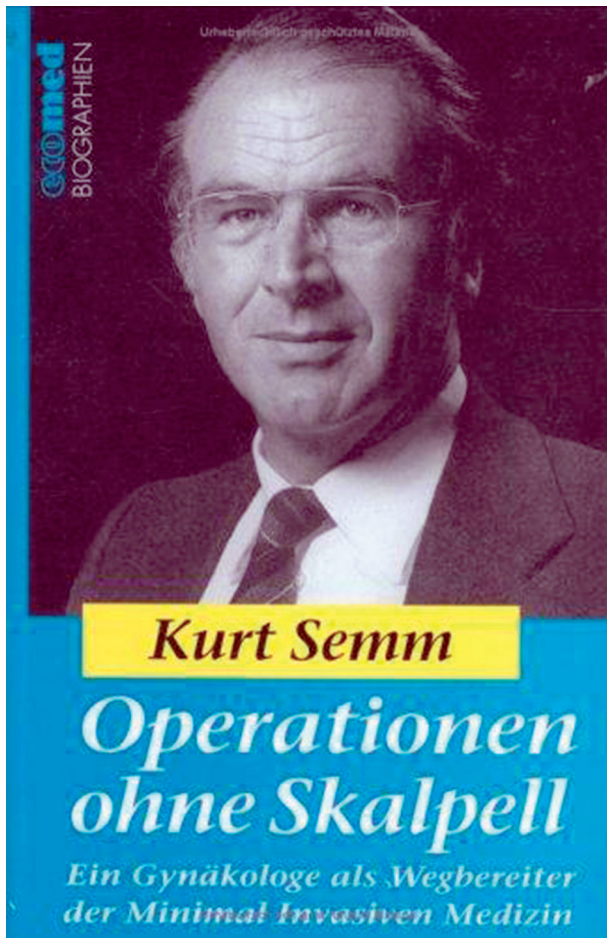


Figure 5 - Autobiography of Kurt Semm



Figure 6 - Actual laparoscopy training