

Meeting Protocol

2nd Meeting of the Natural Orifice Surgery (NOS) Working Group Berlin, March 28, 2007

Date: 28 March 2007, 15:00 – 19:30

Venue: Hotel Savoy, Fasanenstr. 9–10, 10623 Berlin

Participants

Eckhard Bärlehner (Surgery, Berlin, Germany)
Heiko Bæhr (Karl Storz Endoscopy, Tuttlingen)
Tahar Benhidjeb (Surgery, Berlin, Germany)
Jacques Corcos (Urology, Montreal, Canada)
Clémence Delmas (NESA, Berlin, Germany)
Francesco De Meo (NESA's Director, Berlin, Germany)
Harold P. Drutz (Gynaecology, Toronto, Canada)
Wolfgang Flügel (Oto-Rhino-Laryngology, Berlin, Germany)
Parwis Fotuhi (HELIOS Academy, Berlin, Germany)
Sabine Grüsser-Sinopoli (Medical Psychology, Berlin, Germany)
Philippe Hall (Olympus, Hamburg, Germany)
Michael James (Fertility Focus Ltd, Dorchester, UK)
Georg Katcz (Businessman, Vienna, Austria)
Frédéric Mouret (Protomed, Marseille, France)
Christian Portscheller (Karl Storz Endoscopy, Tuttlingen)
Irmgard Posch (Gynaecology, Lörrach, Germany)
Albert Schäffer (Polydimensions, Bickenbach, Germany)
Michael Stark (Gynaecology, Berlin, Germany)
Jochen Strauß (Anaesthesiology, Berlin, Germany)
Antoine Watrelot (Gynaecology, Lyon, France)
Peter Weimann (Intuitive, Paris, France)
Kai Witzel (Surgery, Hünfeld, Germany)
Sabine Wolf (NESA, Berlin, Germany)

Excused absence

Peter Biro (Anaesthesiology, Zurich, Switzerland)
Michelle Fynes (Gynaecology, London, UK)
Joachim Linke (HELIOS Research Center, Berlin, Germany)
Ciro Luise (Gynaecology, Naples, Italy)
Farr Nezhat (Gynaecology, New York, USA)
Manfred Ottow (FEW Blankenburg GmbH, Germany)
Moshe Zvi Papa (Surgery, Tel Hashomer, Israel)
Marc Possover (Gynaecology, Cologne, Germany)
Roland Peplinski (Intuitive, Paris, France)
Jörg Reschke (NESA, Berlin, Germany)
Alexandra Schäffer (Polydimensions, Bickenbach, Germany)
Achim Schneider (Gynaecology, Berlin, Germany)
Svend Schulze (Surgery, Copenhagen, Denmark)
Petra Thürmann (Pharmacology, Wupperzal, Germany)

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Programme

15.00-15.15

Francesco De Meo, Michael Stark
Greetings and presentation of the participants

15.15-15.45

Michael Stark
The NOS concept: State of the art

15.45-16.15

Albert Schäffer
Simulation for the vaginal approach of NOS

16.15-16.45

Coffee break

16.45-17.15

Frédéric Mouret
Intestinal retractors for minimally invasive surgery

17.15-17.45

Tahar Benhidjeb, Kai Witzel, Eckhard Bärlechner
Indication and preclinical application of TED in Surgery

17.45-18.15

Jacques Corcos
Indication and preclinical application of TED in Urology

18.15-18.45

Sabine Grüsser-Sinopoli
A reliable and valid method to assess pain, stress and sexual sensations in NOS patients

18.45-19.00

Michael Stark
Objective evaluation of postoperative pain

19.00-19.30

Panel discussion: Preparing the clinical application of TED

19.30

Closure and get-together

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Presentations

Francesco De Meo, NESA's Director, greeted the participants on behalf of the New European Surgical Academy.

Michael Stark presented the history of abdominal surgery, the development of different surgical methods, the idea behind endoscopy as well as the possibilities and prospects for natural orifice operations. He also presented the available literature at that stage concerning NOS and discussed the problems involved in its development and achievement so far.

Albert Schäfer analyzed common problems in the development of new surgical procedures and instruments dealing with the "Simulation of the vaginal approach of Natural Orifice Surgery". Existing solutions for comparable tasks in high-tech industry like commercial aviation were presented. It was demonstrated that some industrial areas have already decades of experience in computer-based training and evaluation of demanding skills. The potential of a technology transfer from these achievements into the medical community was shown.

A short presentation of existing commercial and non-commercial surgical simulators demonstrated the state of the art in this field. An outlook on the next 3 years showed the on-going international developments and gave an anticipation of the next technical milestones in this field.

The role of appropriate force-feedback for surgical simulation was demonstrated and the on-going developments at the PolyDimensions GmbH like new simulation methods (continuum mechanics) and force-reflecting instruments (Force-impression, FIP) presented.

Frédéric Mouret presented a new range of intestinal retractors for minimally invasive surgery. These retractors allow to decrease trendelenburg angle and pneumoperitoneum pressure and to increase the working space. The device is, for the moment, dedicated to usual laparoscopic approach. It has been designed for vascular laparoscopic surgery. Its functionality has been assessed on cadavers and a previous prototype has been used in more than a hundred patients. With this tool, no more trendelenburg is necessary and the pneumoperitoneum pressure has been decreased to only 8 mmHg.

The retractor is composed of a net and fixation means in order to completely retract bowels and to lock the device to the operating table. The device is inserted through usual trocars and deployed inside the abdomen.

This device can be adapted to a transvaginal approach and can be designed to retract bowels longitudinally or transversally. It presents potential application in gynaecology, urology, digestive and vascular surgery.

Tahar Benhidjeb presented surgical procedures that come into consideration for NOS. He explained in details by means of three today frequently laparoscopically performed operations, e.g., appendectomy, cholecystectomy and right

hemicolectomy, how these procedures should be realized via transdouglass with the TED. He highlighted the technical challenges and the clinical benefits as well as the future prospects of this new technique.

Jacques Corcos presented a video clip on laparoscopic Nephrectomy. Like Tahar Benhidjeb he explained in details by means of this procedure, how he plans to achieve this operation with the TED.

Sabine Miriam Grüsser-Sinopoli explained the theoretical background of Assessment of psychological variables associated with NOS-treatment. It is often described that psychological and physical well-being and perception of pain is influenced by several psychological variables as well as environmental conditions. Therefore, multidimensional aspects are involved in the development and maintenance of pain. Furthermore, it is known that a good patient compliance is highly associated with the quality patient information as well as the communication about the operation and its consequences.

She presented an ongoing study, which goal is the comparison of operation-associated variables in patients undergoing NOS with patients receiving traditional surgery and to identify the psychological variables, which are dominant in pre- and post-NOS.

Michael Stark gave an overview on the objective evaluation of postoperative pain. He explained the background, which brought him to research this field, gave overview concerning the present research programme, which he initiated at the University of Erlangen. He explained the methods available today for estimating blood flow and physiological changes in the brain and proposed a research programme, which might be done together with the University of Oxford.

Panel discussion

In the panel discussion, aspects concerning the clinical application of TED were discussed. Especially the pertinence of psychological and socio-cultural factors associated with the transvaginal-transdouglass approach has been emphasized. The technical aspects and the time frame dealing with the development of TED were discussed very controversial. It appeared that the representatives of the industry seemed reluctant to start to build a prototype. They made particularly reservations concerning the construction of the TED in due time because of its technical complexity and the restricted existing technology.

Irmgard Posch highlighted the scarless aspect of the transvaginal-transdouglass approach, thus minimizing postoperative patient's pains.

Parwis Fotuhi pointed out the importance of the educational aspect within the NOS project by developing simulation tools that offer the opportunity for the acquisition of surgical skill in the preclinical setting.

Antoine Watrelot stressed the distinction between gynaecological and upper abdominal tract procedures. It means that if the operating site is below the promontory, we should consider using saline solution as a medium instead of carbon dioxide. Because if not, we will be obliged to use the knee chest position which is not very convenient and therefore contributed largely for Culdoscopy to be abandoned in the early fifties. Watrelot and his team have already demonstrated that the use of saline solution is safe and easy during Fertiloscopy. It may be interesting to consider

a mixed option: starting to fill the pouch of Douglas with saline then continue with CO₂. Concerning the operations of the upper tract, like gallbladder, CO₂ will be necessary but at a pressure below that of laparoscopy (< 10 mmHg). The pressure may be still lowered by using the intestinal retractor presented by Frédéric Mouret. The low intraabdominal pressure will allow us to perform the transvaginal-transdouglass operations in epidural anaesthesia as highlighted by Jochen Strauß.

Conclusion and decisions

All participants agreed that this meeting was very useful since the multidisciplinary team has raised all questions regarding NOS. This should be continued.

The goal of our group is to develop a device that will allow us performing a totally transvaginal-transdouglass operation. "Totally" means without (!) any abdominal incision: one instrument and one entry!

In preparation to the experimental and clinical application of TED, it was decided to concentrate firstly on few frequently performed "low risk" operations. The following NOS members will gather an operative "roadmap" to the following procedures:

- Tahar Benhidjeb: appendicectomy and cholecystectomy
- Jacques Corcos: nephrectomy
- Michael Stark: hysterectomy

Each author will submit proposals until June 30, 2007.

Finally, the whole working group will meet once the TED has been developed and experimentally applied.