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The da vinci robot and vascular surgery

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Abstract

Objectives
The feasibility of laparoscopic aortic surgery has been adequately demonstrated. Our clinical experience with robot-assisted aortoiliac reconstruction for occlusive diseases, aneurysms, endoleak II treatment and hybrid procedures performed using the da Vinci system is herein described.

Methods
Between November 2005 and April 2012, we performed 250 robot-assisted vascular procedures. 189 patients were prospectively evaluated for occlusive diseases, 48 patients for abdominal aortic aneurysm, two for a common iliac artery aneurysm, two for a splenic artery aneurysm, one for a internal mammary artery aneurysm four for hybrid procedures, and four for endoleak II treatment post EVAR.

The robotic system was applied to construct the vascular anastomosis, for the thromboendarterectomy, for the aorto-iliac reconstruction with a closure patch, for dissection of the splenic artery, and for the posterior peritoneal suture. A combination of conventional laparoscopic surgeries and robotic surgeries were routinely included. A modified, fully-robotic approach without laparoscopic surgery was used in the last 80 cases in our series.

Results
241 cases (96,4%) were successfully completed robotically, one patient's surgery was discontinued during laparoscopy due to heavy aortic calcification. In eight patients (3,2%) conversion was necessary. The thirty-day mortality rate was 0,4%, and non-lethal postoperative complications were observed in 13 patients (5,2%).

Conclusions
Our experience with robot-assisted laparoscopic surgery has demonstrated the feasibility of this technique for occlusive diseases, aneurysms, endoleak II treatment post EVAR and hybrid procedures. The da Vinci robotic system facilitated the creation of the aortic anastomosis, and shortened the aortic clamping time as compared to purely laparoscopic techniques.

Biography

Petr Stadler graduated from the Charles University Prague Medical School in Pilsen, Czech Republic in 1989. He performed his Internship and Residency in General and Vascular Surgery at the District Hospital in Jicin, Czech Republic. Dr. Stadler obtained his certification of general surgery in 1992 and vascular surgery in 1996. Upon completion of his certifications, Dr. Stadler relocated to Na Homolce Hospital in Prague. He was certified as a console surgeon for the da Vinci surgical system in an off-site training program conducted in August, 2005 at the University of California, Irvine. His surgical interests include: vascular, laparoscopic vascular and robot-assisted vascular surgery. Dr. Stadler is a member of the Czech Association of Cardiovascular Surgery, the European Society for Vascular Surgery, a founding member of the International Endovascular and Laparoscopic Society and honorary member the Polish Robotic Society. He has also received a few prestigious honors from the Czech Association of Cardiovascular Surgery for the best publications in 2004 and 2006, the Letter of Appreciation from Korean Society of Endoscopic and Laparoscopic Surgeons in May 2008, the price of the Czech Society of Angiology for the publication in the year 2007, the best audiovisual presentation during the 12th Annual Meeting on Minimally Invasive Cardiothoracic Surgery in 2009 in USA and the International Award of SCVS in 2013 in USA.

He performed also the robot-assisted vascular operation in South Korea, Russia, Poland and India.