2 km. Furthermore, early feeding and early in ambulation may have improved gastrointestinal function and may have contributed to suppress respiratory complications [24,25]. As a result of this program, patients were discharged home during the second or third day on average. While we have not pointed out the cost savings, nevertheless, we calculated that a merely reduction in hospital stay saved €2,550 for a single patient. No side effects or hospital readmissions due to protocol were observed. On the contrary, patients enjoyed the resumption of their daily activities and showed a high degree of compliance.

This multidisciplinary program can be proposed to all patients undergoing aortic surgery without prior selection, major technological investments and long-term surveillance. Nevertheless, this multidisciplinary approach required a period of almost two years, during which medical and nursing staff worked closely with patients in revising their protocol and constructing a care plan for the whole perioperative phase. There are limitations within this study: in particular we did not investigate the value of the impact of single intervention (surgical or anesthesiological or rehabilitative) in postoperative outcome; furthermore, we did not consider a control group.

In conclusion, the results hereby presented suggest that a multidisciplinary approach including a revision of traditional surgical care program combined with optimal pain relief by continuous epidural analgesia, early oral nutrition and enforced mobilization, would enhance recovery and reduce the length of hospital stay after abdominal aortic surgery. Further large-scale studies are required to document the safety of early rehabilitation and to establish if such improvement is preserved over a longer period.

References

[1] Kehlet H, Dahl JB. Anesthesia, surgery and challenges in postoperative recovery. Lancet 2003;362:1921–1928.

[2] Prinssen M, Buskens E, Blankensteijn JD. The Dutch Randomised Endovascular Aneurysm Management (DREAM) trial. Background, design and methods. J Cardiovasc Surg (Torino) 2002;43:379–384.

[3] Ferrari M, Adami D, Del Corso A, Berchiolli R, Pietrabissa A, Romagnani F, Mosca F. Laparoscopy-assisted abdominal aortic aneurysm repair: early and middle-term results of a consecutive series of 122 cases. J Vasc Surg 2006;43:695–700.

[4] Wilmore DW, Kehlet H. Management of patients in fast track surgery. Br Med J 2001;322:473–476.

[5] Brustia P, Porta C. Left sub costal minilaparotomy in aortic surgery. Minerva Cardioangiol 2001;49:91–97.

[6] Brustia P, Renghi A, Gramaglia L, Porta C, Cassatella R, De Angelis R, Tiboldo F. Mininvasive abdominal aortic surgery. Early recovery and reduced hospitalization after multidisciplinary approach. J Cardiovasc Surg (Torino) 2003;44:629–635.

[7] Fleming C, Whitlock EP, Beil TL, Lederle FA. Screening for abdominal aortic aneurysm: a best-evidence systematic review for the US preventive services task force. Ann Intern Med 2005;142:203–211.

[8] Dillavou ED, Muluk SC, Makaroun MS. A decade of change in abdominal aortic aneurysm repair in the United States: have we improved outcomes equally between men and women? J Vasc Surg 2006;43:230–238.

[9] Bush RL, Johnson ML, Collins TC, Henderson WG, Khuri SF, Yu HJ, Lin PH, Lumsden AB, Ashton CM. Open versus endovascular abdominal aortic aneurysm repair in VA hospitals. J Am Coll Surg 2006;202:577–587.

[10] Coggia M, Di Centa I, Javerliat I, Alfonsi P, Kitzis M, Goeau-Brissonniere OA. Total laparoscopic abdominal aortic aneurysms repair. J Cardiovasc Surg (Torino) 2005;46:407–414.

[11] Reed T Jr, Veith FJ, Gargiulo NJ 3rd, Timaran CH, Ohki T, Lipsitz EC, Malas MB, Wain RA, Suggs WD. System to decrease length of stay for vascular surgery. J Vasc Surg 2004;39:395–399.

[12] Abularrage CJ, Sheridan MJ, Mukherjee D. Endovascular versus 'fast-track' abdominal aortic aneurysm repair. Vasc Endovascular Surg 2005;39:229–236.

[13] Carli F, Kehlet H. Continuous epidural analgesia for colonic surgery – but what about the future? Reg Anesth Pain Med 2005;30:140–142.

[14] Tefera G, Carr SC, Turnipseed WD. Endovascular aortic repair or minimal incision aortic surgery: which procedure to choose for treatment of high-risk aneurysms? Surgery 2004;136:748–753.

[15] Laohapensang K, Rerkasem K, Chotirosniramit N. Mini-laparotomy for repair of infrarenal abdominal aortic aneurysm. Int Angiol 2005;24:238–244.

[16] Brown SR, Goodfellow PB. Transverse versus midline incisions for abdominal surgery. Cochrane Database Syst Rev 2005;4:CD005199.

[17] Cerveira JJ, Halpern VJ, Faust G, Cohen JR. Minimal incision abdominal aortic aneurysm repair. J Vasc Surg 1999;30:977–984.

[18] Turnipseed WD, Carr SC, Tefera G, Acher CW, Hoch JR. Minimal incision aortic surgery. J Vasc Surg 2001;34:47–53.

[19] Kehlet H, Holte K. Effect of postoperative analgesia on surgical outcome. Br J Anaesth 2001;87:62–72.

[20] Marret E, Lembert N, Bonnet F. Anaesthesia and critical care for scheduled infrarenal abdominal aortic aneurysm surgery. Ann Fr Anesth Reanim 2006;25:158–179.

[21] Carli F, Mayo N, Klubien K, Schricker T, Trudel J, Belliveau P. Epidural analgesia enhances functional exercise capacity and health-related quality of life after colonic surgery: results of a randomized trial. Anesthesiology 2002;97:540–549.

[22] Norris EJ, Beattie C, Perler BA, Martinez EA, Meinert CL, Anderson GF, Grass JA, Sakima NT, Gorman R, Achuff SC, Martin BK, Minken SL, Williams GM, Traystman RJ. Double-masked randomized trial comparing alternate combinations of intraoperative anesthesia and postoperative analgesia in abdominal aortic surgery. Anesthesiology 2001;95:1054–1067.

[23] Fleron MH, Weiskopf RB, Bertrand M, Mouren S, Eyraud D, Godet G, Riou B, Kieffer E, Coriat P. A comparison of intrathecal opioid and intravenous analgesia for the incidence of cardiovascular, respiratory, and renal complications after abdominal aortic surgery. Anesth Analg 2003;97:2–12.

[24] Holte K, Kehlet H. Postoperative ileus: a preventable event. Br J Surg 2000;87:1480–1493.

[25] Carli F. Perioperative factors influencing surgical morbidity: what the anesthesiologist needs to know. Can J Anesth 1999;46:70–74.

ICVTS on-line discussion A

Author: ***Narcis Hudorovic****, University hospital Sestre milosrdnice, Zagreb 10000, Croatia*
Email Narcis Hudorovic
doi:10.1510/icvts.2006.137562A

The authors stated that they have not pointed out the cost savings, and they only calculated that merely reducing hospital stay saved €2,550 for a single patient in a fast-tracking multidisciplinary program in patients who had undergone elective abdominal aortic surgery [1]. This retrospective population-based study shows that results of the fast-track approach for abdominal aortic surgery can be achieved in the "real world". However, these findings highlight the need for continuous outcome monitoring and associated quality improvement efforts to ensure that all further health providers and institutions involved are achieving desired outcomes. For that reason this multidisciplinary program could be based on research commissioned by the National Coordinating Centre for Health Technology Assessment (NCCHTA). The purpose of the NCCHTA method is to ensure that high quality research information on the costs, effectiveness and cost-effectiveness (CE) is produced in the most effective way for those who use, manage and provide care in the National Health System (NHS). Furthermore, every year the NCCHTA decide which of the many suggestions received from NHS and its users should become research priorities. The main objective of such a study could be the diffusion of state of the art evidence without any mandatory role regarding guidelines implementation or rationing in health care. However, collected results could not be questionable in the sense that an improvement of the quality of life is dependent on the pre-procedural base case values and independent of the pre-operative co-morbidities. Following conventional practice, utility values for the different health states could be obtained from appropriate CUA database, using the states of perfect health and death as anchor values in order to estimate the disutility that would inform the model.

At this point it would be wise to mention that recently the Leapfrog Group have made surgical case volumes and mortality rates key criteria for high-risk procedures [2]. This might seem reasonable at first glance for abdominal aortic surgery, but a recent study on the use of mortality as a surgical quality indicator for hospitals, showed that a very large caseload is necessary to provide a valid measure of quality. In this regard, novel statistical approaches, such as cumulative sum charts (CUSUM), may be appropriate, as these methods permit detection of concerning outcome trends shortly after the occurrence of adverse events.

The authors show that the short-term results for abdominal aortic surgery in fast-tracking multidisciplinary program can be replicated in a large "real-world" setting in the majority of hospitals, and for that reason I would like to congratulate the authors. However, the excess adverse event rate in some hospitals is of continuing concern and underlines the need for continued quality improvement efforts and new statistical approaches to provide valid and timely measures of outcome.

References

[1] Brustia P, Renghi A, Fassiola A, Gramaglia L, Della Corte F, Cassatella R, Cumino A. Fast-track approach in abdominal aortic surgery: left subcostal incision with blended anesthesia. Interact CardioVasc Thorac Surg doi: 10.1510/icvts.2006.137562 [update!].

[2] Birkmeyer JD, Dimick JB. Potential benefits of the new Leapfrog standards: Effect of process and outcomes measures. Surg 2004; 135:569–575.