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ORIGINAL ARTICLE

A comparison in five European Centres of case mix, clinical management and outcomes following either conventional or fast-track perioperative care in colorectal surgery

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P-POSSUM;
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Summary
Background & aims: This study reviewed the case mix, clinical management, and clinical outcomes of patients undergoing colorectal resection in five European centres performing different forms of conventional or 'fast-track' perioperative care.
Methods: The perioperative care programme and surgical practice in each centre was defined. Patient data were collected by case-note review on an internet-based audit system. Case mix was determined using ASA classification and the P-POSSUM scoring system.
Results: A total of 451 consecutive patients from units practicing either conventional (Sweden, $n = 109$; UK, $n = 87$; Netherlands, $n = 76$, Norway, $n = 61$) or fast-track surgery (Denmark, $n = 118$), were studied between 1998 and 2001. Elements of perioperative practice varied widely both between units practicing 'traditional' care and the reference 'fast-track' unit (Denmark). Based on the P-POSSUM scores,

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the case mix was similar between centres. There were no differences in morbidity or 30-day mortality between the different centres. The median length of stay was 2 days in Denmark and 7–9 days in the other centres ($P<0.05$). The readmission rate was 22% in Denmark and 2–16% in the other centres ($P<0.05$).
Conclusion: Compared with traditional care, fast-track perioperative care results in a reduced length of hospital stay but may be associated with a higher readmission rate. Morbidity and mortality appears to be similar with either approach. Prospective evaluation of the potential benefits of the fast-track approach in different European centres is merited.

Introduction

Over the last century, rapid progress has led to markedly reduced morbidity and mortality after general surgery. Despite such efforts,[1] complication rates are still around 20–40% after abdominal surgery.[2] During the last decade, it has been shown repeatedly by Kehlet and coworkers from Hvidovre Hospital, Denmark, that a standardized programme to enhance recovery from surgery can allow early return of bowel function, early discharge from hospital (median length of stay (LOS) 2–3 days after open colonic surgery), and improved physiological function when compared with patients undergoing traditional perioperative care.[1,3–5] Similar achievements have subsequently been reported from other centres.[6–10] Although it may be difficult to design a randomized study comparing traditional vs. fast-track care within a single institution, few such studies of relatively small size have been reported[8,9,11] and confirm that a reduced hospital stay can be achieved without any apparent risk and with a similar or even better functional outcome. The experience from non-randomized comparative studies within different institutions,[3–5] or within single institutions,[6] suggest fast-track colonic surgery to be cost effective with shortened hospital stay, possible reduced morbidity, but increased readmission rates. However, observations from such series may be difficult to interpret due to the limited number of patients and difficulties in comparing the individual components of traditional perioperative care in one institution vs. another. In addition, there have been doubts whether centres performing fast-track surgery have had the same case mix as in other centres.

The Enhanced Recovery After Surgery (ERAS) group is a European multicentre collaboration established to develop perioperative routines aimed to reduce medical complications and improve postoperative function. The present study compares patient characteristics, surgical strategies and predicted and observed outcomes from consecutive patients undergoing open colorectal resection in four European surgical centres performing conventional perioperative care vs. one centre performing 'fast-track' care.

Patients and methods

A working-group (ERAS group) was established between one centre practicing 'fast-track' colorectal perioperative care (Hvidovre Hospital, Denmark) and four other university centres (University Hospital of Northern Norway, Tromsø, Norway/University Hospital, Maastricht, The Netherlands/Karolinska Institutet at Ersta Hospital, Stockholm, Sweden/The Royal Infirmary, Edinburgh, UK) adhering to a more traditional pattern of care. A central database was designed specifically for the project. All centres had ethical approval for collection of the data. The care protocols along with the surgical strategies from all centres were carefully documented. The outcomes were studied (Table 1) from 451 consecutive patients undergoing laparotomy for colorectal resection (above the peritoneal reflection) over a 1-year period between 1998 and 2001, from each of the five surgical units in Denmark (DK, $n=118$), Sweden (SE, $n=109$), Norway (NO, $n=61$), the Netherlands (NL, $n=76$), and the UK (UK, $n=87$). Data were assembled retrospectively, except in Hvidovre, DK, where data collection was performed prospectively and has already been published, in part, elsewhere.[5] Complications occurring during hospital stay and within 30 days from surgery were recorded according to Lång et al.[2] In DK, all patients were seen according to a strict follow-up scheme at 8 and 30 days postoperatively, while patients were reviewed in the out-patient clinic within 4–6 weeks in the other units.

In addition to observed morbidity and mortality, a risk-adjusted, predicted outcome using the P-POSSUM score was calculated.[12] Missing values (<5% of all datafields) for the P-POSSUM variables were assigned to a normal range value to avoid false low scores.