

**ABSTRACT TITLE:** A DIGITAL ENHANCED RECOVERY PATHWAY: IMPROVING PERI-OPERATIVE QUALITY FOR ELECTIVE ESOPHAGO-GASTRIC SURGERY

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**Background:** Surgery remains the mainstay of curative treatment for esophageal and gastric cancers. Esophago-gastric operations have significant risks and complications, and can have a major bearing on patients' ongoing quality of life. We developed a web-based app to track esophago-gastric patients along their course of surgical treatment. Our aim was to explore how better data could stimulate improved peri-operative care throughout the multi-disciplinary pathway.

**Methods:** We prospectively collected metrics on 75 patients who underwent elective surgery for esophago-gastric cancer between October 2016 and August 2017. The data includes elements of peri-operative care, from pre-operative assessment through to discharge. The metrics span both compliance to our pathway and clinical outcomes, providing broad scope to explore how the two correlate. We instated regular feedback to the wider multi-disciplinary team (MDT) through several channels and assessed the impact of this feedback on the recovery of patients.

**Results:** The median hospital stay was 11 days (range 5-71 days; esophagectomy 13 days, gastrectomy 10 days). The median high dependency unit stay was 3 days (esophagectomy 6 days and gastrectomy 3 days). Protracted presence of an epidural, urethral catheter, intra-compartmental drains and naso-gastric tube delayed mobilisation and hospital discharge. We divided compliance to the pathway based on specific tasks that the patients were to achieve. For mobilisation, patients tended to achieve >80% compliance to the recovery pathway on post-operative days 1 and 2, but this dropped to a median of 60% for days 3-5. For nutrition, patients achieved a compliance rate of 60% on post-operative days 1-3, but dropped thereafter. When assessing specific patterns of practise, we noted complications were more common on post-operative days 3, 5 and 7. Of these, the majority (62%) were respiratory in nature, and most were Clavien-Dindo 2 or less. However, the presence of a complication resulted in a lengthier hospital stay by a median of 8 days, and caused poorer compliance to the pathway. Also, patients who had higher pain scores post-operatively on days 1-3 (despite an epidural) had a 46% higher chance of a complication than those with low pain scores. Similarly, patients who failed to mobilise adequately on days 1-3 suffered a 54% increase in the rate of complications. Furthermore, of patients who had a single complication, 42% developed a further complication. Other factors which were also noted to increase the incidence of complications included ASA 3 (compared to 2), greater than 250mls of intra-operative blood loss and body mass index of greater than 30 kg/m<sup>2</sup>. The wider MDT were provided with feedback reports (verbal and written) at regular intervals throughout the study period, highlighting patients' compliance to the recovery pathway for their particular remit. As a result, there was a significant increase in compliance from the physiotherapists, intensivists and surgeons ( $p= 0.042$ ) after the mid-point of the study period.

**Conclusions:** Underpinning our enhanced program with a digital platform has dramatically improved our ability to assess our practise. By prospectively collecting data and using the app to analyse results, we are able to better consider our clinical practise in real-time, both for the whole cohort and for individual patients. The latter enables early intervention to mitigate the risks of developing a complication. By exploring patterns between metrics, we are now able to pre-operatively identify *at risk* groups and optimise them more effectively. Most importantly, we have an accurate, sustainable tool for us to better understand, evaluate and improve our practise, using credible and locally pertinent data. By involving the wider MDT through a feedback process, clinical outcomes can be improved.