456 MACHINE LEARNING OUTPERFORMS LOGISTIC REGRESSION IN PREDICTING ACCURACY OF CCU ADMISSION FOR HIGH GRADE SEROUS ADVANCED OVARIAN CANCER PATIENTS

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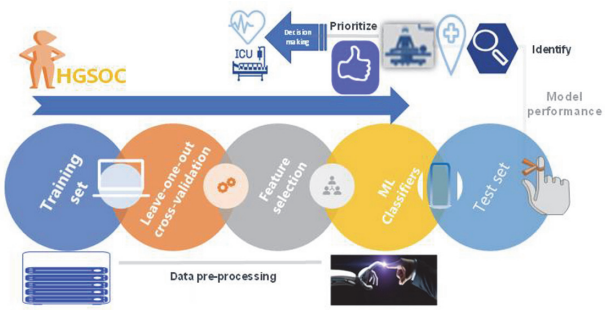
Introduction/Background* In advanced stage high grade serous ovarian cancer (HGSOC), the introduction of maximal surgical effort without compromising peri-operative management and subsequent recovery to achieve complete cytoreduction, requires Critical Care Unit (CCU) availability. This paradigm shift prompts the development of tools to accurately predict CCU admission following cytoreductive surgery. Modern data mining technology, such as Machine Learning (ML) could be helpful in accurately predicting CCU admissions to improve standards of care. We developed a framework to improve the accuracy of predicting CCU admission in HGSOC patients by use of ML algorithms (figure 1).

Methodology A cohort of 291 advanced stage HGSOC patients, who underwent surgical cytoreduction from Jan 2014 to Dec 2019, was selected from the ovarian database. They were randomly assigned to training (60%) and test (40%) subcohorts. Forward selection and backward stepwise regression were employed to screen independent pre- and intra-operative variables. Linear (LDA), Quadratic (QDA), and non-linear distance (ANN and KNN) ML models were employed to derive predictive information. These methods were tested against conventional linear regression (LR). Model performance was evaluated by prediction accuracy, sensitivity, specificity, and F1 scores.

Result(s)* We identified 56/291(19.2%) CCU admissions. For the outcome of CCU admission, the prediction accuracies were higher for LDA (0.90) and QDA (0.93) compared with LR (0.84) when all the variables were included in the in-built model. Feature selection identified pre-treatment albumin, surgical complexity score, estimated blood loss, operative time, and bowel resection with stoma formation as the most significant prediction features. With feature selection, the prediction accuracies were higher for LDA (0.89) and KNN (0.86) compared with LR (0.82). Admission to CCU was associated with increased length of stay (P = 0.000), and decreased number of postoperative complications (P = 0.001).

Conclusion* Herein, ML algorithms accurately predicted HGSOC patients, who required CCU admission following their cytoreductive surgery. Linear discriminant analysis was consistently more predictive than LR for CCU admission, irrespective of the number of features included in the analysis. Limited, potentially modifiable, mostly intra-operative factors contributing to CCU admission were identified and suggest areas for targeted interventions.



Abstract 456 Figure 1

474 ERAS PROTOCOLS IN GYNAECOLOGICAL ONCOLOGY. SHOULD WE INCLUDE THORACIC EPIDURAL ANALGESIA?

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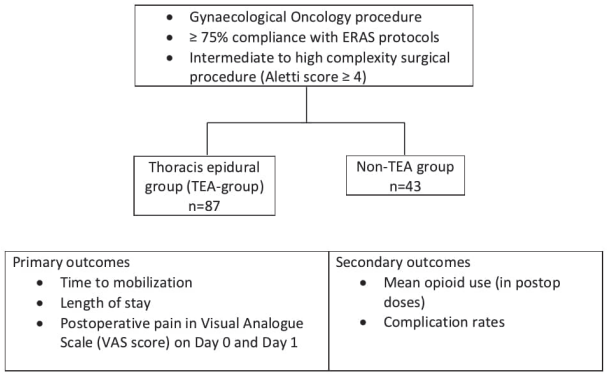
Introduction/Background* Enhanced recovery after surgery (ERAS) pathways aim to improve the perioperative practice ending in a shorter length of stay with less postoperative complications. Although thoracic epidural analgesia (TEA) is included in ERAS guidelines of other specialties, it is not included in ERAS guidelines in gynaecological oncology. We aim to provide further information in the use of TEA in ERAS protocols in gynaecological oncology.

Methodology A retrospective analysis of a prospectively maintained database of patients who underwent intermediate to high complexity surgery from January 2020 to March 2021 due to gynecological malignancy. The ERAS protocol was followed and patients with compliance rates >75% who received postoperative (PO) analgesia through thoracic epidural catheter as part of multimodal analgesia (TEA group) versus those who did not (non-TEA group) were compared. Mobilization, length of stay (LOS), and postoperative pain were considered the primary outcomes of the study

Result(s)* A total of 130 patients (87 in TEA group versus 43 in non-TEA group). Mean visual analog scale (VAS) pain scores at both the day of surgery and PO day 1, were significantly lower in TEA group compared to non-TEA (3.74 vs 4.67, p<0.0001 and 3.30 vs 4.14, p<0.0001, respectively). Mobilization rates were significantly higher in TEA group versus non-TEA (93% vs 62%, p<0.0001). Mean opioid use was significantly higher in non-TEA group (p<0.0001), while nausea rates were significantly reduced in TEA patients (p=0.021). No difference in LOS was observed among the two groups (4.18 vs 4.40, p=0.995) same as in complication rates.



Abstract 474 Figure 1

Conclusion* Although TEA is not included in ERAS protocols in gynaecological oncology, in experienced hands, it would be a beneficial tool related to decreased need of opioid use and nausea rates with no impact to hospital stay and PO complications, aiming to improve the perioperative quality of patient's care.

505 LYMPH NODE STATUS AS A PREDICTOR OF VENOUS THROMBOEMBOLIC RISK POSTOPERATIVELY IN GYNAE-ONCOLOGY

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Introduction/Background* Gynaecological cancer surgery carries a high risk of venous thromboembolism (VTE). In the absence of thromboprophylaxis, 34.5% of women with gynaecological cancer develop VTE post operatively compared to 2% in benign gynaecological surgery patients. Lymph node dissection (LND), an integral part of any gynaecological procedure, carries therapeutic benefit in some cancers but also increases the complications of cancer surgery. An association of LND with VTE has been suggested.

The aim of this study is to investigate the role of LND and lymph node (LN) metastasis on the incidence of VTE following both open and laparoscopic surgery for gynaecological cancer.

Methodology This is a retrospective cohort study analysing data from 1084 patients who underwent gynaecological cancer surgery between 2006-2019 in St James Hospital, Dublin, Ireland (Tertiary referal centre). 1018 patients with complete follow up were included in the study.

Patients with previous VTE, history of significant haemorrhage outside of a surgical setting within the last 5 years, familial bleeding diathesis and patients receiving anticoagulant therapy were excluded. Univariate analysis was used to determine the effects of LND and LN metastasis on the rate of VTE 90 days post surgery.

Result(s)* Forty three patients developed VTE in 90 days post-surgery (4.3%). VTE rate was significantly higher following open surgery (5.4%) compared with laparoscopic approach (2.3%) ($P<0.02$). The total number of para aortic LN retrieved significantly increased the rate of VTE ($P<0.008$). VTE risk within 90 days was 14.3% in patients with >10 para-aortic LN removed , 5.9% in patients <10 paraaortic LN retrieved, compared with 4.4% who had no paraaortic LN removed. Pelvic LN metastatic status significantly influenced VTE risk. 5.2% of patients <5 LN positive for metastasis had VTE, which increased 4 fold (20%) in patients with > 5 LN positive for metastasis ($P<0.042$). Lymphovascular space invasion(LVSI) had no effect on VTE risk postoperatively. Overall survival was reduced in patients who developed VTE($P<0.0001$).

Conclusion* Gynaecological cancer surgery increases VTE risk. The number of paraaortic LN and pelvic LN metastatic status is associated with increased VTE risk and may be useful in predicting VTE post surgery.

510 AN OVERVIEW OF COMPLICATIONS IN MAJOR GYNAECOLOGICAL ONCOLOGY SURGERY AT A TERTIARY CENTRE

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Introduction/Background* We aim to assess the complication rates across different operative modalities and surgeons. Provide information on patient co-morbidities and tissue diagnosis. This information is important for patient counselling and to provide evidence for ongoing unit accreditation.

Methodology We identified all major gynaecology oncology cases performed at our tertiary centre in 2019, assigned to the 4 oncology surgeons. Cases were assessed for operation type, diagnosis and co-morbidities. Complications then assessed using Clavien-Dindo classification. Data about complications obtained from EDN and follow up clinic letters. Standard used was the UK Gynaecological Oncology Surgical Outcomes and Complications audit of 25.9% on inclusion of all patient-reported complications.

Result(s)* Our major complication rate (Clavien-Dindo 3-4) was **1.61%.** Our overall complication rate (Clavien-Dindo 1-4 was **29.8%** . 11 deaths recorded, with only 1 death within 28 days of surgerym unrelated to surgery. Of complications, 1 case of intra-abdominal & retroperitoneal collection, 2 cases wound dehiscence requiring surgical management, 2 cases of haemorrhage requiring relook laparotomy and 1 case returned to theatre for vaginal wall tear after specimen removal.

Conclusion* Our major complication rate is below the national average. Different surgeons have different specialist interests, this may reflect complication rate and allows super specialisation e.g. in robotic surgery. We reported largely similar rates of rare major complications across surgeons and operation type. This knowledge is helpful when consenting patients for procedures, as it gives real life numbers at a local level.

591 PERIOPERATIVE CARE IN GYNAECOLOGICAL CANCER SURGERY DURING THE COVID PANDEMIC IN A LOW RESOURCE CENTRE – ROLE OF ENHANCED RECOVERY PROTOCOLS

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Introduction/Background* ERAS (Enhanced Recovery after Surgery) is a multimodal perioperative care pathway designed to achieve early recovery after surgical procedures. This study aimed to analyse the feasibility of ERAS in the era of pandemic and to find its effect on the post-operative outcome of patients undergoing surgery for gynaecological cancer during the COVID pandemic

Methodology This observational study was done on patients who underwent gynaecological cancer surgery during COVID pandemic in a tertiary cancer centre in South India. Data was collected including patient demographics, nature of surgery, adherence to each of the components of ERAS programme