Peri-operative fluid administration in patients undergoing elective colorectal segmental resection

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Introduction

- Excess fluid and salt load can have many adverse effects, resulting in delays in post-operative recovery
- Patients who gain at least 2.5–3 kg in weight, as a result of salt and water overload, in the post-operative period have a worse outcome than those maintained in a state of zero fluid balance[1]
- There is now a trend in guidelines[2] to suggest aiming for a reduction in fluid and salt load, in order to achieve a closer to zero fluid balance

1. Varadhan KK, Lobo DN. A meta-analysis of randomised controlled trials of intravenous fluid therapy in major elective open abdominal surgery: getting the balance right. Proc Nutr Soc. 2010; 69(4): 488-98.
2. NICE, National Institute for Health and Care Excellence. *Intravenous fluid therapy in adults in hospital. https://www.nice.org.uk/guidance/cg174/chapter/1-Recommendations#routine-maintenance-2 (accessed 22 September 2017).*

Aim

- To determine current fluid prescribing trends within the surgical department of Glasgow Royal Infirmary
- Compare these fluid prescribing trends to the current guidelines as set out by NICE
- Highlight any areas for improvement in current fluid prescribing practices at Glasgow Royal Infirmary

Methods

We carried out a retrospective analysis of peri-operative fluid administration for all patients in 2016, undergoing elective colorectal segmental resection, both laparoscopic and open procedures, at Glasgow Royal Infirmary, within an enhanced recovery programme

Methods

Data collected included;

- All documented fluid input and output both intra-operatively and post–operatively
- Urea and electrolyte values both pre-admission and on days 1, 2 and 3 post-operation
- Patient demographics
- Operation details
- Post operative complication

Methods

Initial 145 entries were reviewed

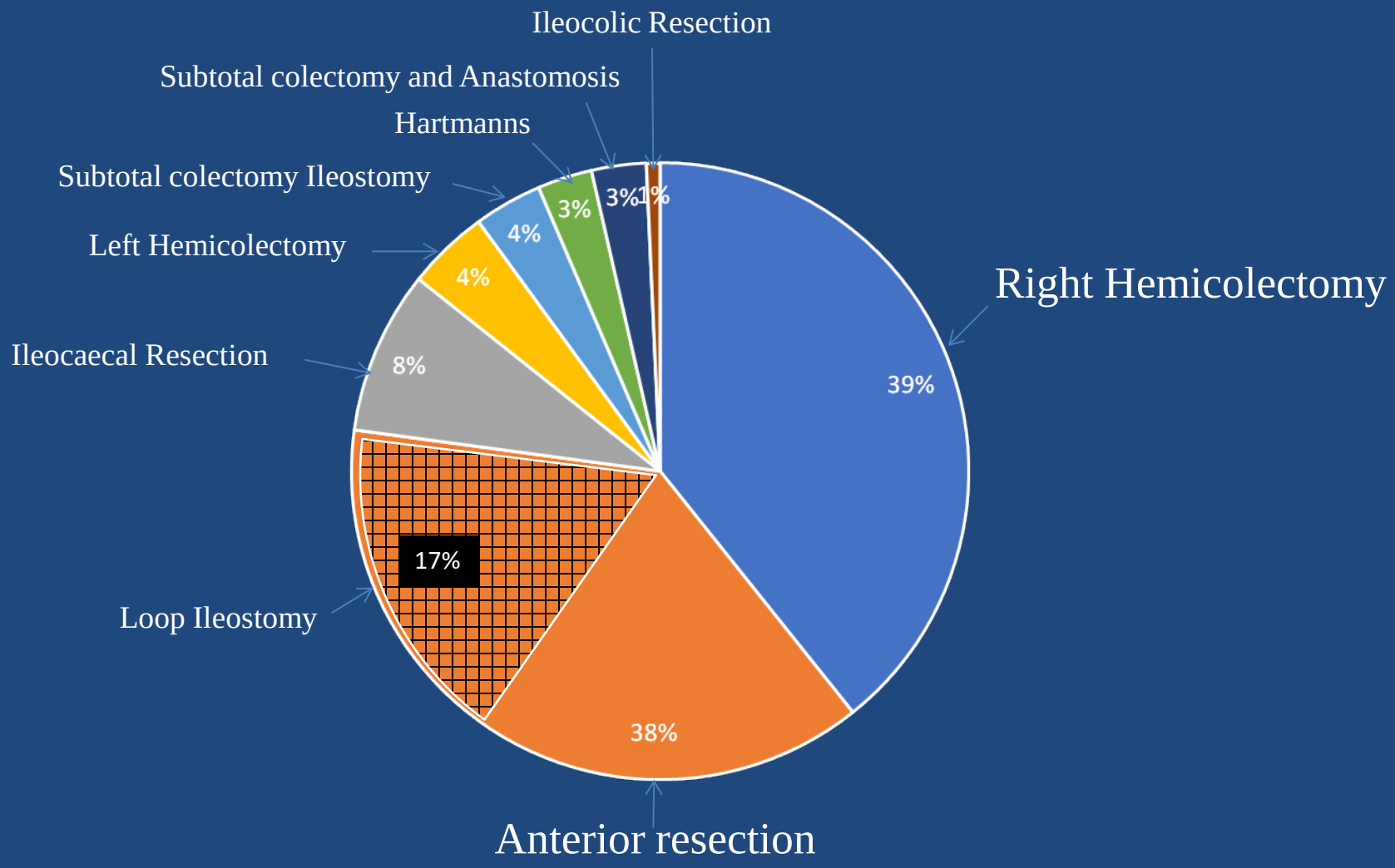
5 patients with intra-operative blood loss of over a litre in theatre were excluded from analysis due to the increased fluids required for resuscitation and replacement

N=140

Of the 140 patients included, only 7 (5%) had blood loss over 500mls

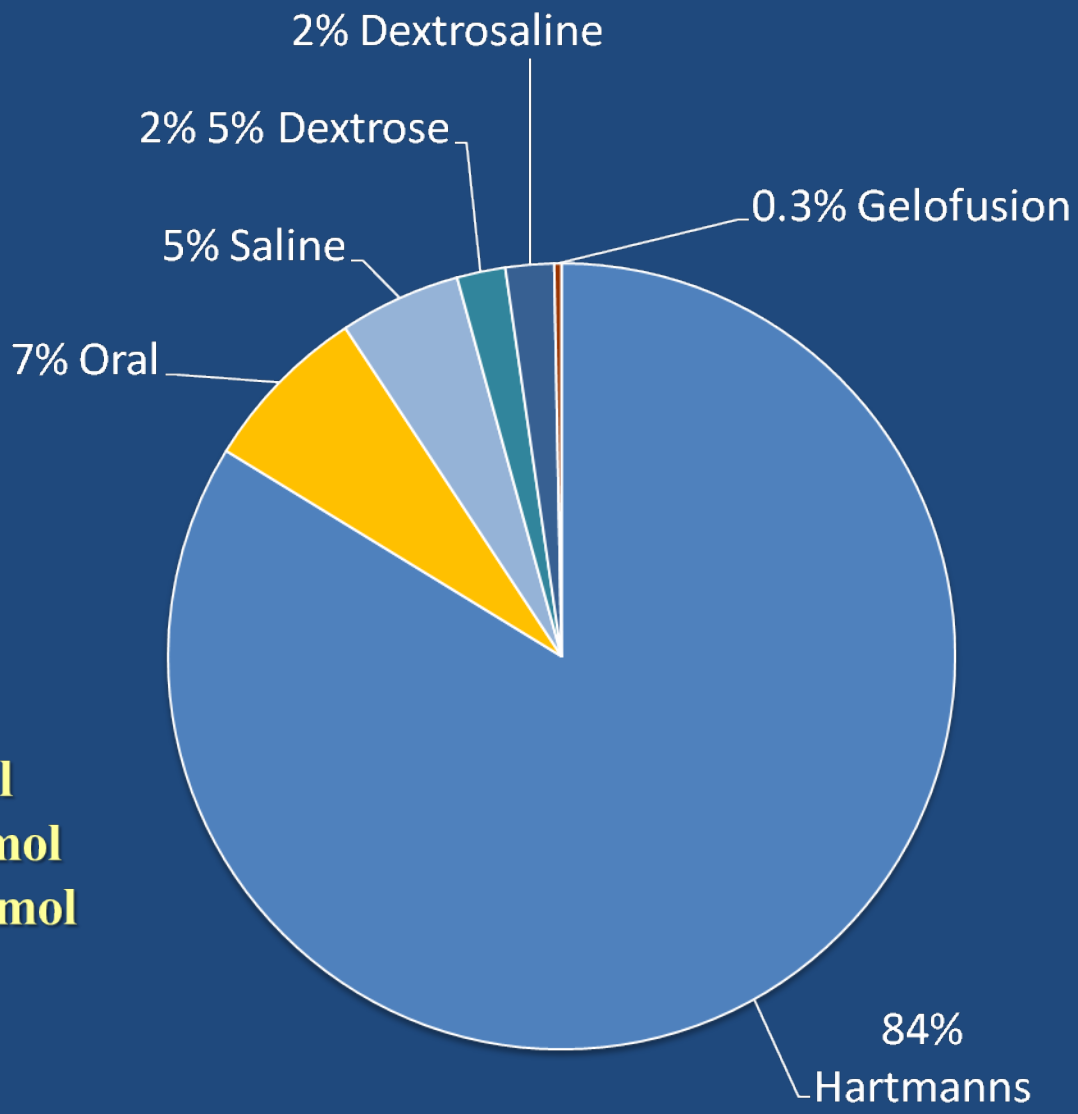
Results

Pie chart showing operation type



Results

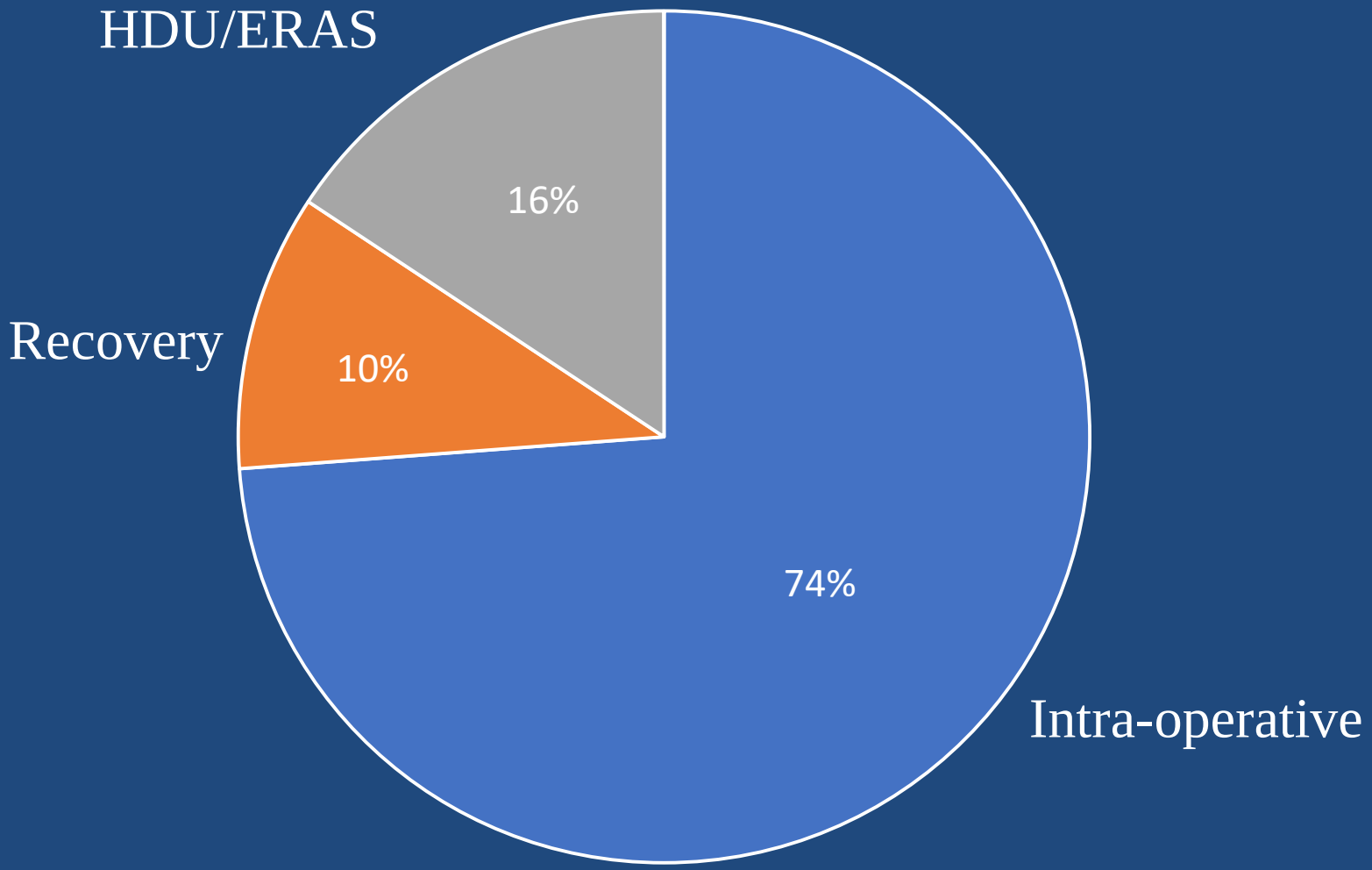
Pie chart showing fluid type given on day of theatre



Fluid: 3948 ml
Sodium: 462 mmol
Potassium: 18 mmol

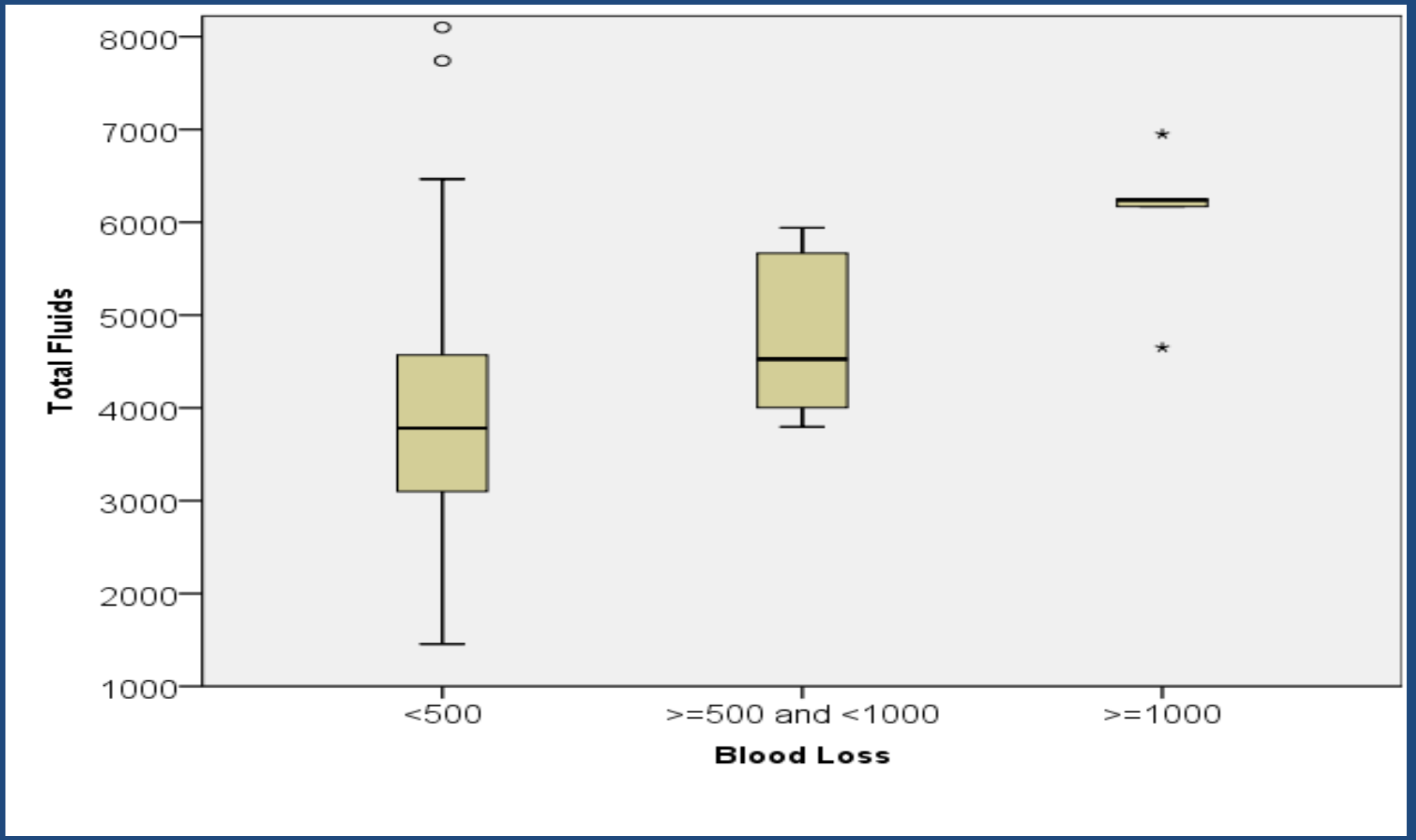
Results

Pie chart showing timing of I.V. fluids on day of theatre



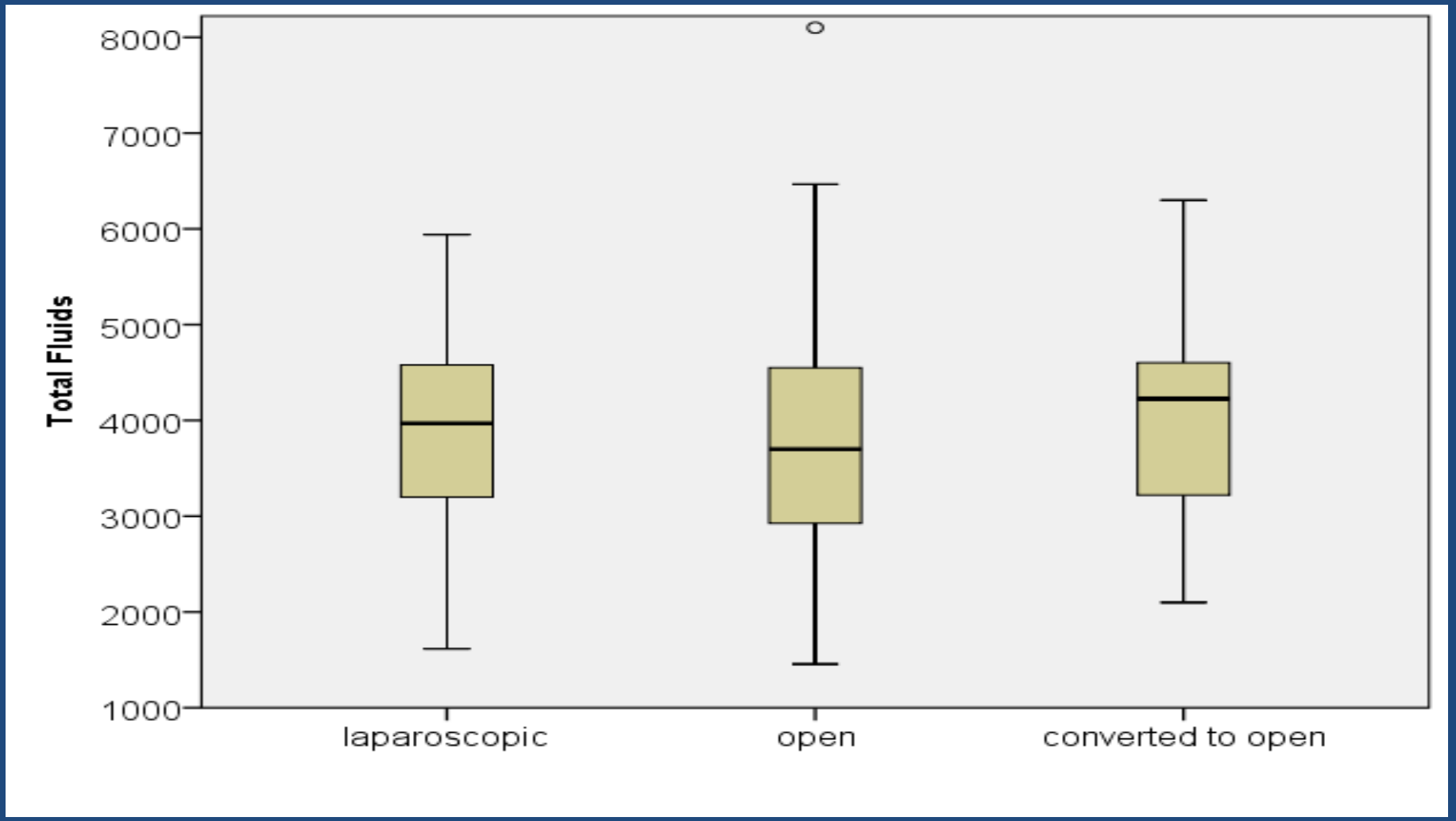
Results

Box plot showing amount of fluid, on day of theatre, per volume of blood loss



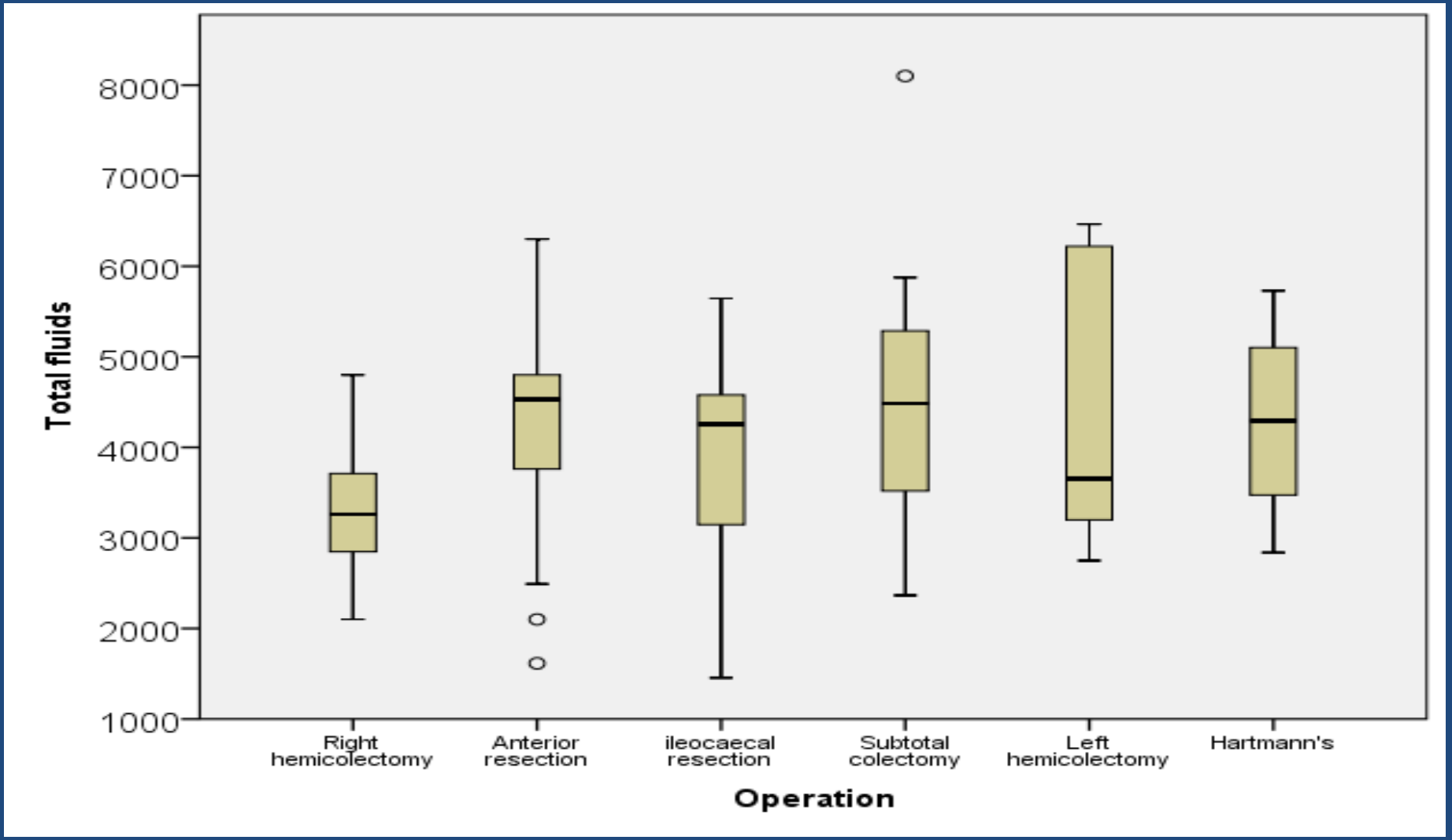
Results

Box plot showing amount of fluid, on day of theatre, per operative approach



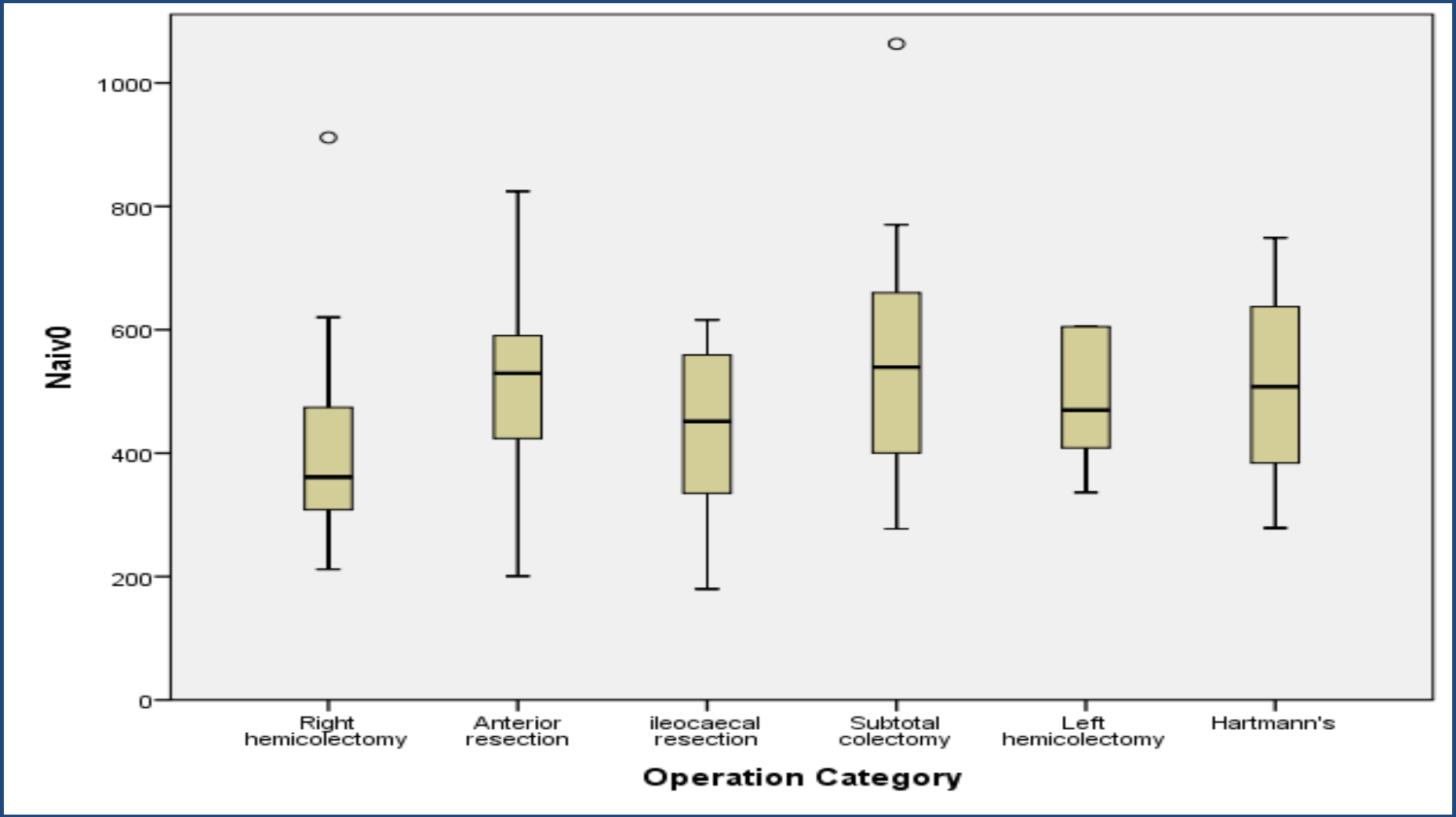
Results

Box plot showing amount of fluid, on day of theatre, per type of operation



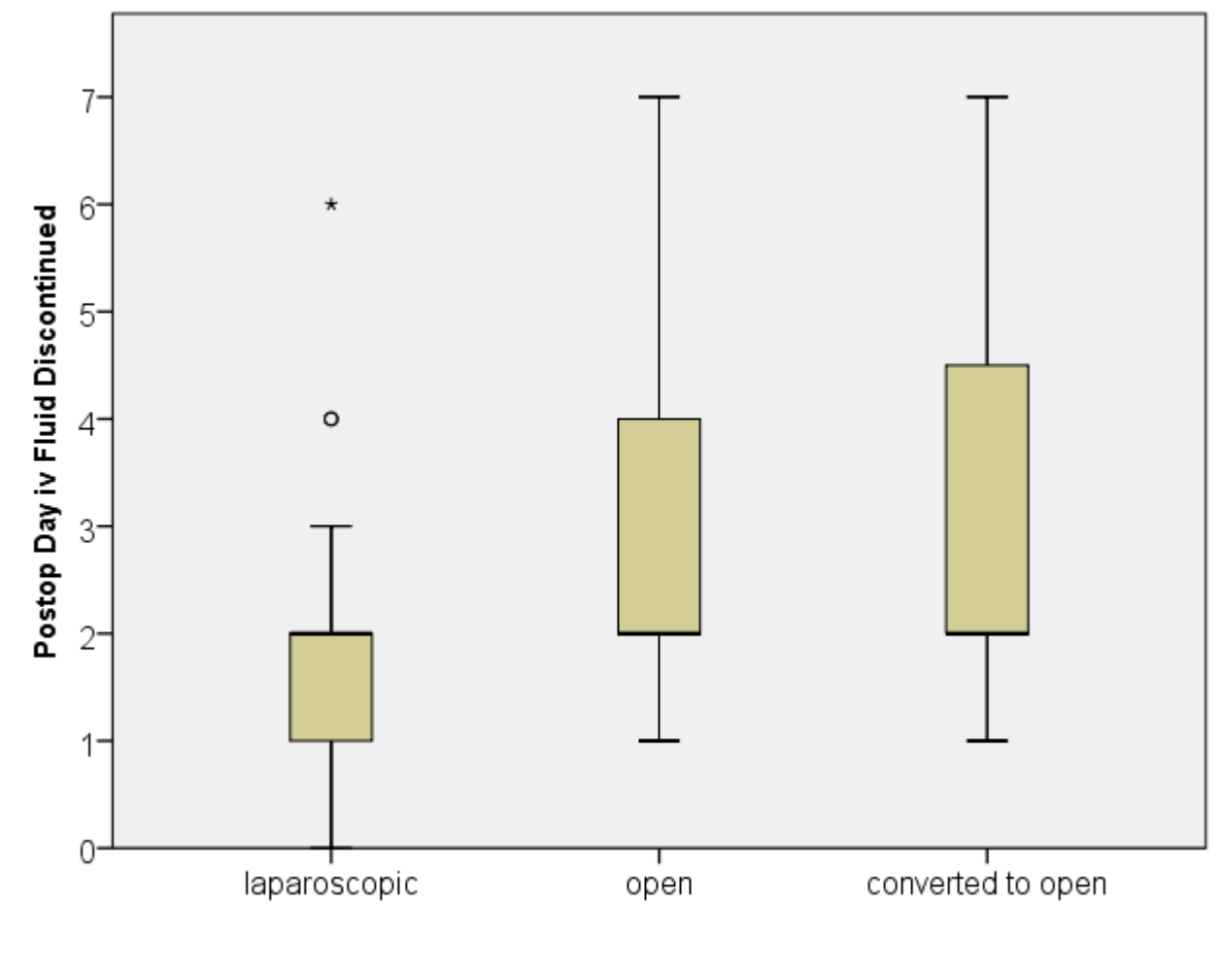
Results

Box plot showing amount of sodium(mmol) , on day of theatre, per type of operation



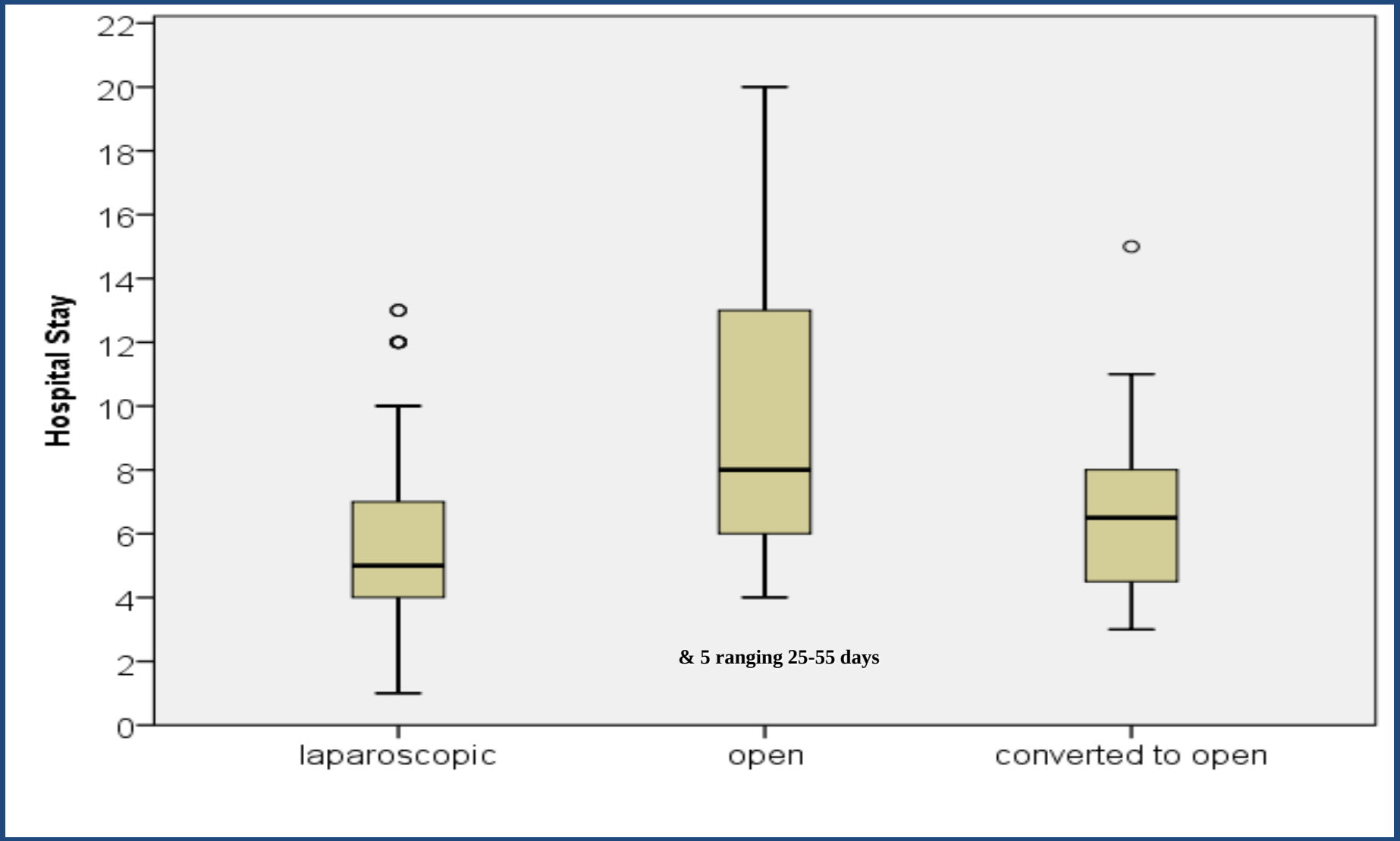
Results

Box plot showing day IV fluids were discontinued



Results

Box plot showing length of hospital stay per operative approach



Conclusion

- Many of our patients had a high positive fluid balance and a high sodium load on the day of theatre
- Discussions are ongoing with the Anaesthetists to agree a reduction in the amount of intra-operative fluids given
- Multidisciplinary discussion, has lead to a change in our enhanced recovery fluid guidelines and education of staff
- For postoperative fluids, the standard Hartman's and Dextrose bags of fluid will now be replaced with the premade maintenance fluid PSG (1000 ml contains: Potassium 20 mmol, Sodium 31, mmol, Chloride 51 mmol, Glucose 40g)

Future Work

Further analysis of data collected for Days 1, 2 and 3 post operation

Repeat audit after the introduction of the maintenance fluid

Questions