

Louis Barnett Prize 2024 Finalist Abstracts Overview

Name	Abstract title	Specialty	Information provided with submission
Alex Boyle	Positive and negative framing of complication risk and long-term outcomes influences decision making in hip and knee arthroplasty	SET1 Orthopaedics	<p>This project was inspired by my work with Professor Cass Sunstein on behavioural science. I was motivated to apply behavioural science concepts in a surgical setting.</p> <p>I formulated the idea for the research, conducted the study, performed the statistical analysis and wrote up the study by myself.</p>
Henry Cahill	Provision, outcomes and patient experiences of bariatric surgery comparing a provincial and metropolitan centre	SET General Surgery	<p>I am submitting my thesis that was completed as part of a Master of Health Science submitted to the University of Auckland this year. This thesis represents a research portfolio conducted to gain a holistic understanding of the bariatric surgery service being delivered in Northland, and comparing that to Waitematā to benchmark the provision of surgery and the outcomes achieved. I was the sole author of this thesis with supervision from Associate Professor Chris Harmston and Professor Ian Bissett.</p>
Brodie Elliot	Variation and Outcomes of Enema Reduction for Paediatric Intussusception across Aotearoa New Zealand: A Multistage Nationwide Study.	SET General Surgery	<p>During my recent time at Starship Hospital, I designed, organised, and ran a national multicentre study investigating the management of paediatric intussusception.</p> <p>This work is being written-up and we hope to engage relevant national stakeholders to standardise the</p>

			management of this common paediatric surgical pathology.
Tony Milne	Prucalopride for postoperative ileus after colorectal surgery	SET 5, post-fellowship exam, trainee in General Surgery	This randomised trial formed part of my PhD thesis on postoperative ileus after elective colorectal surgery. I conducted this research with my supervisors Ian Bissett and Greg O'Grady (Dept of Surgery, ACH) and was the primary researcher in all aspects of the trial: design, ethics, methodology, recruitment and analysis. This trial was a huge amount of work and a lot of fun!
Jonathan Stevenson	The evolving epidemiology of paediatric acute mastoiditis in New Zealand	SET Otolaryngology	While working in Christchurch in 2022 I noticed a sudden increase in the number of cases of paediatric acute mastoiditis presenting acutely under our service. Under the supervision of Phil Bird (ORL surgeon) and Tony Walls (Paediatric Infectious Diseases physician) I completed an audit of paediatric acute mastoiditis cases in Christchurch, confirming a sudden increase in cases of Pneumococcal acute mastoiditis. This project was then expanded to a national retrospective study (HDEC 2023 EXP 15083) to explore the evolving epidemiology of this (previously rare) condition. I led a collaboration between ORL registrars in each of the five main centres in New Zealand (Auckland, Waikato, Wellington, Christchurch and Dunedin) to gather a dataset of paediatric acute mastoiditis cases across New Zealand and also collected the Christchurch component of the dataset. I performed all data analyses, compiled the

			results for presentation (to be presented at the European Congress of Otolaryngology this month) and was the lead author for the subsequent manuscript (currently in process of being submitted for publication).
Tim Wang	Electrophysiological and histological evidence for the Gastrointestinal Aberrant Pathway- high-resolution gastrointestinal electrical mapping of surgical recovery in pigs	SET5 General Surgery	He has an interest in Upper GI surgery and has been involved in multiple gastric motility research projects. This world's first research was conceptualised by himself along with the study design, data collection, data analysis and manuscript draft.

Electrophysiological and histological evidence for the *Gastrointestinal Aberrant Pathway*- high-resolution gastrointestinal electrical mapping of surgical recovery in pigs

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Introduction

Gastric dysfunction is common after surgery. Emerging evidence implicates gastrointestinal electrophysiological abnormalities as a contributing cause in patients who have had a formation of a gastrointestinal anastomosis. Gastrointestinal electrophysiology and motility is normally coordinated by underlying gastric and intestinal electrical slow wave activity, generated by bioelectrically active cells termed the interstitial cells of Cajal (ICC). A new syndrome, termed the 'Gastrointestinal Aberrant Pathway' (GAP), has recently been identified in a patient with persistent post-surgical symptoms, where intestinal electrical activity propagates retrograde through the anastomotic scar into the stomach. Changes in the ICC structure and network was concurrently observed.

Purpose

The purpose of this study is to assess the electrophysiological and ICC changes across a gastrointestinal anastomosis in a chronic animal model.

Methods

Six weaner pigs underwent formation of a gastrojejunal anastomosis followed by a two-week recovery period. High-resolution serosal mapping (32-256 electrodes; 4-7.6mm spacing) was performed at baseline, immediately following the formation of anastomosis and after the two-week recovery period. Recordings were acquired using a commercially available ActiveTwo acquisition system (BioSemi, The Netherlands), with data acquired at 512Hz. Signal processing and analysis was performed in the Gastrointestinal Electrical Mapping Suite (FlexiMap, Auckland, NZ). Gastric and intestinal slow wave direction, frequency, amplitude and velocity were compared. Baseline and anastomotic tissues were collected and stained using c-kit and ANO1 immunohistochemistry for ICC.

Summary of Results

Consistent antegrade gastric slow wave propagation was observed in the baseline period, while jejunum showed both antegrade and retrograde propagation. In the post-recovery recordings, 3/6 cases were found to have retrograde slow wave propagation from jejunum into stomach. Gastric frequency and amplitude were reduced and velocity increased compared to the baseline data ($p < 0.05$). In the jejunum, only amplitude was reduced compared to baseline ($p < 0.0001$). Immunohistochemical studies confirmed the presence of ICC within the anastomotic scar in all subjects.

Conclusions

ICC regrowth occurred at the anastomotic scar following gastrojejunal anastomoses, which likely underpins the observed retrograde slow wave activity passing from the small intestine into the stomach. This study provides electrophysiological and histological confirmation of the 'GAP Syndrome', and may provide a mechanism for post-surgical gastric dysmotility.

Positive and negative framing of complication risk and long-term outcomes influences decision making in hip and knee arthroplasty

A Boyle

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Declaration:

I am a SET1 orthopaedic registrar (selected in 2023) currently taking a year away from training to complete a Master of Public Health at Harvard University, USA. I am a New Zealand Citizen.

ABSTRACT:

Introduction:

Framing of risks and benefits has been shown to impact risk perception in a variety of settings. This may have implications for shared decision making in orthopaedic surgery.

Purpose:

To determine whether framing of complication risk in total hip arthroplasty (THA) and framing of long-term patient satisfaction rates in total knee arthroplasty (TKA) influences patient decision making and 'worry'.

Methods:

Two cross-sectional survey studies were undertaken, one based on a THA vignette and one based on a TKA vignette. For each, participants were randomized into a positive-framing or negative-framing group and asked to read the vignette. They were then asked to indicate whether they would proceed with surgery, and to self-report their degree of 'worry' about surgery. For the THA vignette, the positive-framing group was informed '98% of people will have no major complications' while the negative-framing group was informed that '2% of people will have a major complication'. The vignettes were otherwise identical. For the TKA vignette, the positive-framing group was informed '80/100 of people will be *happy* ... once they have recovered' and the negative-framing group was informed '20/100 people will be *unhappy* ... once they have recovered'. The vignettes were otherwise identical. For both surveys, the primary outcome was decision to proceed with surgery (yes/no). The secondary outcome was subjective 'worry' based on positive or negative framing.

Summary of results:

For the THA vignette (622 individuals) 294/310 (95%) indicated they would proceed with surgery in the positive-framing group while 275/312 (88%) indicated they would proceed with surgery in the negative-framing group ($p = 0.0013$). For the TKA vignette (623 individuals), 302/311 (97.1%) indicated they would proceed with surgery in the positive-framing group and 280/312 (89.7%) indicated they would proceed with surgery in the negative-framing group ($p = 0.0001$). Self-reported 'worry' about surgery differed based on positive or negative framing in both surveys.

Statement of conclusions:

Framing of complication risk influences patient decision making and 'worry' in a THA vignette. Framing of long-term outcomes influences patient decision making and 'worry' in a TKA vignette. This has implications for shared decision-making and informed consent.

Acknowledgements:

Professor Cass Sunstein, Program on Behavioral Economics and Public Policy at Harvard Law School

Provision, outcomes and patient experiences of bariatric surgery comparing a provincial and metropolitan centre

Author: H Witcomb Cahill

Department and Institution: Department of General Surgery, Te Whatu Ora – Te Tai Tokerau

Declaration: I am eligible to be considered for this award

Introduction: This thesis aimed to gain a holistic and current understanding of the health burden and surgical management of obesity in New Zealand. Specifically focusing on understanding the provision, outcomes and patient experience of bariatric surgery at Northland District Health Board (NDHB) and Waitematā District Health Board (WDHB).

Purpose: To understand the provision and patient experience of bariatric surgery in Northland, and benchmark it against what is being delivered in a neighbouring metropolitan centre.

Methods: Firstly a literature review was performed to understand the international and national literature on obesity and bariatric surgery. Following this a five year observational cohort study was performed of patients who received bariatric surgery at NDHB and WDHB to compare rate of bariatric surgery, type of bariatric surgery being delivered and outcomes. Finally an individual, semi-structured interviews with grounded theory framework and qualitative analysis was performed to understand the barriers patients encountered in receiving bariatric surgery at NDHB.

Summary of results: The current health burden of obesity nationally and internationally and the management of obesity including non-surgical and surgical options were summarised in the literature review.

There is significant inequity in the provision of bariatric surgery, such that eligible patients who reside in Northland are six times less likely to receive bariatric surgery than patients with the same disease residing in Waitematā.

Eligible patients in Northland primarily fail to receive bariatric surgery because of the weight loss expectation as part of the pre-operative requirements for eligibility. The other themes identified showed that the overall design of the bariatric surgical service fails to support patients psychologically, physically, socially and economically.

Conclusion: Bariatric surgery offers life changing results for patients who suffer from obesity. The distribution of bariatric surgery between different geographical areas is not equitable and should be distributed on a needs based approach. If we want to deliver patient centred care in bariatric surgery then significant work is needed to improve how patients interact with bariatric services.

Prucalopride for postoperative ileus after colorectal surgery

Authors

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Department/Institution

- 1- Department of Surgery, Auckland City Hospital
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Declaration

Dr Tony Milne is a New Zealand citizen and SET 5 Trainee in General Surgery. He completed his Fellowship Examination in May 2024

Abstract

Introduction

Delayed return to gut function and prolonged postoperative ileus (PPOI) are significant problems after colorectal surgery. Prucalopride is a selective serotonin-4-receptor agonist that may improve gut motility.

Purpose

This randomized trial formed part of my PhD thesis looking at prediction and prevention of PPOI. The purpose of this trial is to determine if prucalopride can improve postoperative return of gut function after elective colorectal surgery and reduce PPOI.

Methods

This is a multicenter, double-blind, parallel, placebo-controlled randomized trial of Prucalopride 2mg vs. placebo in patients undergoing elective colorectal resection. Patients with inflammatory bowel disease and planned ileostomy formation were excluded, but colostomy formation was allowed. Study medication was given 2 hours preoperatively and daily for up to 6 days postoperatively. The aim was to determine whether Prucalopride improves return of gut function and reduces incidence of PPOI. The primary endpoint was GI-2 (time to passage of stool and tolerate diet). Participants were allocated 1:1, in blocks of 10. Randomization was computer generated. All study personnel, medical staff and patients were blinded.

Results

This study was completed between October 2017 and May 2020 at 2 tertiary hospitals in New Zealand. 148 patients were randomized, 74 per arm. Demographic data were the same between groups. There was no difference in median (IQR) time to GI-2 between prucalopride and placebo: 3.5 days (2,5) vs. 4 days (3,5) respectively, $p=0.124$. Prucalopride improved median time to passage of stool (3 vs. 4 days, $p=0.027$) but not time to diet (2 vs. 2 days, $p=0.669$) or median length of stay (4 vs. 4 days, $p=0.929$). In patients who underwent laparoscopic surgery ($n=125$; 84.5%), prucalopride significantly improved median time to GI-2 (3 days (2, 4) vs. placebo (4 days (3, 5), $p=0.012$). The rate of PPOI, complications, and adverse events was similar between groups.

Conclusions

Prucalopride did not improve time to overall recovery of gut function after elective colorectal surgery or impact PPOI. Prucalopride significantly improved time to GI-2 in patients who underwent laparoscopic surgery with an acceptable safety profile.

Trial Registration clinicaltrials.gov identifier: NCT02947269

Funding HRC, CSSANZ, MPPT

The evolving epidemiology of paediatric acute mastoiditis in New Zealand

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Introduction

Streptococcus pneumoniae is a common cause of paediatric acute mastoiditis (AM). The global incidence of AM has decreased following the introduction of Pneumococcal Conjugate vaccines (PCV). In 2017, PCV-13 was replaced by PCV-10 in the New Zealand immunisation schedule. We hypothesised that this policy change would result in an increased incidence of paediatric AM in New Zealand.

Purpose

To evaluate the impact of the changes in Pneumococcal vaccination on the incidence and microbiology of paediatric AM in New Zealand.

Methods

A retrospective observational study was conducted, including patients aged <18 years with a first inpatient admission with an ICD-10 diagnosis of AM between January 1, 2014 and December 31, 2022. Cases were identified from the National Minimum Dataset. Electronic medical records were reviewed for cases admitted to hospitals in Auckland, Waikato, Wellington, Christchurch and Dunedin. Cases were divided into four periods, 2014-2016 (PCV-13 baseline), 2017-2019 (transition), 2020-2021 (PCV-10 COVID) and 2022 (PCV-10 post-COVID) for analysis. In each period the national incidence rate of all-cause AM, the proportion of AM cases attributable to *Pneumococcus* and the proportion of Pneumococcal AM cases presenting with a subperiosteal abscess were compared with the baseline period.

Summary of Results

391 new cases of paediatric AM occurred during the study period. The national incidence of paediatric AM increased from a baseline of 3.62 cases/100,000 person-years in 2014-2016 to 6.22 cases/100,000 person-years in 2022 (RR 1.72, 95% CI 1.28-2.30). Clinical and microbiological data was available for 212 cases admitted in Auckland, Waikato, Wellington, Christchurch and Dunedin. In 2022 48% of all cases were attributed to *Pneumococcus*, compared with 27% in the baseline period ($p = 0.03$). In 2022 17/20 (85%) of Pneumococcal cases presented with a sub-periosteal abscess, compared with 7/18 (39%) of Pneumococcal cases in the baseline period ($p < 0.01$).

Statement of conclusions

The national incidence of paediatric AM in New Zealand has increased after the national immunisation schedule reverted from PCV-13 to PCV-10, with a concurrent increase in the proportion of cases attributable to *Pneumococcus*. This is likely due to serotype replacement, as PCV-10 lacks coverage of the pathogenic Pneumococcal serotype 19a.

Word count: 348 words

As a current RACS trainee in Otolaryngology – Head and Neck Surgery and a New Zealand citizen I confirm that I am eligible for the Louis Barnett Prize.

Variation and Outcomes of Enema Reduction for Paediatric Intussusception across Aotearoa New Zealand: A Multistage Nationwide Study.

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Declaration: The principal investigator and presenting author, Brodie Elliott is a current AoNZ GSET trainee and a citizen of New Zealand.

Introduction: Most children with intussusception can be successfully managed with radiologic enema reduction. International evidence suggests ambulatory discharge after a four-hour post-reduction observation period is safe. There are no AoNZ guidelines for paediatric intussusception management nor are national practices and outcomes known.

Purpose: We sought to investigate national intussusception management, focusing on the success of non-operative reduction, post-reduction observation and enema reduction techniques.

Methods: We performed a national 15-year retrospective, multicentre cohort study of all children who were treated for intussusception between 01 Jan 2007 and 01 Jan 2022. A robust clinical dataset was collected across AoNZ using REDCap. We then completed a snapshot survey of all radiologists who manage paediatric intussusception. Survey answers were collected anonymously via REDCap between 01 Apr 2023 - 01 Jul 2023.

Results: A total of 529 children with intussusception were managed across six hospitals. The median age at presentation was 0.8 years. Primary enema reduction was attempted in 88.5% of cases (80 – 100%) but there was significant variation in enema reduction success (58.8% – 100%; $p < 0.001$). The overall general anaesthesia rate was 36% (8 – 46%), most commonly due to secondary operative management after failed enema reduction.

In the 339 children with successful enema reduction, the median post-reduction observation period was 21.6 hours. If reduced to four hours, we estimated savings of NZD\$883,632 and 7342 ward hours over the study period. The overall recurrence rate between 4-24 hours was 3.5% (12/339). Responses from 24 of 26 paediatric radiologists revealed a significant range of enema reduction hardware and practices. Peri-procedural antibiotics and sedation were inconsistently administered. There was significant variation in reported initial and peak reduction pressures, from 0-120mmHg and 100-130mmHg, respectively. Finally, there was a wide range of practice regarding the threshold and timing of repeat reduction.

Conclusion: There is significant interhospital variation of enema success rate and subsequent need for operative intervention across AoNZ. This is likely contributed to by inconsistent enema reduction techniques, periprocedural management and hardware. Furthermore, post-observation management practices are outdated and costly. These data support a multidisciplinary standardised, national approach to this common disease.