



ADVANCES IN PAEDIATRIC COLORECTAL SURGERY

Mr Sebastian King

This year's recipient of the College's Foundation for Surgery Senior Lecturer Fellowship, Mr Sebastian King, plans to use the attached funds to extend his research interests in Paediatric Colorectal Surgery, develop international research partnerships and perform research using new technologies in Australia.

Mr King, who has a PhD in Paediatric Colorectal Surgery, is a Paediatric Surgeon at The Royal Children's Hospital (RCH) in Melbourne, a Senior Clinical Lecturer at the University of Melbourne and conducts Paediatric Colorectal Research through the RCH and the Murdoch Childrens Research Institute.

The Senior Lecturer Fellowship was designed by the Section of Academic Surgery to provide salary support for a senior lecturer and surgeon early in their career to help them establish a pathway in academic surgery.

Mr King has particular research interests in colorectal anatomy, pathology and motility, as well as the use of high resolution Manometry in the assessment and management of children with previously repaired Oesophageal Atresia (OA).

In 2014, Mr King used the funds attached to the Hugh Johnston Travel Fellowship to take up a Fellowship at the Hospital for Sick Children (SickKids) in Toronto, Canada.

One of the largest paediatric hospitals in North America, SickKids is also one of the few hospitals in the world to have a Surgical Fellow dedicated to the Neonatal Intensive Care Unit, a position Mr King filled from July to December.

He also spent time as a Visiting Fellow at the Nationwide Children's Hospital in Columbus, Ohio, where he worked under the supervision of Professor Marc Levitt, a world leader in anorectal malformations and Hirschsprung disease.

This year, Professor Levitt will visit Melbourne at Mr King's invitation to conduct paediatric colorectal courses at the RCH for trainees and surgeons from across Australasia.

Currently, Mr King is concentrating on two major research projects: the investigation and management of colonic dysmotility in children with chronic constipation, and the investigation and management of oesophageal dysmotility in patients with previously repaired OA.

Working in collaboration with Associate Professor Phil Dinning from Flinders University, Adelaide, Mr King will use colonic Manometry to understand the pathology of slow transit constipation (STC).

"Chronic constipation may be a lifelong problem, and it currently affects three per cent of children and accounts for up to five per cent of visits to paediatricians and 25 per cent of referrals to paediatric gastroenterologists," Mr King said.

"As a Paediatric Surgeon, a large portion of my clinical time is dedicated to children affected by STC and OA patients and every week I see around five new children suffering from chronic constipation who have gone through all other avenues of treatment before they ended up in hospital.

"Yet, STC is a relatively recent discovery in the paediatric population and we are now trying to understand the pathology behind the condition.

"We know that STC develops after birth and we know there are abnormalities in the nerve cells and neurotransmitters in kids with STC but we are now trying to understand why they occur and how they may be treated."

Mr King said that his research team, which currently comprises five students from the University of Melbourne, had recently received seed funding through the RACS Brian

Smith Memorial Colorectal Award to pay for high-resolution Manometry equipment and fibre-optic catheters.

Mr King said the equipment would be used to investigate the pathology and mechanics driving STC by comparing the colonic function of STC patients with that of children born with birth defects such as Hirschsprung Disease and anorectal malformations.

“This research will help us understand the physiology behind the abnormalities that drive STC, which in turn could help us develop new treatments and interventions,” Mr King said.

“I am also in the process of introducing new technology and advanced automated quantitative analysis software, which allows us to focus on more accurately identifying segmental colonic dysmotility.

“This may lead to more focused surgical resections rather than the practice of colectomy, which is sometimes required in children with refractory disease.

“Approximately 30 per cent of children with chronic constipation are affected by the condition throughout their lives, which imposes a massive financial burden upon health care systems. We believe this work, therefore, has the potential to greatly benefit affected children and the health budget. “

Mr King is also leading a research project investigating oesophageal dysmotility in children with OA in collaboration with world leaders in the field, including Associate Professor Taher Omari from Flinders University, Adelaide.

He said the RCH was a world leader in the assessment and management of OA with the Oesophageal Atresia Database, established by Mr Nate Myers in 1955, the most comprehensive of its type in the world.

He said the research group would use the data to investigate oesophageal dysmotility characteristics of children born with OA.

“The majority of these children are affected by oesophageal dysmotility, which may present with swallowing difficulties, dysphagia and/or gastro-oesophageal reflux,” Mr King said.

“Until now it has been assumed that the dysmotility is largely a congenital phenomenon yet we believe it may be that the operative ligation of the tracheo-oesophageal fistula and the subsequent oesophageal anastomosis damages the vagal innervations.

“By using oesophageal Manometry and fibre-optic catheters we believe we will be able to obtain evidence of segmental or global dysmotility, which could lead to more appropriate post-operative management of the complications of OA repair.”

Mr King’s research group has already conducted motility studies in 20 OA children aged less than three years, an investigation that will be expanded this year.

He is also conducting other clinical trials at the RCH, including investigating the long-term outcomes for children with Hirschsprung disease, the role for transcutaneous electrical therapy in children with spina bifida and the non-operative management of post-splenic trauma.

He said that during 2016 he hoped to attract surgeons and trainees wishing to complete a higher degree into his research team.

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Mr King thanked the College for the support provided through the Foundation for Surgery Senior Lecturer Fellowship.

“I feel extremely fortunate to have been selected for this prestigious Fellowship, particularly given that it represents a belief by senior Fellows that my work is of sufficient quality and importance,” he said.

“I have been very lucky to have Professor John Hutson as a mentor. He encouraged me to become an academic surgeon and I am glad I took his advice.

“Academic surgery creates a wonderful professional balance because you are able to treat and heal patients through clinical practice while leading change and making discoveries and introducing advances through scientific research.”

