South Afr J Anaesth Analg. 2022;28(3):88-90
https://doi.org/10.36303/SAJAA.2022.28.3.2827

South Afr J Anaesth Analg
ISSN 2220-1181 85EISSN 2220-1173

GUEST EDITORIAL

Perioperative outcomes – more than sevoflurane and scalpels

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It is well understood that access to safe surgery is a major challenge in low- and middle-income countries (LMICs), where over five billion people do not have reliable access to surgical care, resulting in an estimated 17 million avoidable deaths per annum.[1] Bickler et al. have predicted that up to 90% of children in LMICs will manifest a surgically treatable condition before the age of 15.[2] If these conditions are not managed effectively, they result in severe morbidity or mortality. Butler et al. have echoed this sentiment, noting that up to 20% of children in Rwanda, Sierra Leone, Nepal, and Uganda needed surgery but that 62% of that cohort had an unmet surgical need.[3] Despite paediatric surgical services in South Africa being positioned to offer a wide range of safe paediatric surgical interventions,[4] the paucity of surgeons results in limited access to centralised centres and much of the population remains unserved.[5]

It is, however, becoming increasingly apparent that accessing surgical care is not the only challenge in overcoming peri-operative adverse outcomes. A recent study by Biccard et al. demonstrated how patients across the African continent are twice as likely to die postoperatively than their counterparts in high-income countries (HIC).[6] This is despite being of low ASA status, regardless of the surgical discipline involved, and affects both elective and emergency procedures.

This ongoing plight is highlighted by the article by Drs Balkisson, Kusel and Torborg, "A retrospective review of the perioperative management of patients with congenital oesophageal atresia and tracheo-oesophageal fistula (OA/TOF) at a South African third level hospital" in this month's edition of the Journal. Their review is a timely (and perhaps humbling) reminder that outcomes in surgical patients are determined by more than good surgical and anaesthetic technique.

The authors performed a retrospective clinical audit of all cases of neonatal OA/TOF repair over an 11-year period, aiming to describe the patient population presenting for surgery, evaluate the preoperative factors affecting early mortality, and report on intraoperative ventilation and haemodynamic complications. While the incidence of major cardiac and other anomalies was similar to internationally published data, they describe a 60-day in-hospital mortality rate of 21%, higher than expected based on commonly used risk stratification criteria. The main factor associated with mortality outside of traditional risk stratification tools (prematurity and the presence of major congenital cardiac anomalies) was the need for preoperative ventilation, which was required in 52% of the neonates. They conclude that the lack of antenatal diagnosis, together with delays in transfer to an appropriate referral centre, resulted in a high incidence of pneumonia requiring ventilation and delays in surgical intervention.

In the neonatal population, antenatal diagnosis of congenital surgical conditions could facilitate either the transfer of an expectant mother to an appropriate level facility prior to delivery, or allow for planned infant transfer immediately post-delivery. One of the areas that highlights the gap between HIC and LMIC is the access to antenatal ultrasound – most women in HIC have access to antenatal ultrasound and the majority of cases of congenital anomalies, including TOF/OA are diagnosed antenatally, whereas in sub-Saharan Africa, it is estimated that access to antenatal ultrasound in rural areas is as low as 6%.[7] Despite the World Health Organization's (WHO) recommendation that all pregnant women have one ultrasound before 24 weeks' gestation, antenatal ultrasound is not offered as a standard screening tool in South Africa at clinic or community health centre level, where many women are cared for during pregnancy, but only when indicated in specific circumstances.[8] The South African maternity guidelines recommend that, at district hospital level, "all pregnant women should preferably have access to one basic ultrasound at between 18–20 weeks' gestation (if the infrastructure allows for this)", and that patients are referred for further assessment if any abnormalities are detected on the scan.[8]

Delays in the diagnosis and referral of neonatal surgical conditions such as gastroschisis are associated with increased complications and worsened outcomes (4.8 OR of mortality if outborn from a surgical centre).[9] If antenatal diagnosis of surgically treatable conditions is not possible in LMICs, healthcare workers need to be trained to recognise the signs and symptoms of, and have a high index of suspicion for, the presence of these neonatal surgical conditions. They should also be able to provide emergent stabilising care prior to transfer. Furthermore, there needs to be ready access to tertiary centres where these conditions are managed. This implies education of healthcare workers at peripheral and district facilities, and a well-functioning referral pathway, transport logistics, and an adequate number of intensive care beds in referral centres.

Outcomes, therefore, are determined by the entire perioperative process, which starts with timely diagnosis (in many cases, as far

back as early pregnancy), timely referral to an appropriate level centre, and access to appropriate surgical and neonatal critical care. It is this entire process, with all its steps, that needs to function optimally to ensure improved patient outcomes.

These steps, and the barriers to achieving them, are recognised in the global surgery community as areas that need to be prioritised, as access to surgical and anaesthetic care is considered an integral and critical part of universal health coverage and is not only in the best interests of the individual child but in the health and sustainability of communities.[10] The development and implementation of a National Surgical, Obstetric and Anaesthesia Plan (NSOAP), which is fully embedded into the national health policy and strategy, will contribute to improved, cohesive and sustainable health care within South Africa.

We are delighted that preliminary meetings in the development of an NSOAP in South Africa are underway, and that the perioperative care of the country's children is on the agenda. This is not a minor "interest group" agenda but is in line with the WHO's sustainable development goals (SDG), particularly those targets that aim to reduce preventable deaths in children under five and reduce neonatal mortality (SDG goal 3, target 3.2.1 and 3.2.2).[11]

This needs to be a continued area of advocacy and teamwork as we aim to improve perioperative care and outcomes for South Africa's children.

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