



Managing surgical patients with serious mental illness: can we do better?

The prevalence of mental disorders in the Australian population is not insubstantial, and the evidence suggests that this affliction is increasing in incidence particularly among youth.^{1,2} The Australian Institute of Health and Welfare reports that at least one in five (20%) of Australians aged 16–85 years will have experienced mental disorders in the previous 12 months, and of these affected individuals approximately 6% will have suffered an affective (mood) disorder, 14% will have had an anxiety disorder and 5% will have had a disorder as a result of substance abuse.³ Based on these prevalence rates, it is estimated that in 2015 almost 4 million people would have experienced a common mental disorder.

While these statistics might seem somewhat irrelevant to the practice of surgery, McBride *et al.*⁴ have provided very new and relevant data highlighting the reality that patients with co-morbid serious mental illnesses have significantly worse outcomes from surgery and incur higher costs peri-operatively compared to the overall surgical population. In this retrospective study, McBride *et al.* analysed a cohort of patients undergoing elective surgery at the Royal Prince Alfred Hospital, Sydney, from 2010 to 2014. Of 23 343 surgical admissions, using International Classification of Diseases coding, the investigators were able to identify a subgroup of patients with decompensated or active mental illnesses. This analysis established that within this cohort there were 451 (2%) patients with serious mental illness, which also included a subset of 47 (0.2%) surgical patients who were identified as having psychotic disorders. Patients with serious mental illnesses were found to have significantly higher in-hospital mortality compared to the general surgical population, and also found to have increased rates of post-operative complications, higher overall total co-morbidity, longer stays in intensive care and in hospital overall, and were much more likely to be readmitted within 28 days. The overall costs of admission were shown to be significantly higher for patients in this group, being approximately two to three times more than the general population.

This would appear to be the first substantial Australian data of its kind documenting surgical outcomes among patients with co-morbid mental illness, and this report suggests there exist potential deficiencies in the provision of surgical and peri-operative services to this subset of patients, thus representing a challenge for us as surgeons to reset our approach to the surgical care of mentally ill patients.

A number of overseas studies have found similar results to that of McBride *et al.* A study assessing the influence of psychiatric co-morbidity on peri-operative outcomes after elective shoulder arthroplasty also demonstrated suboptimal treatment outcomes among patients with concurrent depression, anxiety, dementia and

schizophrenia, including an increased requirement for blood transfusions and an increased incidence of non-home discharge or transfer to another facility.⁵ In a study by Cooke *et al.*⁶ of 55 patients undergoing acute appendectomy with coexistent schizophrenia, 56% developed post-operative complications including two patients who died of respiratory complications, with a median duration of stay for the 55 patients being 10 days (range 1–175 days).

McBride *et al.*'s paper does not address the issue of causality, and while the reasons for patients with serious mental illnesses having poorer outcomes from surgical procedures are not clear, it is recognized that patients with mental illnesses have a higher incidence of smoking, hypertension, obesity and drug abuse,⁷ which undoubtedly would have significant health implications, and could certainly contribute to increased peri-operative morbidity. Psychiatric patients may also have a tendency to cause more disruptive behaviour, and as a result are often isolated or placed in higher security facilities with the potential therefore to be attended to less frequently. However, in order to achieve outcomes comparable to the average surgical patient, it can be argued that these patients need to receive additional supportive care in the peri-operative period, and particularly in the form of increased collaboration between surgical and psychiatric staff. Such enhanced collaboration, for example, might help to ensure that psychiatric patients undergoing elective surgery are optimally medicated pre-operatively, and that patients receiving acute or emergency surgical treatment are managed in a more coordinated fashion both before and after surgery.

Whether the poorer outcomes in this group of patients are a consequence of their poorer mental and physical condition prior to surgery, or due to their care being inadvertently altered due to their mental state, this is an important issue which needs to be further explored, and it would be critical to determine whether surgical outcomes can be modified and improved through the implementation of peri-operative interventions. This potentially represents an important area of health care strategy which would benefit from a multidisciplinary team approach involving surgeons, psychiatrists, psychiatric nurses and paramedical services to ensure that mentally ill patients are optimally managed in the peri-operative period.

References

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Viscoelastic tests in trauma care

The adoption of haemostatic resuscitation with limited crystalloid, permissive hypotension until rapid haemorrhage control and blood products in ratios to mimic whole blood, has improved outcomes. However, coagulopathic trauma patients within hours of injury are also at risk of hypercoagulability with deleterious organ dysfunction beyond the commonly recognized thromboembolic complications. In the era of precision medicine, attention has turned to the possibility of tailoring blood and coagulation factor use to the individual bleeding patient.

Over the last decade, studies examining the potential role of bedside thromboelastography (TEG) and rotational thromboelastometry (ROTEM) in trauma resuscitation have been widely published. Both are forms of viscoelastic testing (VET) of whole blood, which can identify abnormalities in the intrinsic and extrinsic coagulation cascade, maximum clot strength and the rate of fibrinolysis. While standard laboratory assays assess the efficacy of the coagulation cascade, the complex *in vivo* interaction with platelets and fibrin is not assessed.

The value of VET in trauma resuscitation is unclear. TEG and ROTEM have poor predictive accuracy for the diagnosis of coagulopathy defined traditionally by a prolonged prothrombin time (PT).¹ However, abnormalities in clot strength and accelerated fibrinolysis have been found to be predictive of mortality in trauma.^{1,2} These features are not assessed by conventional coagulation assays. Schochl *et al.*³ demonstrated the use of ROTEM to predict the need for massive transfusion protocols and to decrease platelet and packed red blood cell transfusion requirements. In their centre, ROTEM use led to increased use of prothrombin complex concentrates and fibrinogen. Conversely, a military study reported increased use of platelet and cryoprecipitate transfusion after introduction of ROTEM monitoring without reduction in use of red blood cells.⁴

van Wessem and Leenen⁵ performed TEG on 21 severely injured trauma patients who were acidotic and hypothermic with prolonged PT. These patients required massive transfusion protocols and most required surgery. Despite seeming a small study, it includes all trauma patients with severe bleeding presenting to the highest volume Dutch trauma centre (demographically similar to Australasian centres) over a 30-month period. TEG results were normal in their cohort. In most cases, both fresh frozen plasma and tranexamic acid

had been given which may have acted to normalize TEG findings. In addition, the use of kaolin, which is a reagent for testing the intrinsic coagulation, is unlikely to correlate with PT, which is a measure of the extrinsic pathway. Earlier use of TEG or use of tissue factor reagent may have altered the findings. Nevertheless, early pre-emptive haemostatic resuscitation and tranexamic acid administration is standard of care. Based on normal TEG results, the authors concluded that TEG did not provide additional information to guide trauma resuscitation in their institution.

The reported usefulness of VET in trauma should be interpreted cautiously. Most published data are based on retrospective case series, frequently only with historical controls. There is publication bias in some units that have TEG/ROTEM integrated into their protocols. Institutions that have been able to demonstrate a change in practice or outcome are more likely to publish their results than those with little or no change in practice. This sentinel paper published in *ANZ Journal of Surgery* is valuable in demonstrating, that for a typical metropolitan blunt trauma unit already practicing haemostatic resuscitation, the routine use of TEG may have little additional benefit over the clinical recognition of the coagulopathic state and adherence to balanced resuscitation protocols.

Despite enthusiasm in the literature, there is as yet insufficient evidence to clearly define the role of VET during early trauma resuscitation. They may well aid in assessing the effect of ongoing resuscitation through operative repair and particularly for patients with comorbidities or medication affecting their coagulation. Identifying the specific point of transition between coagulopathy and a hypercoagulable state in the individual trauma patient is also attractive for safe initiation of chemical thromboprophylaxis. Alternatively, VET use may simply lead to improved focus on coagulopathy and adherence to haemostatic resuscitation, which could indirectly improve outcomes.

References

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