Evidence suggests that corrective spinal fusion for scoliosis in pediatric patients is associated with an increased risk of adverse events in the first thirty days after surgery. Bleeding is one such adverse event that appears to be more cumbersome in corrective fusion of NMS. These patients appear to be at higher risk for bleeding because they often have multiple segments fused and longer operative times. One study suggests an estimated blood loss of 200mL/segment over the initial post-operative 24 hours. NMS patients frequently will have osteopenic bone which tends to bleed more, and this requires intraoperative repair, further prolonging surgery. NMS patients may also have baseline coagulopathies or have platelet dysfunction secondary to medications.

To our knowledge, there does not exist a case presentation or series in the literature that examines the use of blood samples drawn from the surgical field to guide resuscitation and transfusion. Although it was useful during this case, we would not recommend this strategy, particularly in a high risk operation such as corrective fusion for NMS. This patient had a history of difficult intraoperative access, and although we easily established large bore access, it should have been a more serious consideration when there was significant difficulty placing the intra-arterial catheter. Nevertheless, a team based approach with our surgical colleagues helped to guide this patient through an otherwise uneventful perioperative course.

This case demonstrates the importance of preoperative preparation and the severity of intraoperative blood loss in posterior spinal fusion for NMS. Although it was a useful last resort, we would not recommend this strategy as many samples came back clotted or with laboratory error. We also have no control samples to verify the accuracy of the samples obtained from the surgical field, other than reassuring post-operative labs from the PICU.

Preoperative preparation is central to managing the intraoperative hemorrhage during posterior repair of NMS. These patients should all have large bore intravenous access, arterial access, and the ability to sample blood to examine laboratory values intraoperatively. Central line placement is not essential, but should be strongly considered. Anti-fibrinolytic therapy has also been shown to be beneficial in reducing blood loss in spine surgery for NMS.

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