

Anesthetic Considerations for a Super-Morbidly Obese Parturient for Cesarean Delivery

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Introduction

Parturients with super morbid obesity, defined as a BMI >50, represent a growing population that has nearly doubled in the last 10 years. The preponderance of obesity has challenged anesthetic and surgical care providers as a result of a multitude of comorbidities associated with it. Moreover, obesity accentuates the already stressed physiologic changes of pregnancy. This places both the parturient and the fetus at greater risk for complications and requires careful planning and interdisciplinary cooperation.



Figure 1: 17Ga x 6 in (15cm) Tuohy needle vs standard 8cm

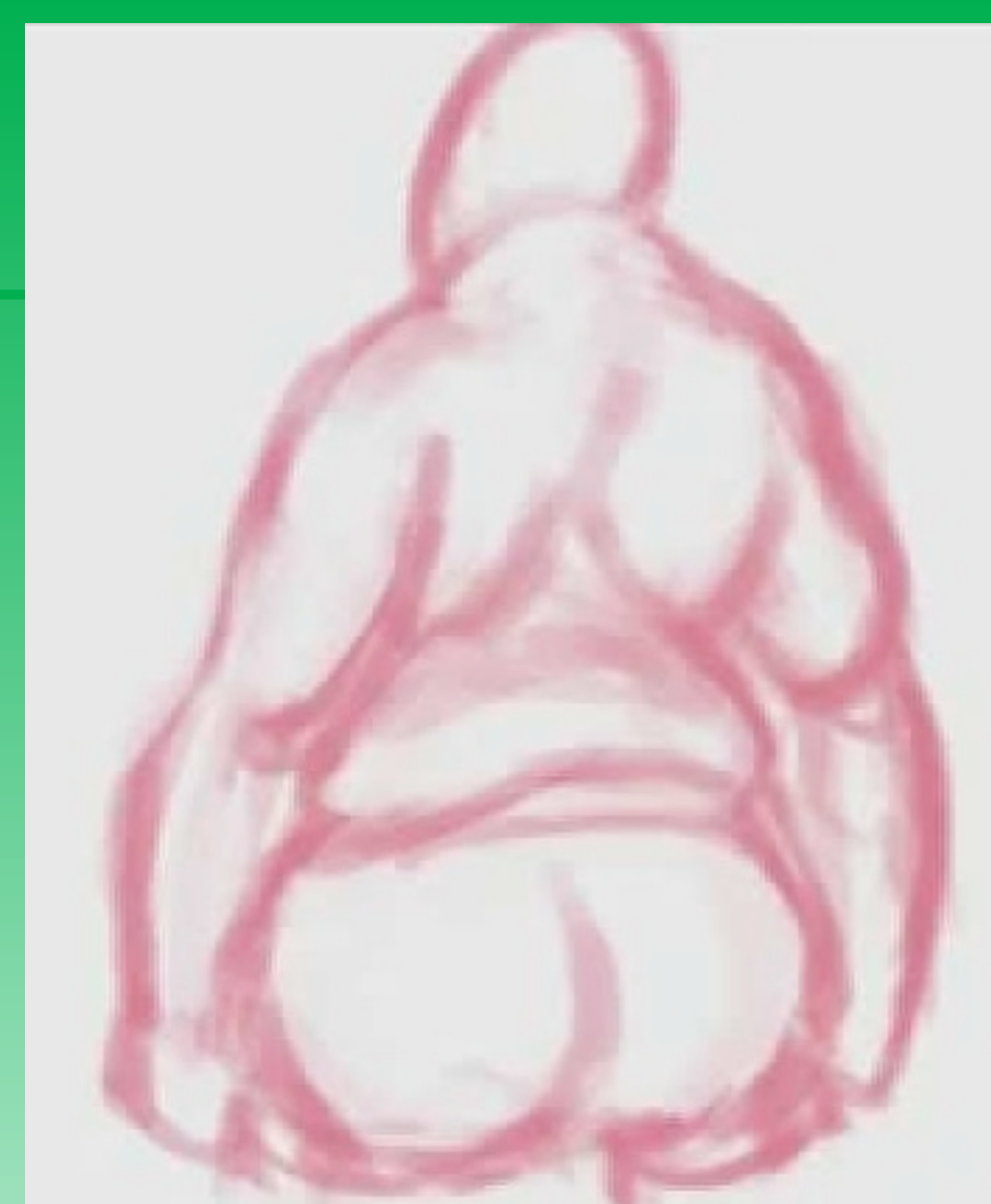


Figure 2: Representation of body habitus with epidural target

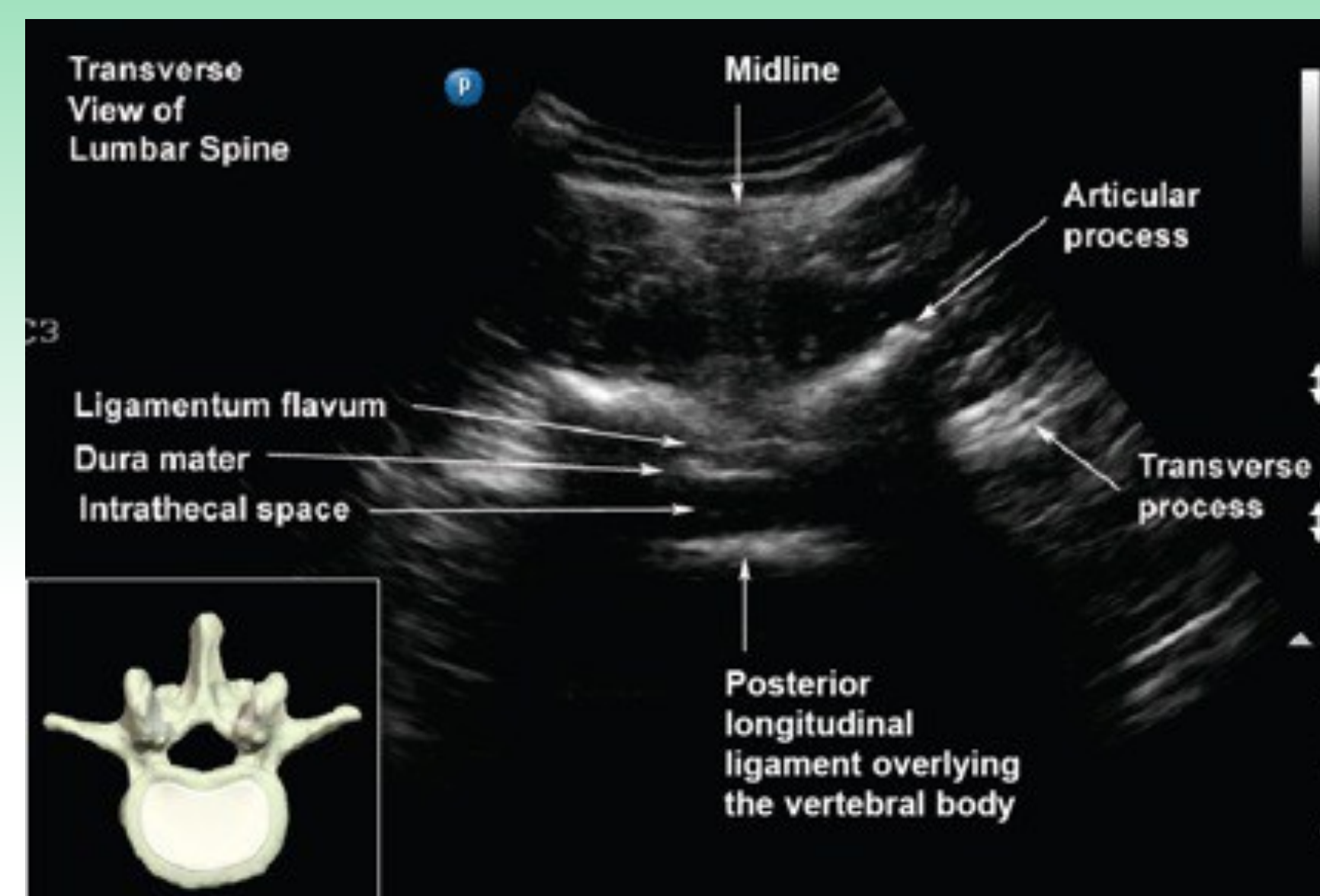


Figure 3: Representation of US guided epidural placement

Case Series Description

We describe the complexity of anesthetic care in a parturient with a BMI of greater than 100. She initially underwent a primary cesarean delivery at our institution, followed by a repeat cesarean 1.5 years later following the same protocol. BMI increased by 1 point to a maximum value of 101. Deliveries occurred at 34.1 weeks gestational age, with in-hospital admission and monitoring prior.

Our patient's comorbidities include anemia, chronic hypertension with superimposed pre-eclampsia, insulin dependent diabetes, obstructive sleep apnea with asthma, restrictive airway disease leading to respiratory compromise in the supine position, poorly controlled anxiety, and antiphospholipid antibody syndrome.

On the day of surgery, the patient was transported on a bariatric stretcher to the operating room and was placed in the sitting position for a combined neuraxial and general anesthetic approach. The patient's upper back pannus were retracted for a pre-induction ultrasound guided epidural. Loss of resistance was obtained initially at 13cm with a 15 cm Tuohy needle, and for the subsequent delivery at 12 cm with a 12 cm needle. Incremental doses of local anesthetic were administered while simultaneously central venous access and arterial catheterization were obtained. The patient could not recline greater than 30 degrees without becoming hypoxic and was positioned on a large ramp. She was intubated while awake and maintaining spontaneous respiration using topicalization of the airway with lidocaine and sedation with dexmedetomidine and low dose propofol. Direct laryngoscopy was used with video laryngoscopy available. A clamp test was used to confirm adequacy of the epidural. General anesthesia in a TIVA approach was then induced with dexmedetomidine, remifentanyl, and propofol. The surgical approach was via supra-umbilical vertical midline incision. The fetuses were delivered with subsequent intubation and transfer to NICU – both ultimately did well, and were extubated once the effects of general anesthesia receded. The epidural catheter remained in place for post-operative analgesia.



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Discussion

We estimate mortality to be at least 50% in these surgical cases due to the large risk of hemorrhage, airway compromise, embolic events, and respiratory arrest. Obesity accentuates the already stressed physiologic changes of pregnancy and increases the risk of maternal mortality significantly in a cesarean delivery. A difficult airway with increased risk of aspiration, decreased physiologic reserve with increased risk of apnea and rapid desaturation, and cardiovascular stress owed to increased cardiac output are among the many physiologic challenges.

While vaginal delivery could theoretically have been considered, a conversion to unplanned/emergent cesarean section would have been catastrophic for the patient and fetus owing to lack of appropriate staffing, equipment, and lack of physiologic reserve. Thus, a planned cesarean section was overall the safest course of action.

By using a combination neuraxial and general anesthetic approaches we hoped to capitalize on the benefits of each while minimizing the potential side effects. Performing the cesarean section under neuraxial anesthesia alone was not feasible due to our patient's inability to lie flat without symptomatic desaturation and subsequent exacerbation of her already elevated anxiety level. Likewise, relying on general anesthesia alone would have necessitated higher intraoperative medication dosages with greater effects on the fetuses and would have led to increased reliance on IV or PO opiate medications for post-operative pain control. This would have exacerbated our patient's already elevated risk for post-operative respiratory compromise. Utilizing the epidural intra-operatively allowed us to decrease our TIVA infusion rates while keeping the patient comfortably anesthetized. Maintaining the epidural in place in the immediate post-operative period allowed for pain control with decreased opiate medication use.

It is worth noting that the multiple surgical and anesthetic challenges of the morbidly obese parturient must be overcome in a multidisciplinary team based approach. It is absolutely crucial to obtain input from all services involved – from surgical, to anesthesia, to transport, to OR and ante/postpartum nursing, etc. - to assess resources and anticipate challenges.

References

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