



Anterior Mediastinal Mass in the Pregnant Patient: Management Considerations and Outcomes

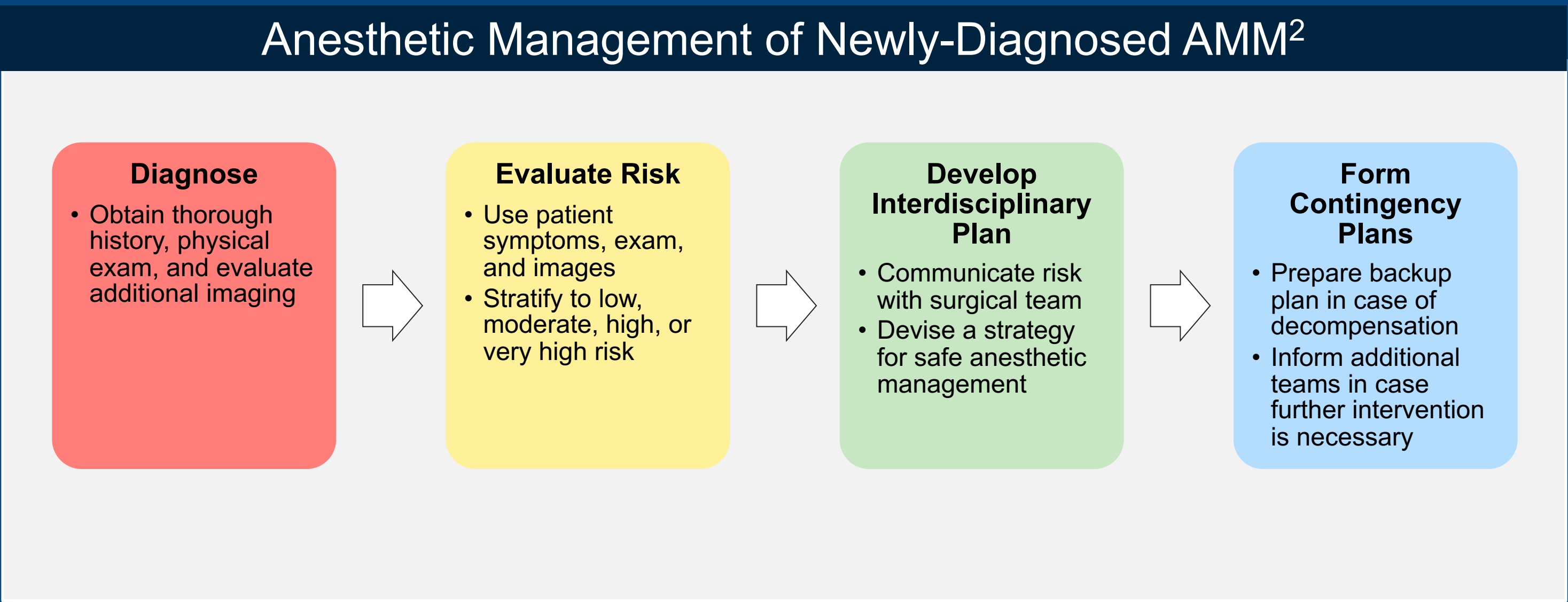


Laura Lockard, MD¹, Aditya Upadhyay, MD^{1, 2}, Melissa Kreso, MD¹

¹University of Rochester Medical Center: Department of Anesthesiology & Perioperative Medicine, ²Vanderbilt University Medical Center

Introduction

Anterior mediastinal masses (AMMs) present substantial anesthetic challenges, as airway or vascular compression can lead to sudden and catastrophic cardiopulmonary collapse during both general and neuraxial anesthesia. Consequently, patients with AMMs require comprehensive preoperative assessment, meticulous risk stratification, and close multidisciplinary collaboration to ensure safe procedural planning. Pregnancy further amplifies these risks through physiologic adaptations that exacerbate respiratory and hemodynamic vulnerability, particularly during labor and delivery. Additionally, the need to defer or modify definitive oncologic therapies during pregnancy underscores the importance of coordinated, interdisciplinary care to preserve maternal stability, support fetal well-being, and facilitate timely postpartum treatment.



Case Description

Initial Presentation

- 29-year-old G1P0 female at 35w1d with normal pregnancy presented with cough
- Chest radiograph showed mediastinal widening, subsequent MRI revealed an 11 x 5 x 11 cm anterior mediastinal mass
- Biopsy: precursor T-cell lymphoblastic leukemia/lymphoma
- Induction of labor initiated at outside hospital, transferred for a higher level of care

Clinical Findings

- Subjective: nonproductive cough, exertional dyspnea, neck swelling
- Vitals: BMI 29, BP 113/65, HR 99, RR 16, SpO₂ 98%
- Exam: Mallampati II, mild neck swelling, otherwise unremarkable

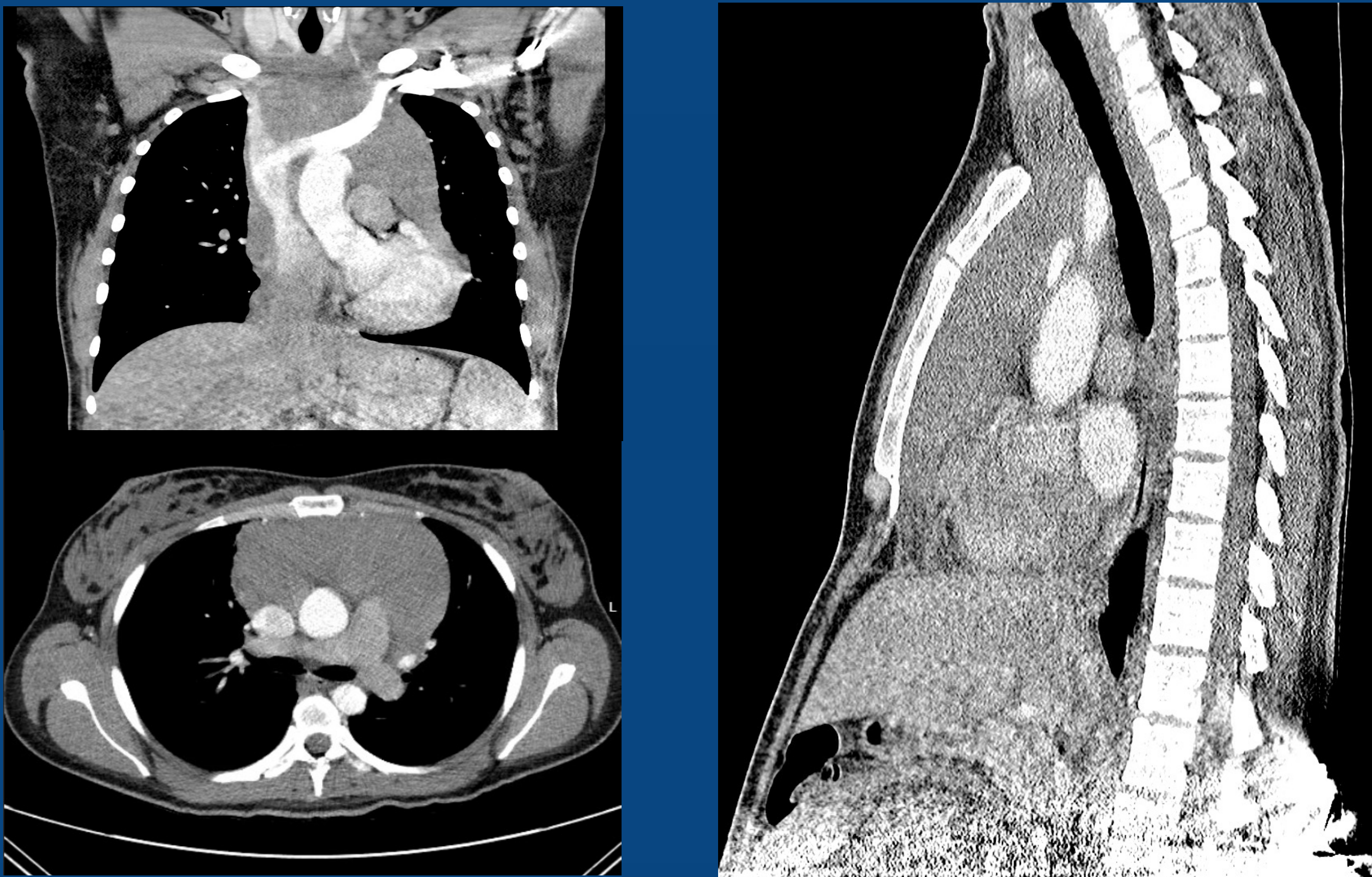
Imaging

- CT chest: Diffuse conglomerate lymphadenopathy encasing the mediastinum and mediastinal vasculature, with anterior extension into the retrosternal space. No vascular invasion or airway compression was seen, though there was external compression of the left and right brachiocephalic veins.
- TTE: LVEF 65% with normal LV/RV size and function, normal estimated RV systolic pressure, and a small circumferential pericardial effusion without evidence of tamponade.

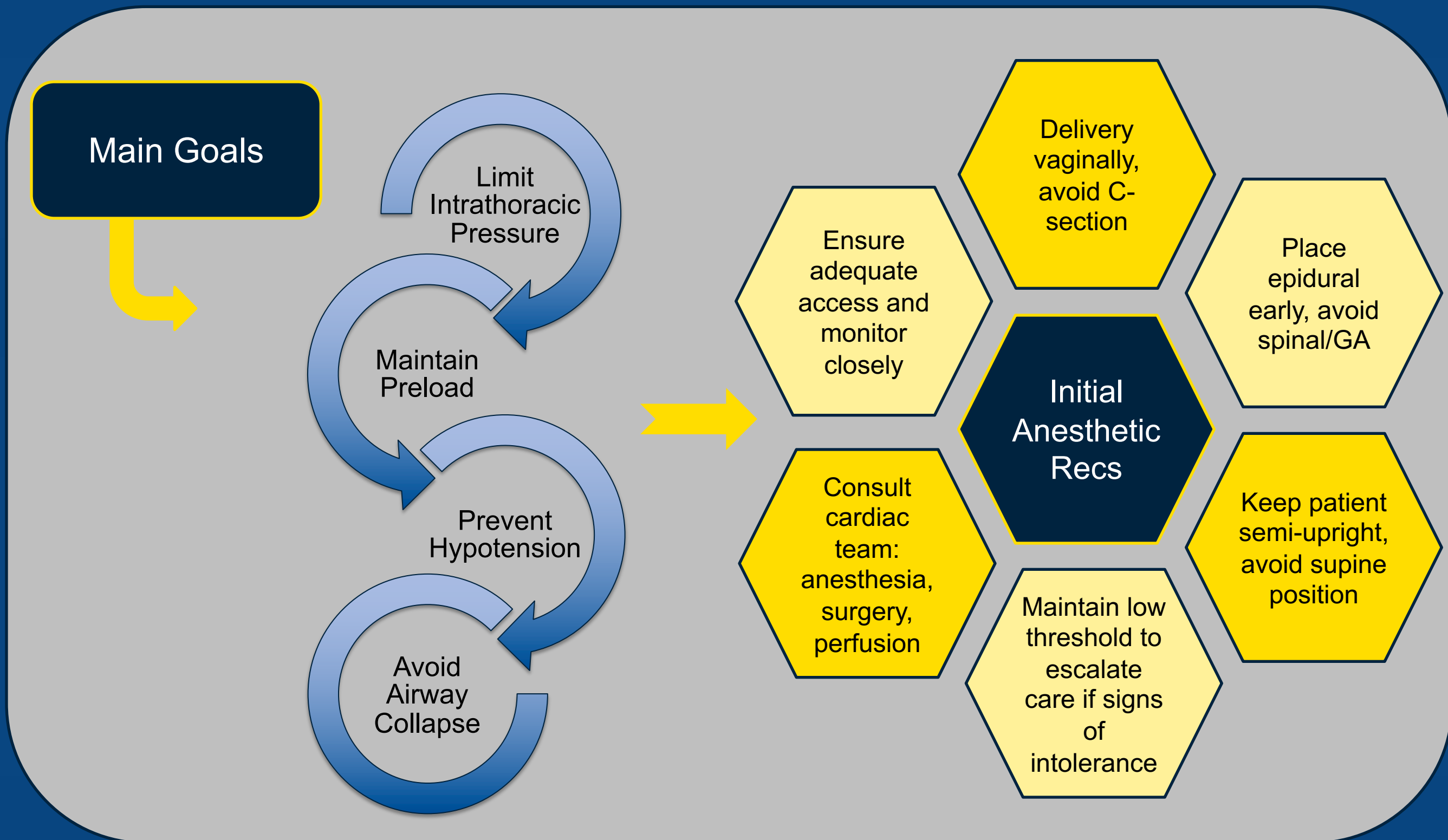
Initial Management

- Obstetrics team paused induction of labor
- Coordinated multidisciplinary discussions between anesthesia, high risk obstetrics, oncology, interventional radiology
- Oncology recommended delivery to allow initiation of oncological workup and treatment as soon as possible, and the obstetrics team favored proceeding with vaginal delivery

Images



Clinical Management



- RUE PICC was placed by IR for central access
- OB resumed induction on labor and delivery; the patient was maintained in semi-upright position
- An epidural catheter was placed at L3-L4 early in labor
- Analgesia was initially unilateral; the epidural required two replacements before getting sufficient relief
- The patient had a spontaneous vaginal delivery; both mother and infant tolerated delivery well
- Patient transferred to the oncology service to initiate chemotherapy and radiation

Discussion

Although imaging showed no airway compression, the patient's symptoms and vascular involvement placed her in the high-risk category, potentially complicating the use of general anesthesia or neuraxial techniques.²

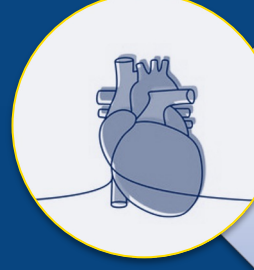
	Low Risk (<2%)	Intermediate Risk (~2-15%)	High Risk (> 15%)
Symptoms	Asymptomatic	Mild-to-moderate: cough, shortness of breath, can lie flat	Severe: orthopnea, stridor, cyanosis, acute onset
Airway Compression	< 50%	<50% + symptoms OR ≥ 50% + no symptoms	≥ 50% + symptoms OR mid/lower airway compression
Vascular Compression	No cardiac/vascular compression	Asymptomatic SVC OR mild/mod unilateral PA compression	SVC syndrome + dyspnea OR pericardial effusion OR major PA compression
Anesthetic Planning	Standard induction	Consider asleep FB/SV intubation for GA, consider slow titration of neuraxial	Consider awake FB/SV intubation for GA, +/- ECMO available, consider slow titration of neuraxial

Physiological changes in pregnancy further complicated anesthetic decision-making^{1,3}:



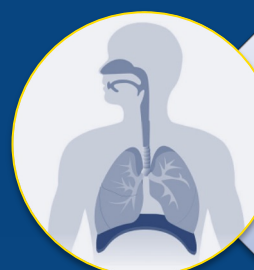
Increased Intrathoracic Pressure

AMM: Mass effect/mechanical displacement of mediastinal structures
Pregnancy: Cephalad diaphragmatic displacement, bearing down



Decreased Preload

AMM: Venous compression, cardiac compression
Pregnancy: IVC compression by gravid uterus (supine)



Difficult Ventilation

AMM: Compression of airway by mass, SVC syndrome
Pregnancy: Diaphragm displacement, decreased FRC, increased O₂ consumption, airway edema, muscle relaxation

- Challenges with *general anesthesia*:
 - Decreases preload and cardiac output and increases intrathoracic pressure, increasing the risk of cardiovascular collapse
 - Reduces lung volumes, relaxes bronchial smooth muscle leading to greater airway compressibility and potentially difficult or impossible ventilation
- Challenges with *spinal anesthesia*:
 - Causes abrupt sympathectomy and systemic vasodilation, risking sudden hemodynamic collapse
- Given the patient's risk profile, early epidural placement with cautious titration was considered a safe neuraxial option, with spinal anesthesia and general anesthesia posing higher theoretical risks

Conclusions

- Patients with anterior mediastinal masses present unique anesthetic challenges, which are further complicated by the physiologic changes of pregnancy
- Interdisciplinary planning enabled a safe delivery and timely initiation of oncologic treatment without compromising maternal or fetal safety
- Thorough preoperative risk stratification, close communication among the care teams, and clear contingency planning were essential to achieving a successful outcome.

References

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