

Emergency Anesthetic Management for a Concurrent Subdural Hematoma Evacuation and C-Section in a Pregnant Trauma Patient

33y found unresponsive at home as victim of domestic abuse

Physical Exam:

- GCS 3T
- Burns, diffuse bruising over torso and abdomen, gravid uterus

Imaging:

- CT head – impending uncal herniation
- Traumagram - sternal body fracture, new/old rib fx, renal lac, aspiration PNA, retroplacental hematoma
- US – fetal heart tones, EGA 28w

Plan:

- Emergently to OR for concurrent CD + L hemicraniectomy



Mass effect with a 1.7cm midline shift and effacement of basilar cisterns consistent with impending uncal herniation

SOAP 2022
ANNUAL MEETING

Case Description

Access & Airway: 7.0 ETT, radial a-line, NGT, 18G PIV x2

Induction with propofol, rocuronium, midazolam, phenylephrine

Maintenance with propofol, sevoflurane

C-section incision made with delivery in <1 min; Pitocin started at 600milli-u/min. Craniotomy immediately followed

Maintenance of MAP with phenylephrine, vasopressin, calcium chloride

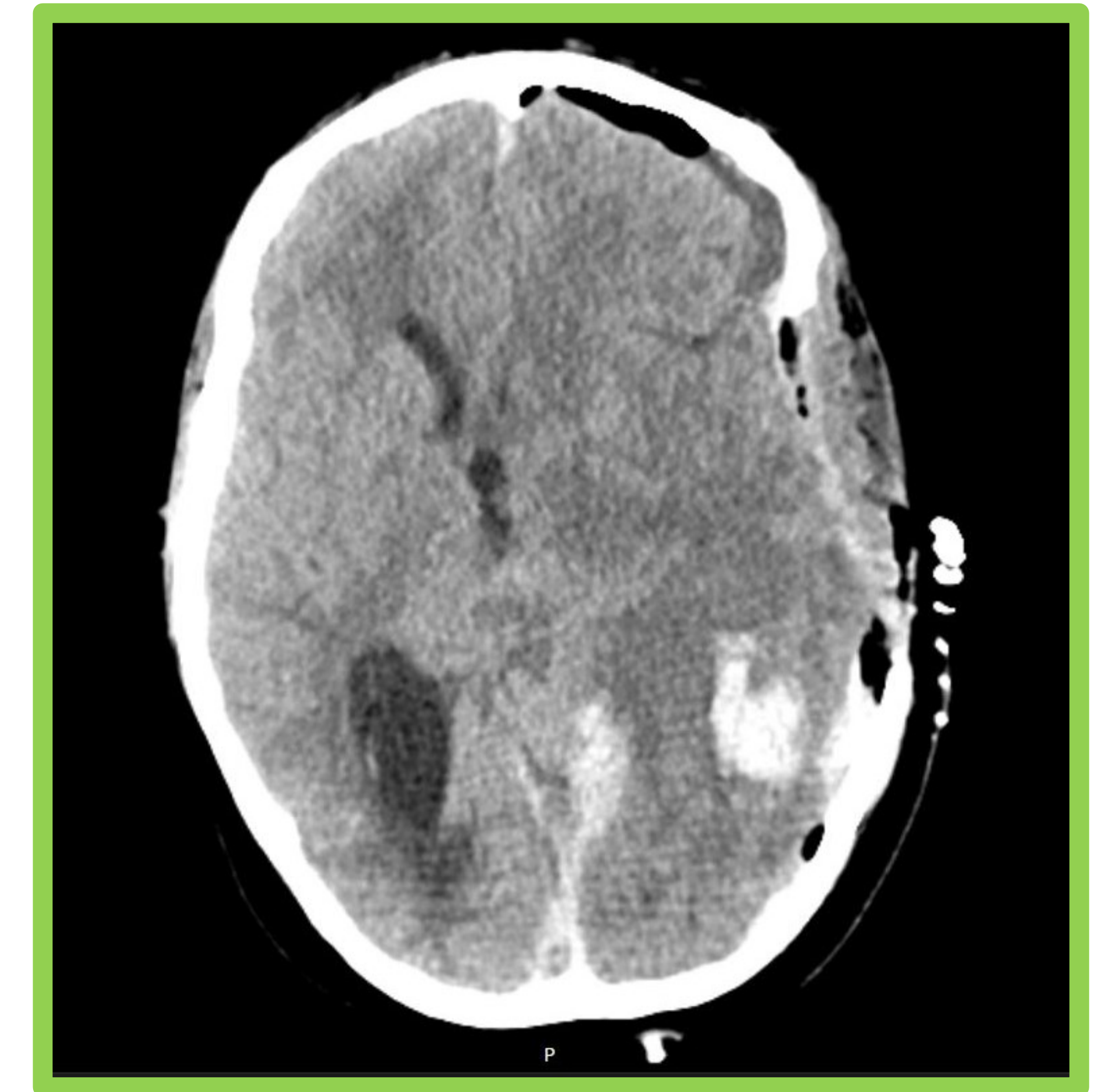
Resuscitation with 2 units PRBC, 3.5 L crystalloid, 500ml 5% albumin

Case completed in less than 1.5 hours, EBL 1.5

Transported to ICU

POD1: significant brainstem hemorrhage

POD7: brainstem herniation; organ donation elected by medical surrogate



POD1, development of L temporal lobe IPH and R posterior brainstem IPH

Discussion Points

ICP Strategies in Pregnancy

- **Mannitol** – fetal hyperosmolality, ↓ lung fluid production, hypernatremia and dehydration (theoretical)
- **Loop Diuretics** – controversial; fetal teratogenicity and maternal death in animal studies; not seen in human case series (use with caution)
- **Hypertonic saline** – associated with dural venous sinus thrombosis, maternal/fetal death (extreme caution, contraindication)
- **Temperature** – in TBI patients, hyper/hypothermia ↑ maternal/fetal morbidity and mortality
- **Hyperventilation** – controversial; may cause uterine artery vasoconstriction, oxyhemoglobin dissociation curve shifts left

Timing of Delivery vs Neurosurgical Intervention

- Fetal viability
 - a. Delivery precedence: stable mother with evidence of fetal compromise
 - b. Neurosurgical precedence: high maternal morbidity or mortality (herniation)
 - c. Individualized approach:
 - no expectation of brain death but likely poor prognosis
 - optimizing fetus could worsen ICP/intracranial injury
- Discussion with family, medical surrogates, consulting teams, hospital ethics committee if warranted

Trauma and Domestic Violence

- Trauma occurs in 1 of 12 pregnancies and is the leading cause of non-obstetric maternal mortality.¹
 - Intimate partner violence remains a primary contributor, affecting 3-9% of all parturients.^{1, 2}
- The presence of TBI in these women significantly increases the risks of morbidity and mortality.³
- Clinical management of TBI in this population presents unique considerations:
 - physiologic changes of pregnancy
 - potentially teratogenicity of the pharmacologic tx for ↑ ICP
 - exposure to radiation or contrast during imaging³
- Pregnant patients are a vulnerable population who are frequently excluded from TBI research