

□ Bleeding Complications

Gastrointestinal bleeding

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□ Definition

Bleeding [complications](#) refer to **hemorrhagic events**

□ Classification

Type	Description	Clinical Impact
Superficial bleeding	Subgaleal hematoma , wound bleeding	Often self-limited, may require drainage
Epidural hematoma	Blood collection between dura and skull	Can cause mass effect, requires urgent evacuation
Subdural hematoma	Blood between dura and arachnoid	May be acute or delayed, surgical or conservative management
Intracerebral hemorrhage	Hemorrhage within brain parenchyma	May be due to vessel injury, coagulation issue; often severe
Rebleeding at surgical site	Reaccumulation of blood at resection cavity	May need re-craniotomy or intensive care

□ Risk Factors

- Intraoperative vessel injury
- Inadequate hemostasis
- Use of anticoagulants or antiplatelets
- Coagulopathy (e.g., thrombocytopenia, liver disease)
- **NSAID use (theoretical concern)**
- Hypertension in the immediate postoperative period

□ Bleeding Requiring Surgical Intervention

Defined as any postoperative hemorrhage that necessitates **reoperation** for evacuation or decompression.

Criteria may include:

- Neurological deterioration
 1. Midline shift or mass effect on imaging
 2. Persistent or increasing hematoma
 3. Raised intracranial pressure (ICP)

□ NSAIDs and Bleeding Risk

Recent evidence (e.g., Cardoso et al., *Neurosurgery* 2025):

- No statistically significant increase in:
 1. All bleeding events (RR 1.05; 95% CI: 0.58–1.93)
 2. Surgical reintervention (RR 1.27; 95% CI: 0.51–3.16)
- Suggests NSAIDs may be **safe for analgesia** post-craniotomy when used judiciously

□ Monitoring

- Daily neurological examination
- Blood pressure control
- Early postoperative imaging (CT/MRI)
- Hemoglobin levels and coagulation profile

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