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Lecturer –ass. Khilgiyaev R.H.

Classification of skull injury

- **Closed**
- **Open (with injury of aponeurosis or bones)**

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Classification of skull injury

- **Without bones fractures**
- **With bones fractures**
  - **Fractures of archs of skull**
  - **Fractures of base of skull**

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Classification of skull injury

- **Concussion of brain**
- **contusion of brain**
  - **Light**
  - **Mild**
  - **Heavy**
- **compression of brain due to:**
  - **contusion mass**
  - **bones fragments**
  - **Hematoma:**
    - **Epidural**
    - **Subdural**
    - **intracerebral**

Investigations

- **X-ray of skull (Fractures of bones)**
- **CT (Fractures of bones, contusion areas of brain, haematomas)**
- **Ultrasound (dislocation of brain due to compression)**
- **Lumbar puncture with Liquor Investigations (determination of colour, pressure)**

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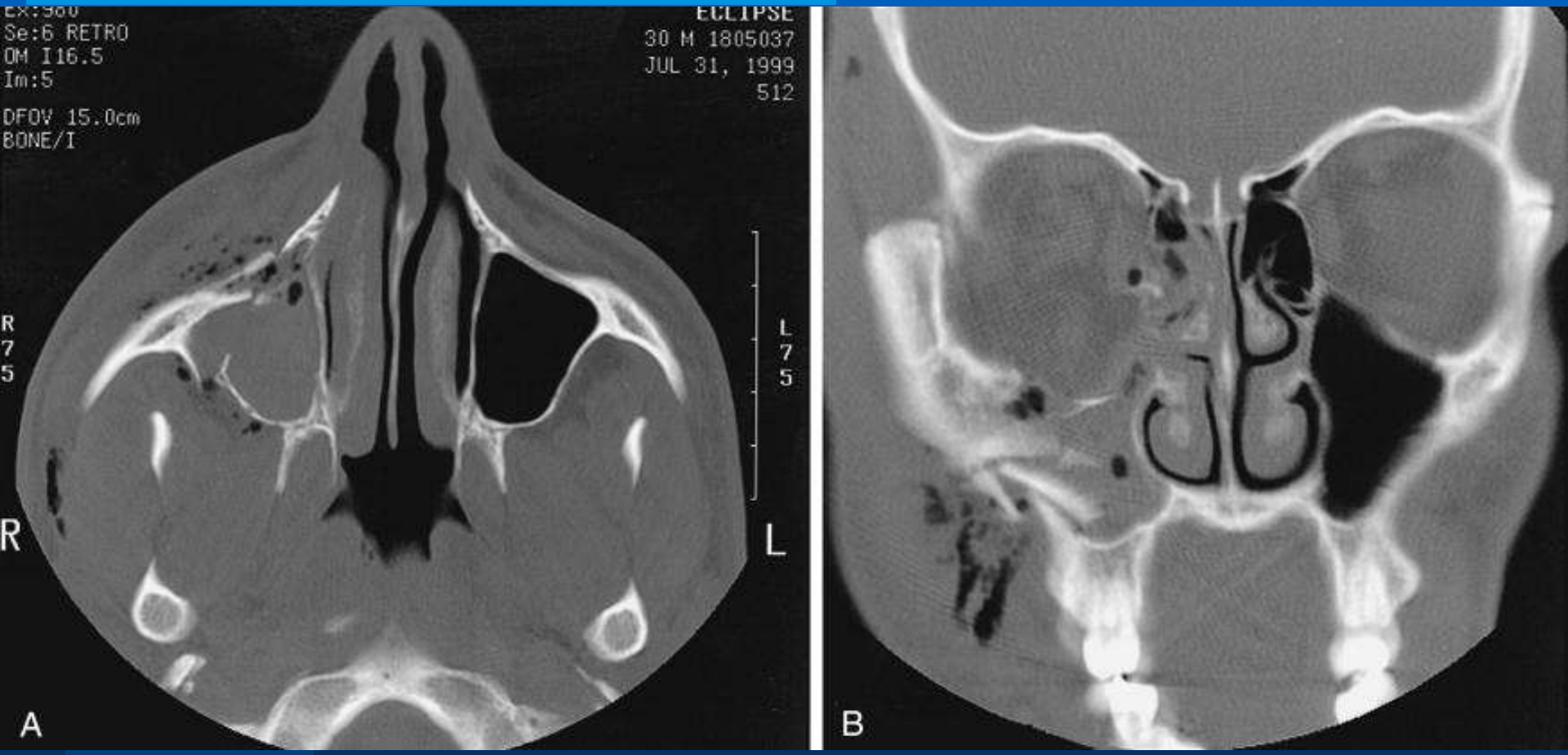
Fracture of base of skull, signs

- **Disharge of liquor from ears (nose)**
- **Nose (ear) bleeding**
- **“Glasses” sign**

Fractures right maxilla and lateral, inferior, and medial walls of the right orbit. Opacity of the maxillary and ethmoidal sinuses.



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Concussion of brain

- **Loss of consciousness (less than 1 min)**
- **Retrograde amnesia**
- **Nausea**
- **Vomitus**
- **buzzing in the ears**
- **Headache**

General cerebral signs

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Concussion of brain. Treatment

- **confinement to bed**
- **Analgetics**
- **Nootrops (nootropil)**

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contusion of brain

- **General cerebral signs**
  - **Loss of consciousness (more than 1 min, may be as long as some days – condition of coma)**
  - **Retrograde amnesia**
  - **Repeated Vomitus**
  - **Severe Headache**
- **Neurologic (lateralizing) signs**
- **Meningeal signs**

The severity of brain injury

can be rapidly estimated by determining the:

- *level of consciousness*

and presence or absence of

- *lateralizing signs* **of central nervous system dysfunction, including**
  - **pupillary changes**
  - **motor findings.**

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Level of consciousness

- **is most commonly assessed by the GCS score**
- **GCS score is based on an evaluation of :**
  - **eye opening,**
  - **best motor response**
  - **verbal response**

Signs of central nervous system dysfunction

- **are unilateral or asymmetrical, so-called *lateralizing signs*, are highly suggestive of focal intracranial lesions that may require surgical intervention**
- ***Pupillary function* is assessed by the size, equality, and response to bright light**

  (largest pupil is on the side of the mass lesion)
- **Lateralized extremity weakness is detected by testing *motor* power in patients with conscious or by observing symmetry of movement in response to painful stimulus**

Signs of the Mass effect (compression of brain)

- **“Light period” (after awakening patient return to coma)**
- **larger pupil on the one side (anisocoria)**
- **Paresis (extremity weakness)**
- **Afasia**
- **Bradicardia**
- **Dislocation of brain to one side more than 2 mm (ultrasound investigation)**

Treatment of skull injury

- **use of mannitol to induce an osmotic diuresis**
- **Patients with focal intracranial pathology that is causing significant mass effect require urgent surgical evacuation of the mass lesion**
  - **The outcome in these patients is improved by rapid decompression**
  - **any epidural or subdural hematoma that is causing significant mass effect, especially in a patient with poor mental status, should be evacuated with *Craniotomy***

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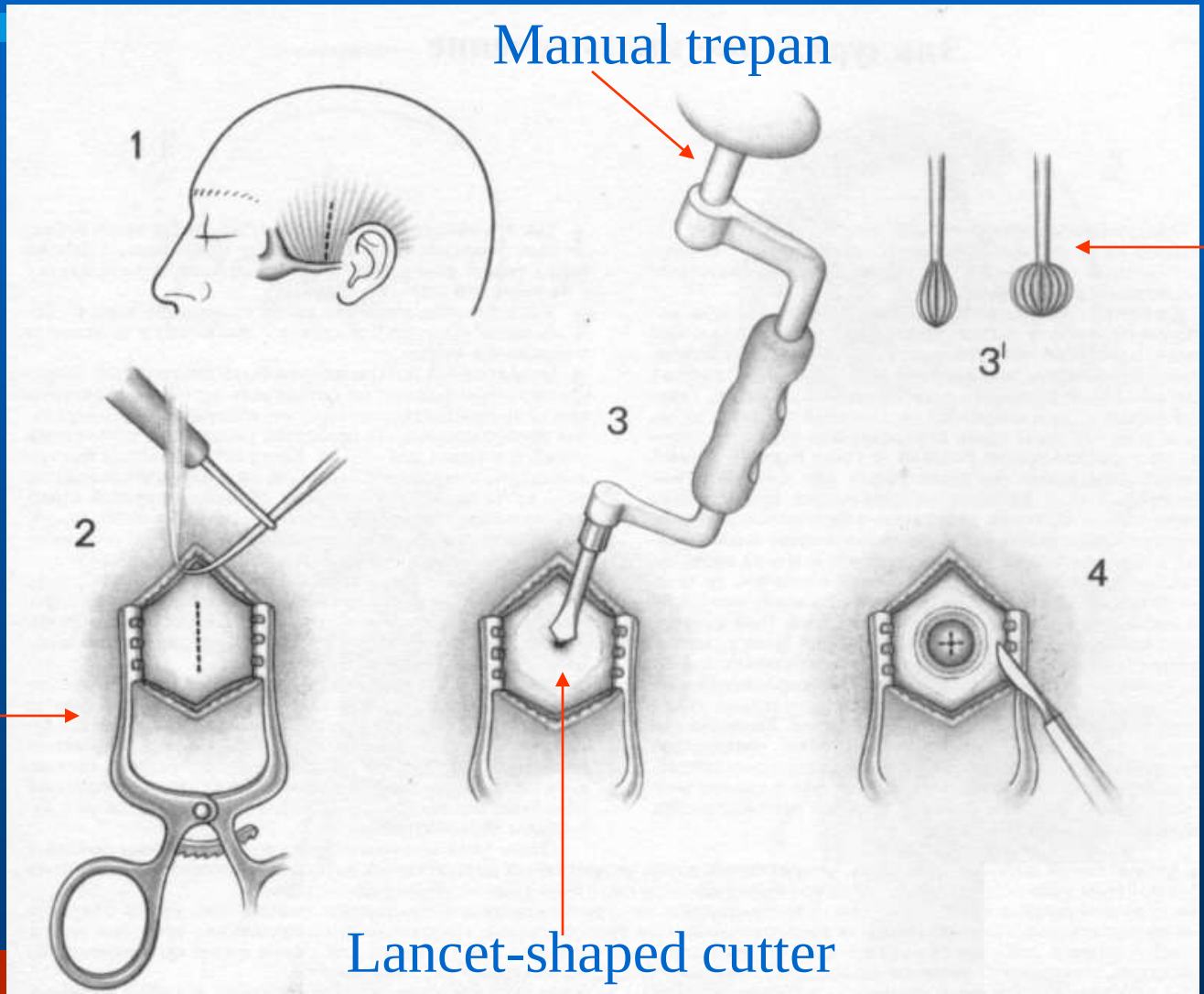
Subdural hematoma. Trepanation 1



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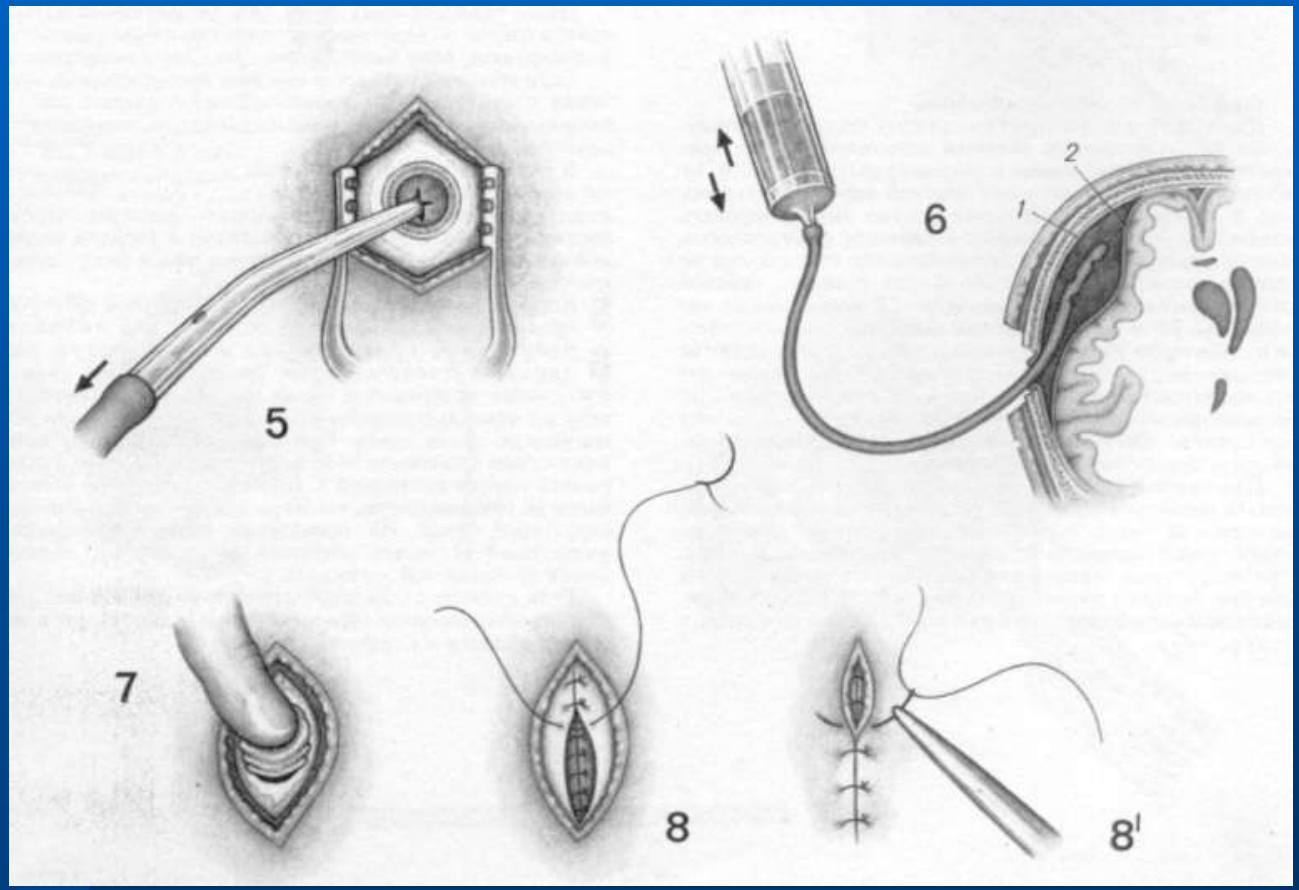
Subdural hematoma. Trepanation 2



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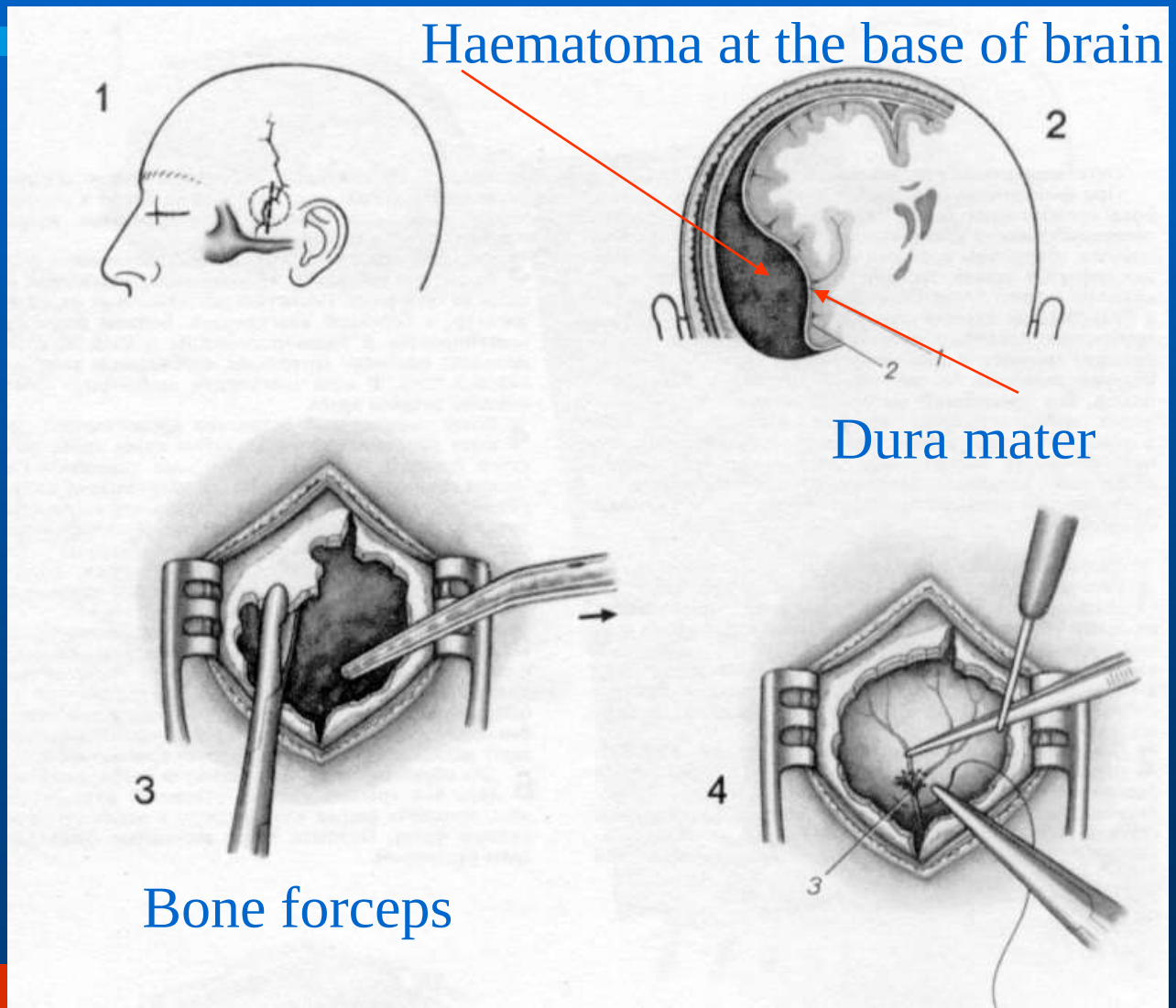
epidural hematoma. Decompressive trepanation of the skull



Coagula-tion or suture of vessel

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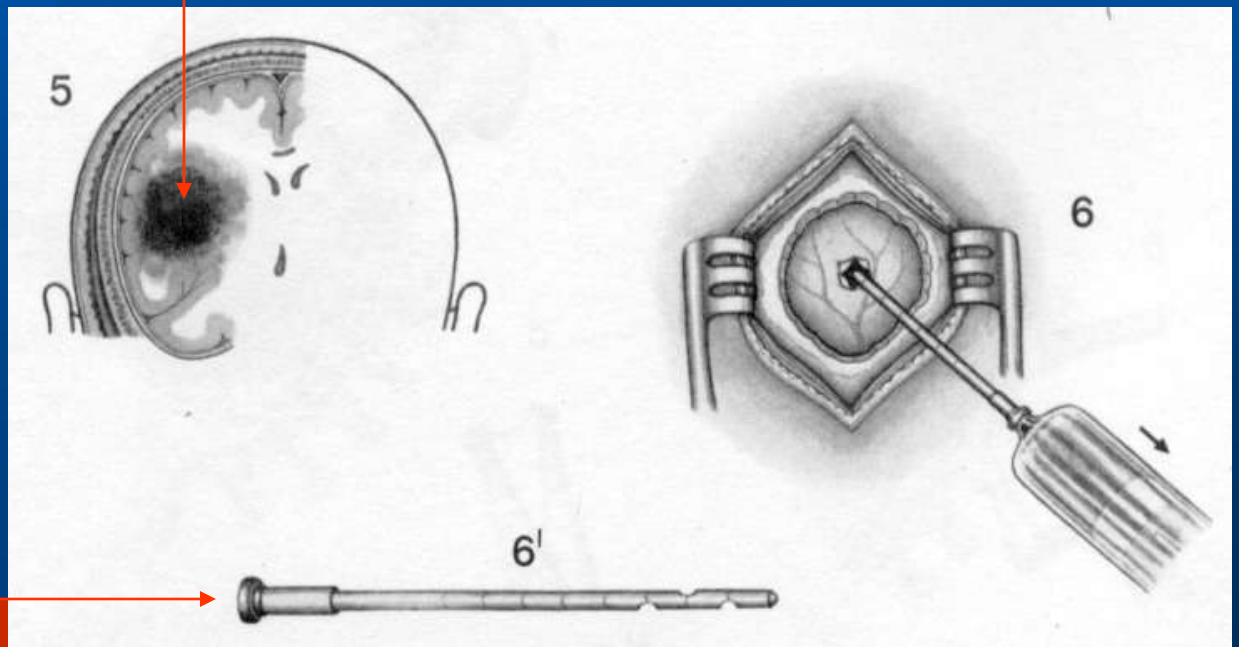
intracerebral hematoma

Brain can pass through dura mater due to:

- Oedema of brain
- Intracerebral hematoma



Brain puncture

Cannula for Brain puncture

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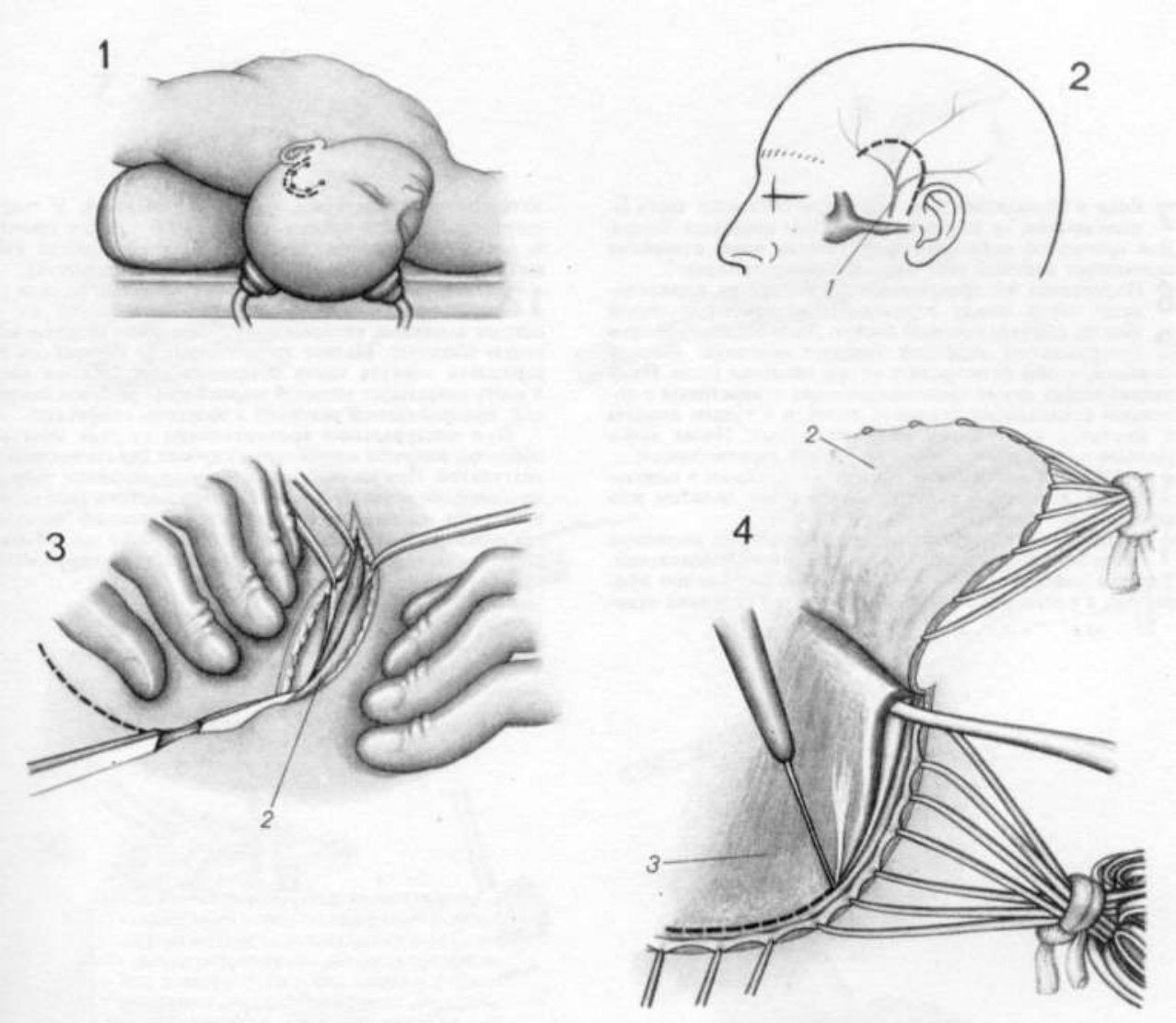
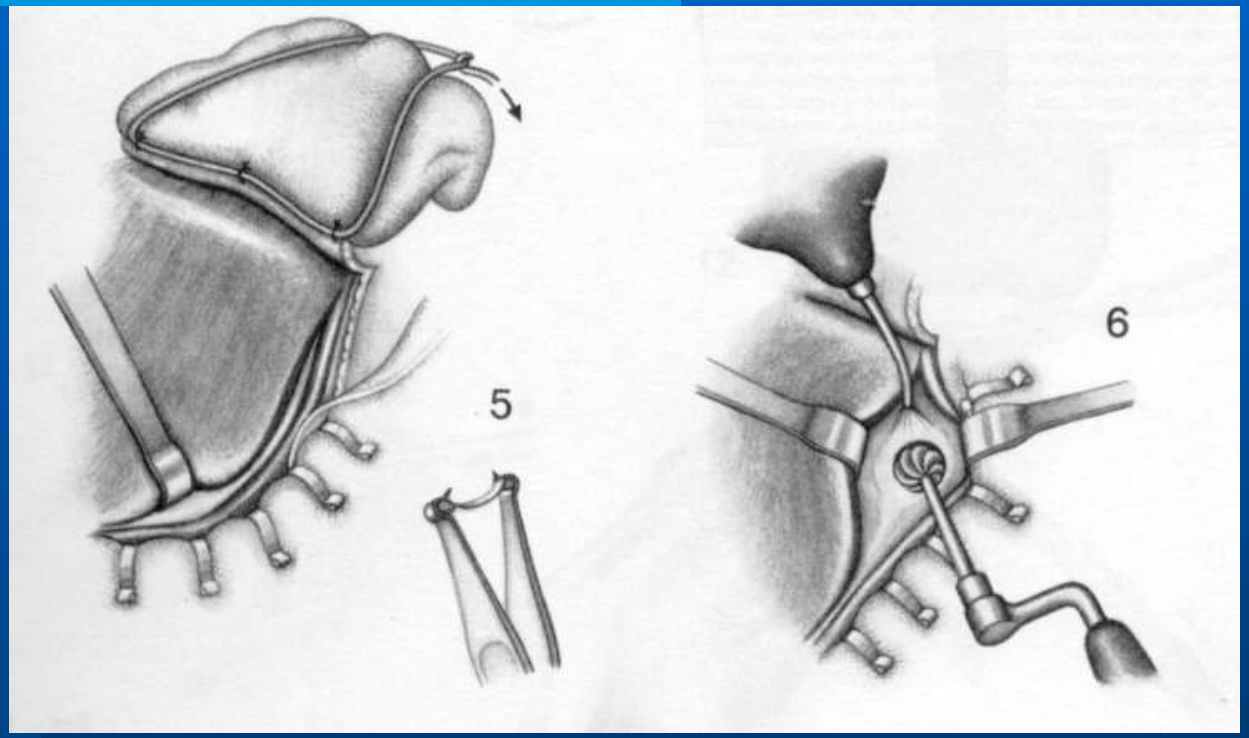
Osteoplastic trepanation of the skull

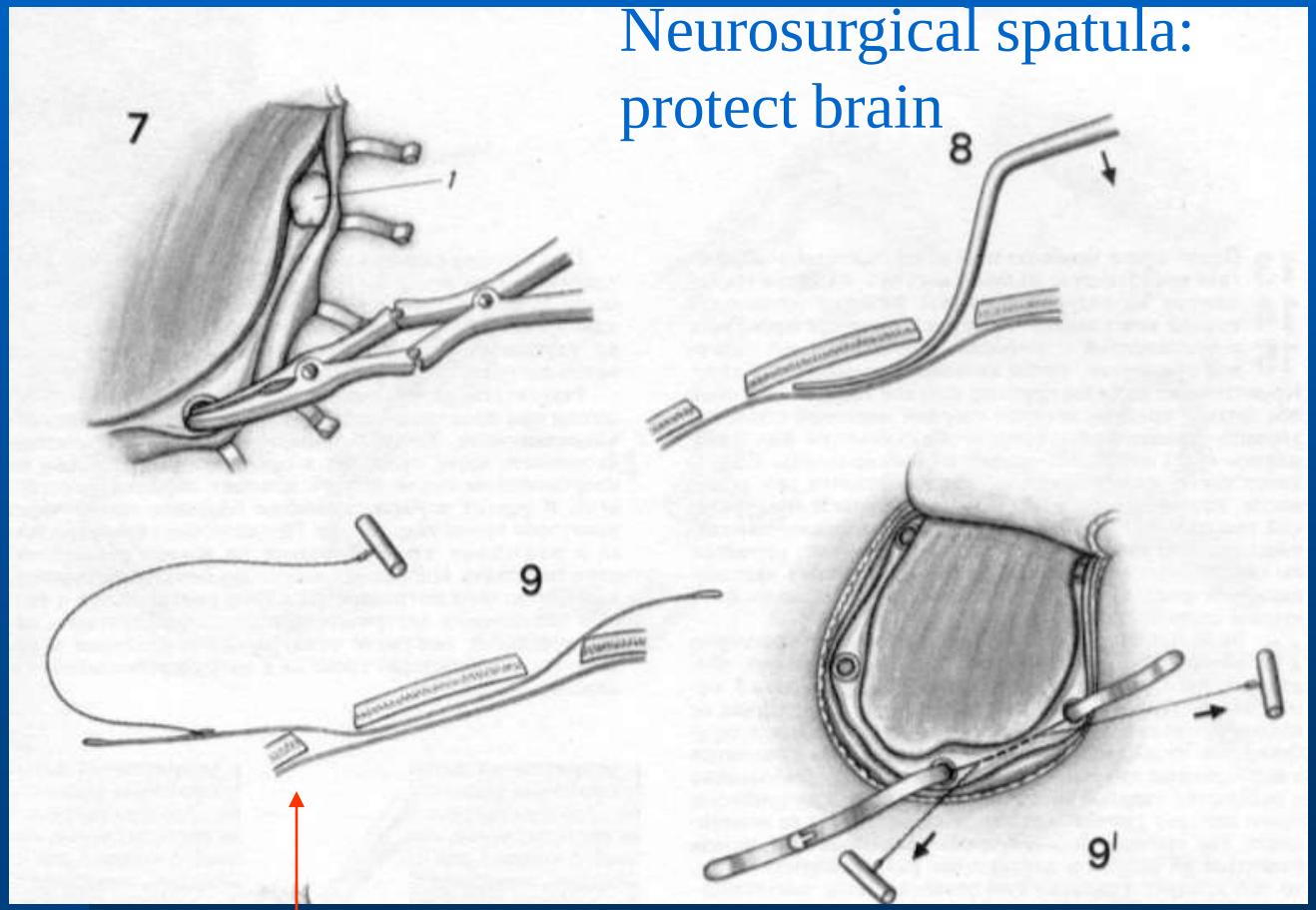
1



Osteoplastic trepanation of the skull 2



Osteoplastic trepanation of the skull 3

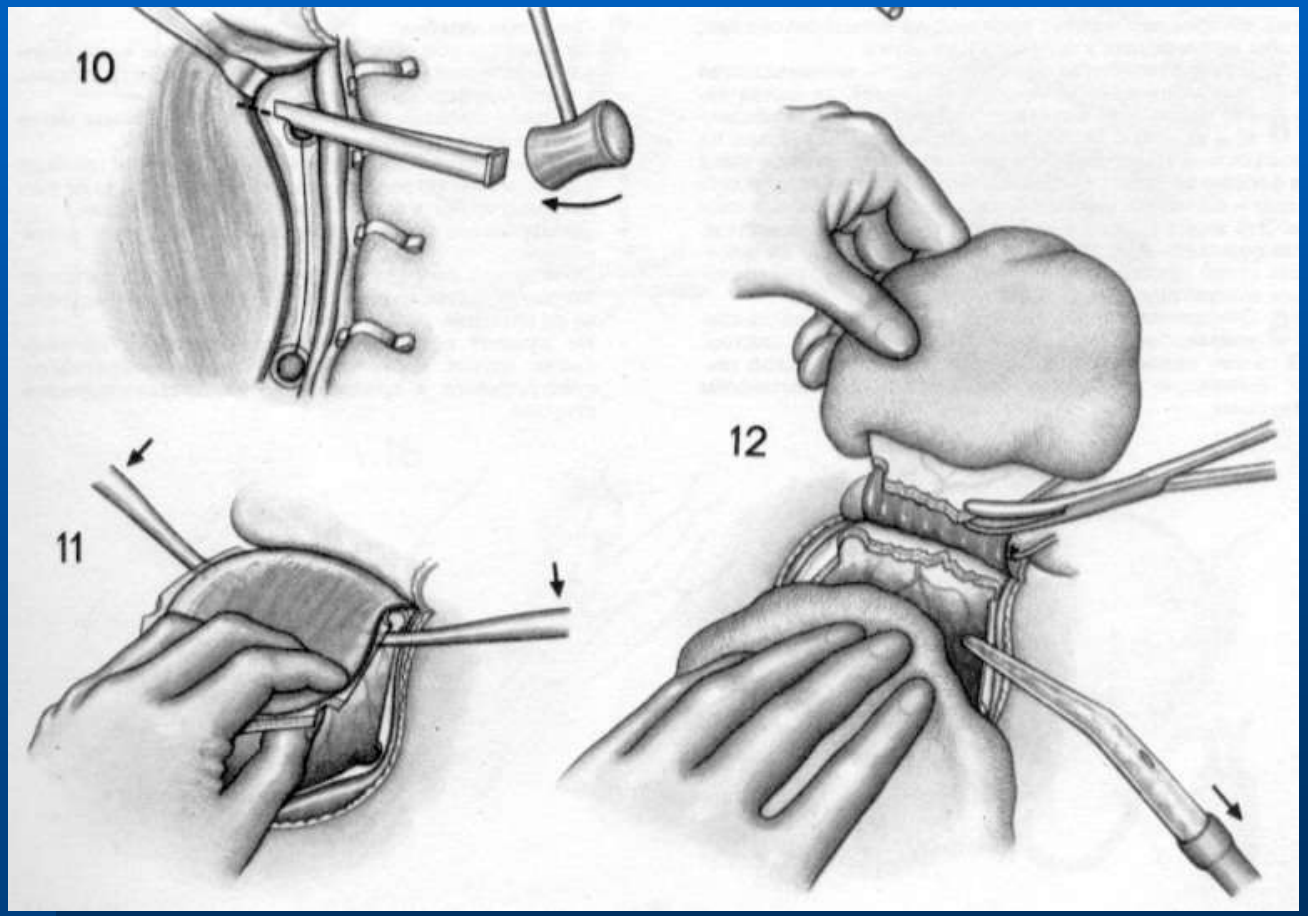


Neurosurgical spatula: protect brain

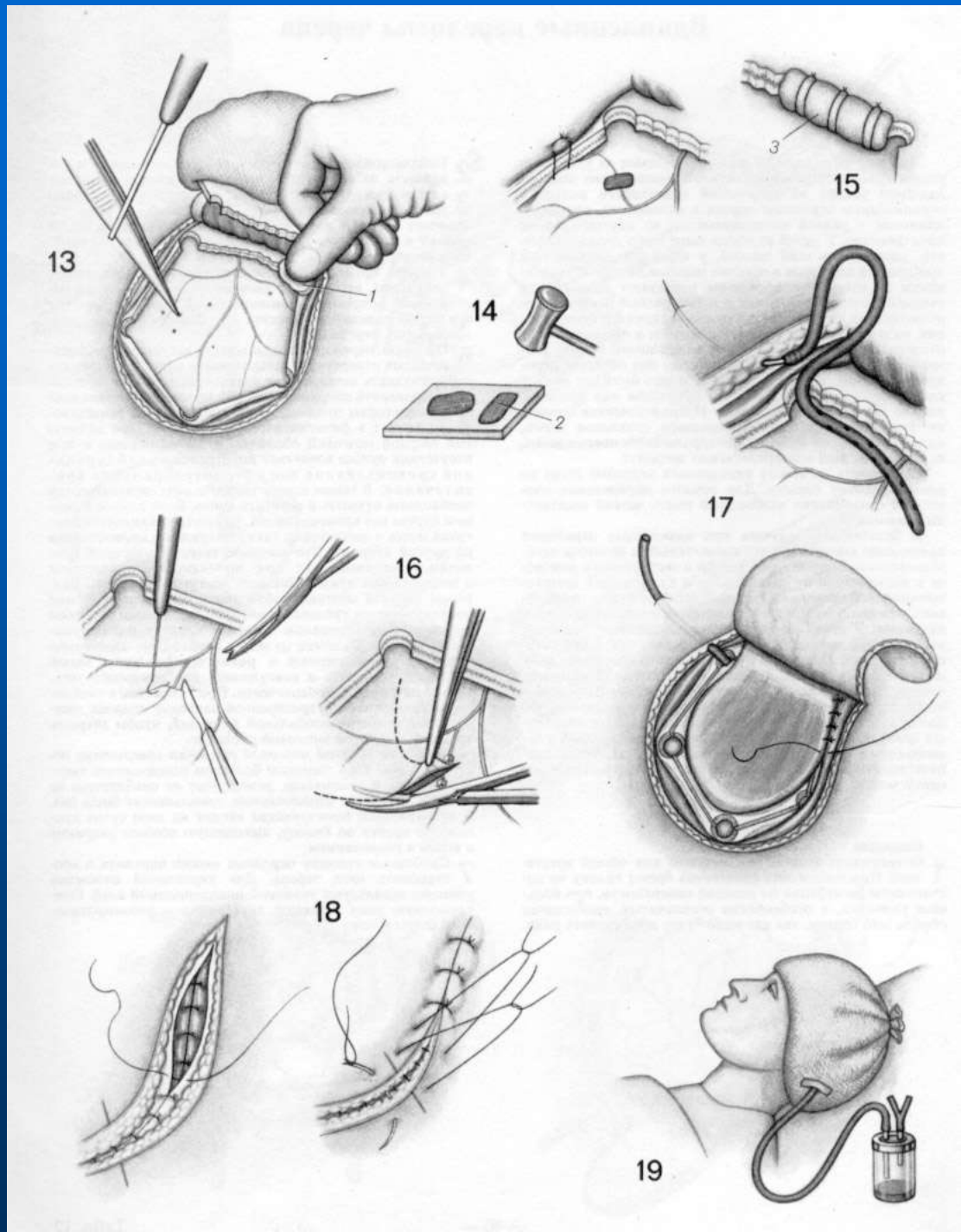
Wire saw by Gigli

Osteoplastic trepanation of the skull

4



Osteoplastic trepanation of the skull 5



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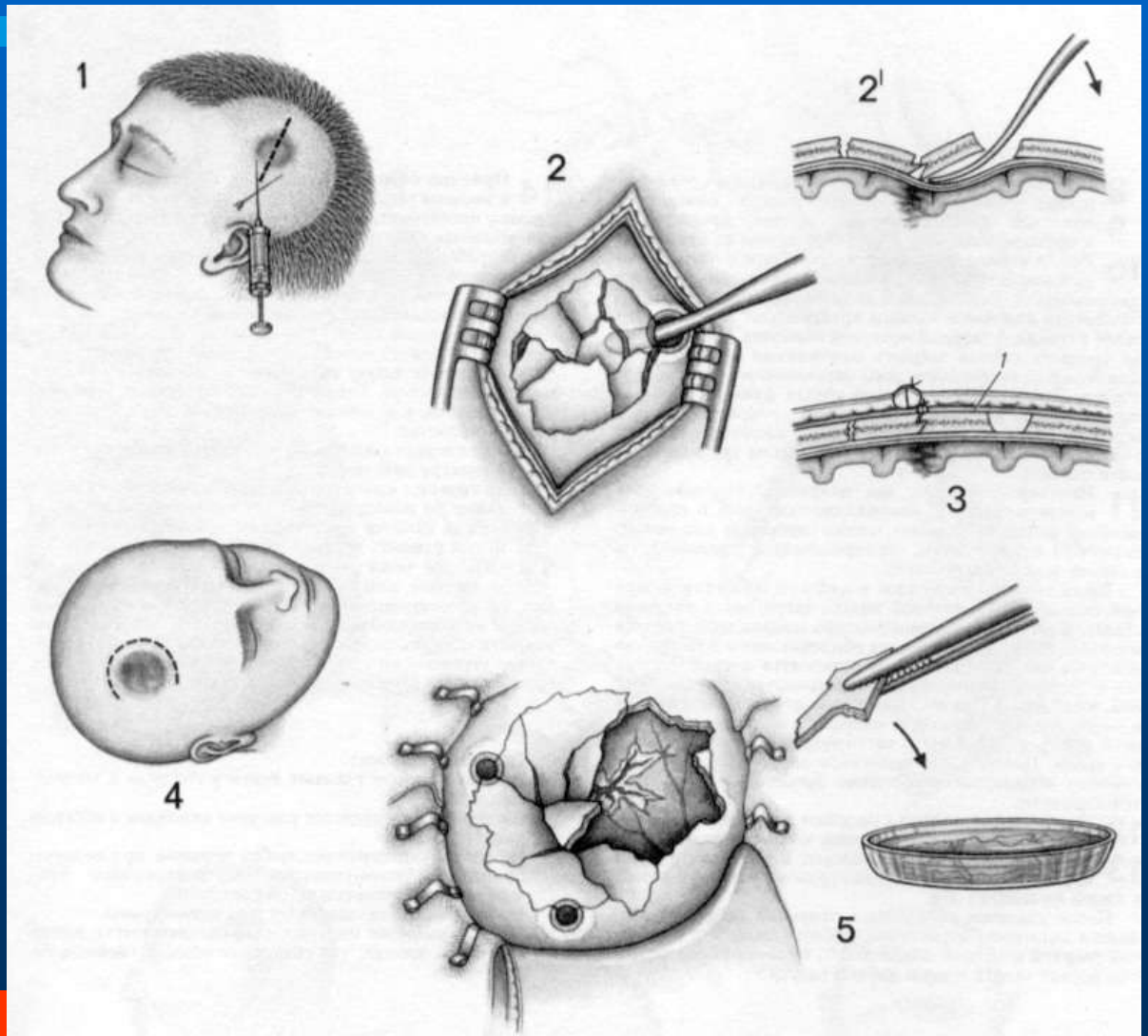
Press-fractures of the skull 1



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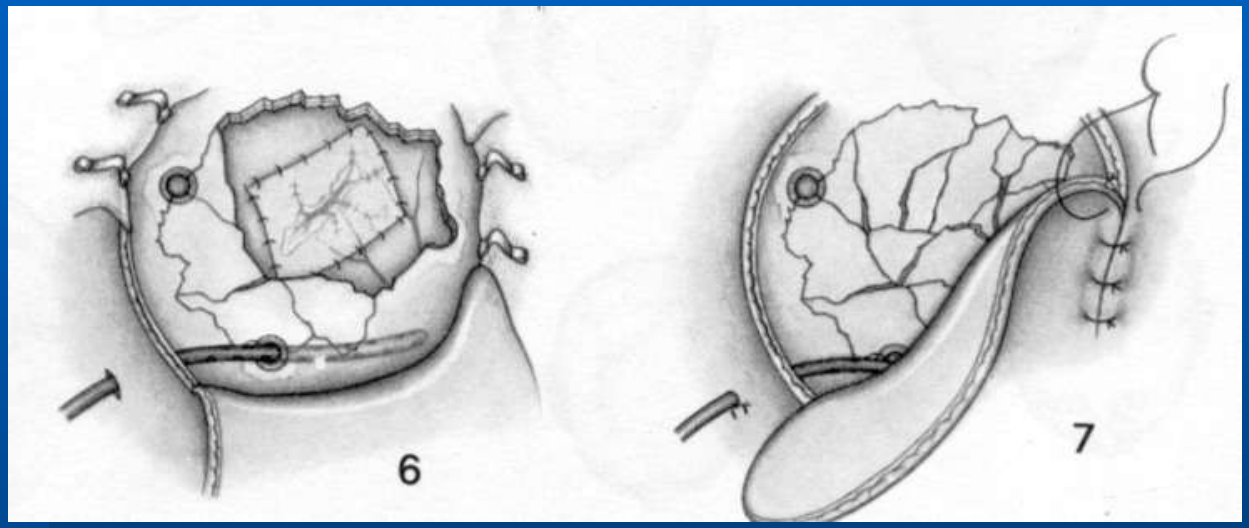
Press-fractures of the skull 2



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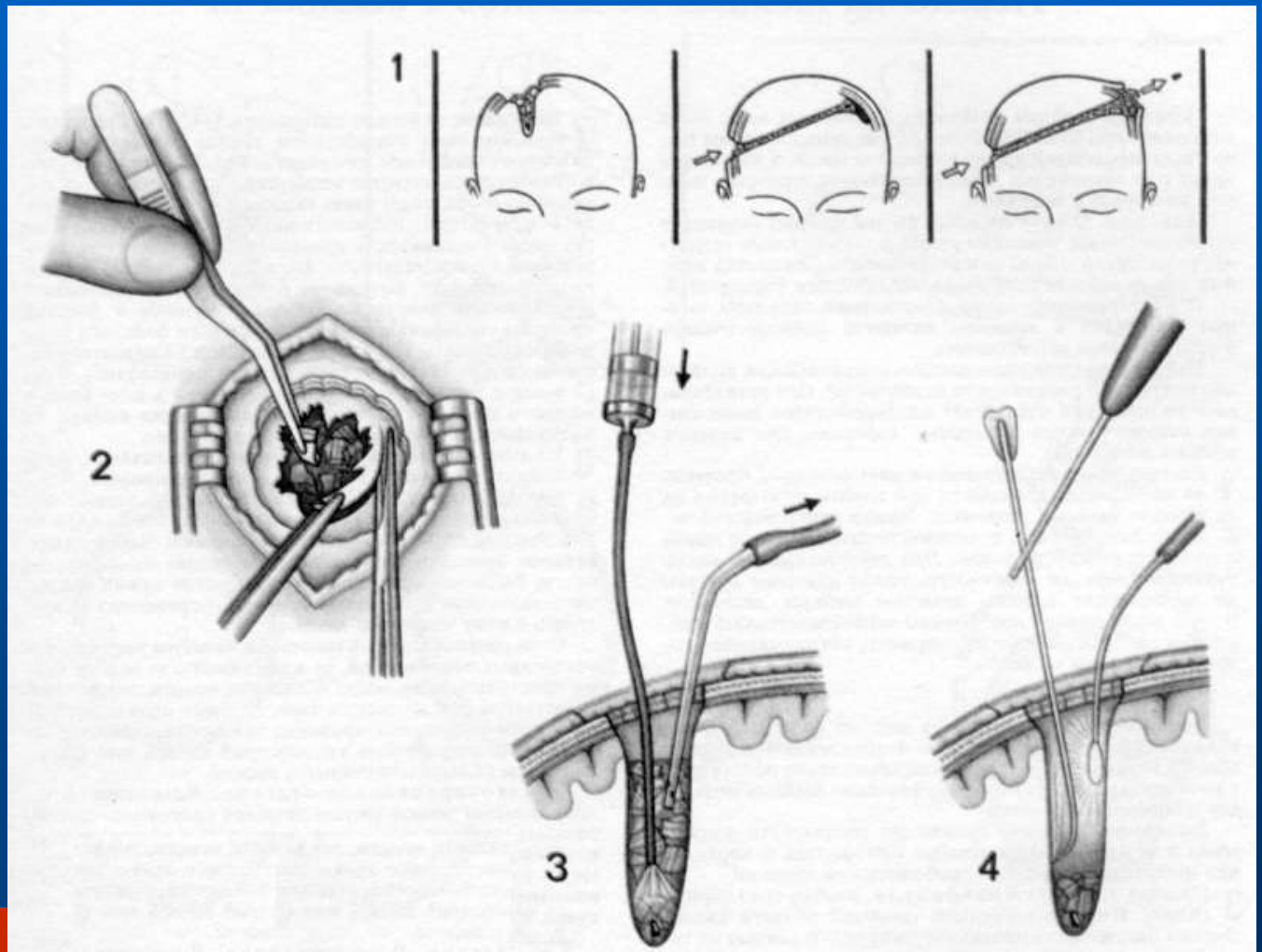
Open injury of skull 1



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Open injury of skull 2