Decompressive craniectomy indications

Decompressive craniectomy (DC) is a widely used treatment of refractory high ICP.

Indications (controversial) include:

1. Malignant middle cerebral artery territory infarction primarily for the nondominant hemisphere. Use on the dominant side is more controversial

2. Traumatic intracranial hypertension.
   a) As an adjunct for persistent intracranial hypertension when other ICP control measures fail ¹).
   b) early in the management: maybe considered for patients undergoing emergent surgery (for fracture, EDH, SDH...) ²)

3. uncontrollable brain swelling during craniotomy

4. reported in children with refractory nontraumatic intracranial hypertension ³)
   (e.g. infection, infarction, Reye's syndrome...).

Raised intracranial pressure is very often debilitating or fatal because it causes compression of the brain and restricts cerebral blood flow. The aim of decompressive craniectomy is to reduce this pressure.

It is performed on traumatic brain injury and stroke.

After traumatic brain injury, secondary decompressive craniectomy is most commonly undertaken as a last-tier intervention in a patient with severe intracranial hypertension refractory to tiered escalation of ICP-lowering therapies. Although decompressive craniectomy has been used in a number of conditions, it has only been evaluated in randomized controlled trials after traumatic brain injury and acute ischemic stroke. After traumatic brain injury, decompressive craniectomy is associated with lower mortality compared to medical management but with higher rates of vegetative state or severe disability. In patients with stroke-related malignant hemispheric infarction, hemicraniectomy significantly decreases mortality and improves functional outcome in adults <60 years of age. Surgery also reduces mortality in those >60 years, but results in a higher proportion of severely disabled survivors compared to medical therapy in this age group. Decisions to recommend decompressive craniectomy must always be made not only in the context of its clinical indications but also after consideration of an individual patient's preferences and quality of life expectations ⁴).

Decompressive craniectomy for traumatic brain injury

see Decompressive craniectomy for severe traumatic brain injury.

Decompressive craniectomy for ischemic stroke

see Decompressive craniectomy for ischemic stroke.
Suboccipital Decompressive Craniectomy for cerebellar infarction

Intracerebral hemorrhage

Intracerebral hemorrhage is often complicated by secondary haematoma expansion and perihemorrhagic edema.

After few small previous studies had suggested advantages by the combination of decompressive hemicraniectomy with haematoma removal, decompression on its own has been investigated within the last 5 years. Two case series and one case-control study in altogether 40 patients with severe spontaneous intracerebral haemorrhage have shown mortality rates ranging from 13 to 25% and favourable outcome from 40 to 65%.

Decompressive hemicraniectomy appears to be a feasible and relatively well tolerated individual treatment option for selected patients with spontaneous intracerebral haemorrhage. Data are insufficient to judge potential benefits in outcome. A randomized trial is justified and mandatory.