**COMMON NEEDS FOR CRANIOPLASTY**¹

**Neuro Trauma**
1. Emergent decompressive craniectomy postcraniotomy

**Neuro Oncology**
1. Brain neoplasms with calvarial extension
2. Skull neoplasms
   a. Primary (i.e. intraosseous meningioma)
   b. Metastatic Lesions

**Revision**
1. Sterile bone resorption+/- osteomyelitis**
2. Soft Tissue Dehiscence after primary craniotomy with exposed bone flap*

**Timing Considerations***
- 90 day time interval on average from time of bone removal to time of implant placement
  - Non-delayed incisional scalp healing
  - No Swelling

**Timing Considerations***
- 1. Single-stage Cranioplasty with intraoperative implant size modification²
  2. 90 day time interval
     - Non-delayed incisional scalp healing
     - No Swelling

**Timing Considerations***
- 90 day time interval
  - Non-delayed incisional scalp healing
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**PREOPERATIVE PLANNING**¹

**Scalp Examination**
- Open Wounds (new & old), incisional scabs, delayed wound healing, areas of alopecia, inherent scalp mobility, scalp thickness, signs of previous surgical incisions/scalp reconstruction

**CT Scan**
- Assess defect for surgical planning, quantify coexisting soft tissue atrophy (pterional region)
- Used for custom implants

**Patient Specific Implant**

**Autologous bone to PSI in situations greater than 1 month after craniotomy/craniectomy and/or temporal hollowing**¹

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*The material contained in this technique algorithm represents Dr. Chad Gordon’s conclusions based on his own practice and clinical experience with cranioplasties. Dr. Gordon is a paid consultant of DePuy Synthes Companies of Johnson & Johnson.

**Bone culture required**
If bone culture results are abnormal (p. acnes), 6 months delay
**Procedure Goal:** Achieve a tensionless closure to allow a healthy scalp incision recruiting additional scalp laxity through the release of subfascial (subgaleal) ligaments during the fascia-skin flap elevation while also leaving underneath an undisturbed, vascularized pericranial-onlay flap. This type of dissection plane accompanies multiple benefits such as decreased bleeding, durotomy, seizures and decreased cerebrospinal fluid leaks.¹,³

**PATIENT PREP¹***

1. **Scalp is shaved**

2. **Sterilization:**
   1. Scrubbed with iodine solution
   2. Wet iodine-based prep
   3. Iodine Povacrylex solution

3. **Previous incisions and bony defect marked (hash-lines)**

4. **Preemptive anesthesia:**
   - Injected into scalp, 50:50 mixture of 1% lidocaine with epinephrine and sterile saline (parallel injection away from brain)

*Surgeon present for/participates in
SURGICAL TECHNIQUE¹

Initial Incision with Scalpel, Colorado needle cautery completes incision to bone
Scalp mobility achieved with periosteal elevator and cautery (galeal scoring as needed)

Skull defect dissected in the supra-pericranial plane leaving behind a vascularized
pericranial-onlay flap, which remains undisturbed above the dura*

Implant placement

Tension-free Scalp Closure

REFERENCES


*Note: it is important to remain in the proper plane to avoid durotomy/brain injury or scalp perfusion interruption.