

Cranial restoration System - combination of a neurosurgical tool and a bone allograft of special formation.

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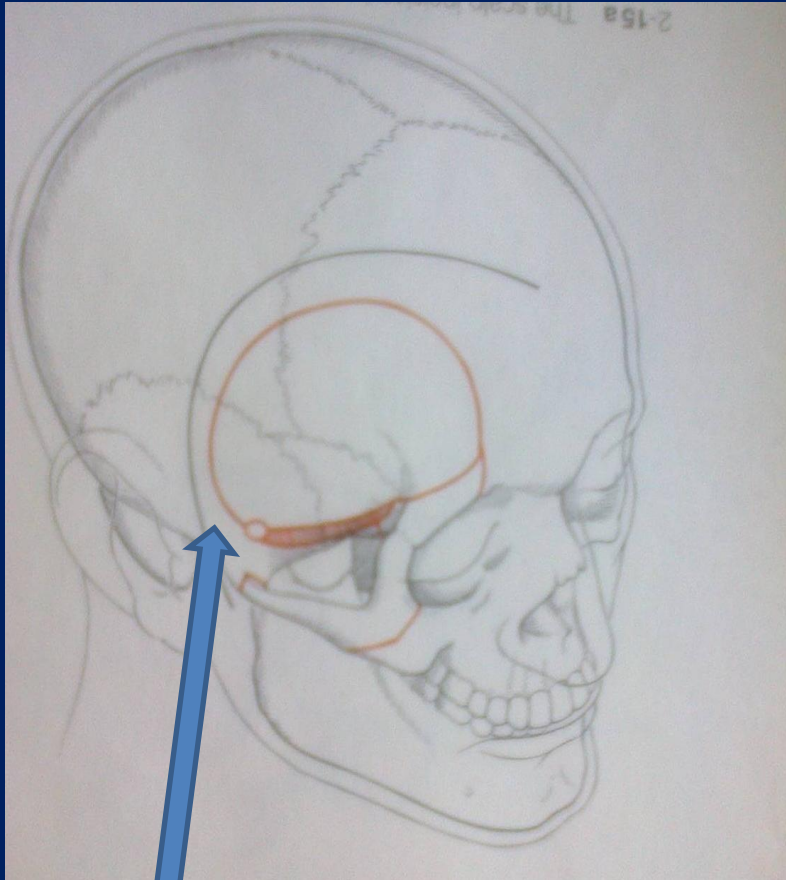
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Method for cranial opening

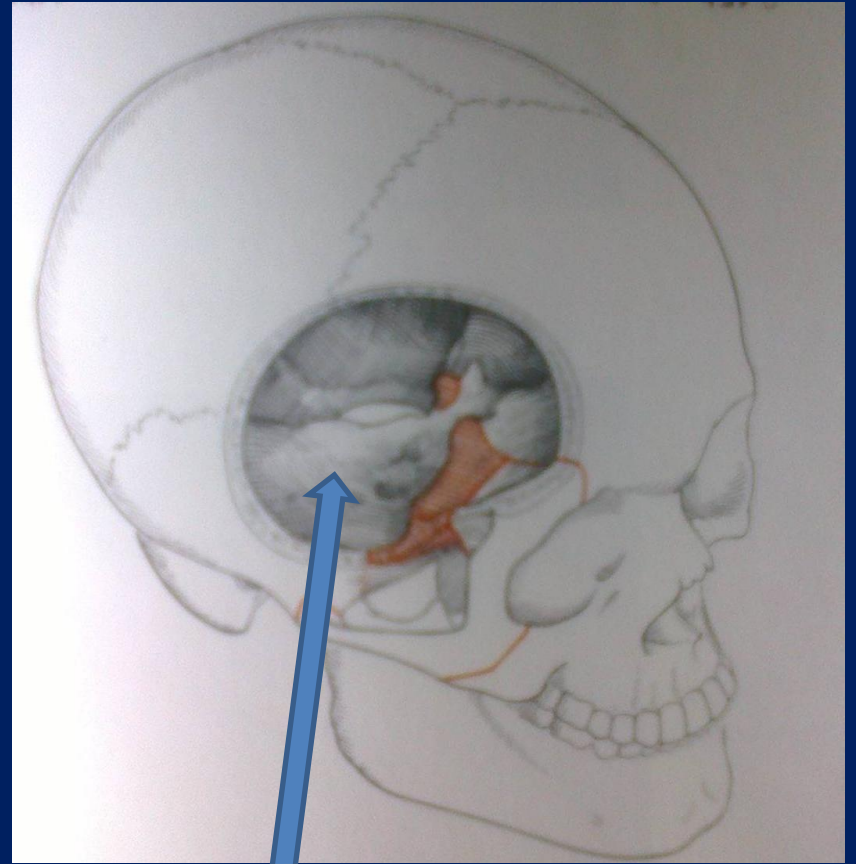
- In order to perform a neurosurgical procedure the skull has to be opened (craniotomy) or there must be a burr hole (trephination).
- Craniotomy demands one or more trephinations of the skull so that the special freza of the drill which will cut the bone is inserted through the burr hole.

Occlusion of the skull

- At the end of the neurosurgical procedure the bone removed is repositioned and secured. The gap that remains due to trephinations is treated until today as follows:
 - 1. It remains as it is, with the disadvantage of skin retraction and potential injuries of the meninx as a result of its projection through the trephination.
 - 2. Its is covered with synthetic bone "paste" with the potential risk of leakage to the inside of the skull and production of heterotopic ossification there, which may injure the meninx or/and create pressure effects.



Trephination



Craniotomy

Occlusion of the skull

- An ideal solution for the occlusion of the skull is the fitting of a cylindrical graft which fits in the trephination.
- The risk is the possibility of the graft slipping to the inside of the skull.

Talos Drill

- The drill "Talos" is a specialized tool for trephination, which modulates the burr hole of the skull so as to enable the safe placement of bone graft that will allow the optimal healing of the deficit.
- It is used during the repositioning of the bone flap at the end of the neurosurgical procedure.



Talos Drill

The design and construction was based on the ascertainment that the restraint of the graft in the hole is uncertain whether it is in the form of chips or as a cylindrical plug.

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TISSUE GRAFT BANK

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TISSUE GRAFT BANK

- The Bank collects tissues of human origin, processes them and produces grafts for medical use.
- It operates in accordance with the international standards and requirements of the International Atomic Energy Agency, and the European Directives 23/2004, 17/2006 and 86/2006 for human tissues and cells.
- The grafts produced are available for use in Hospitals, clinics and medical laboratories across the country.

Bank Activities

- Production of grafts.
- Services.
- Development of new methods and techniques of tissue processing.
- Applied research.
- Update - Education (doctors, partners, technical staff)

Production Process

- Finding and collecting of tissues
- Tissue process and production of tissue grafts
- Packaging and radio-sterilization of the final products
- Computerization and archiving
- Disposal of produced grafts

Finding – collecting of tissues

- The femoral heads are received from Femoral fractures after hip surgery rehabilitation.
- In each case the special criteria for the selection of donors are followed.



Specific criteria for the selection of donors

Those subject to the detailed categories of Presidential Decree 26/2008, Articles 1 - 26 on the harmonization of the Greek legislation with the European.

Tissue process and production of tissue grafts



Tissue process and production of tissue grafts



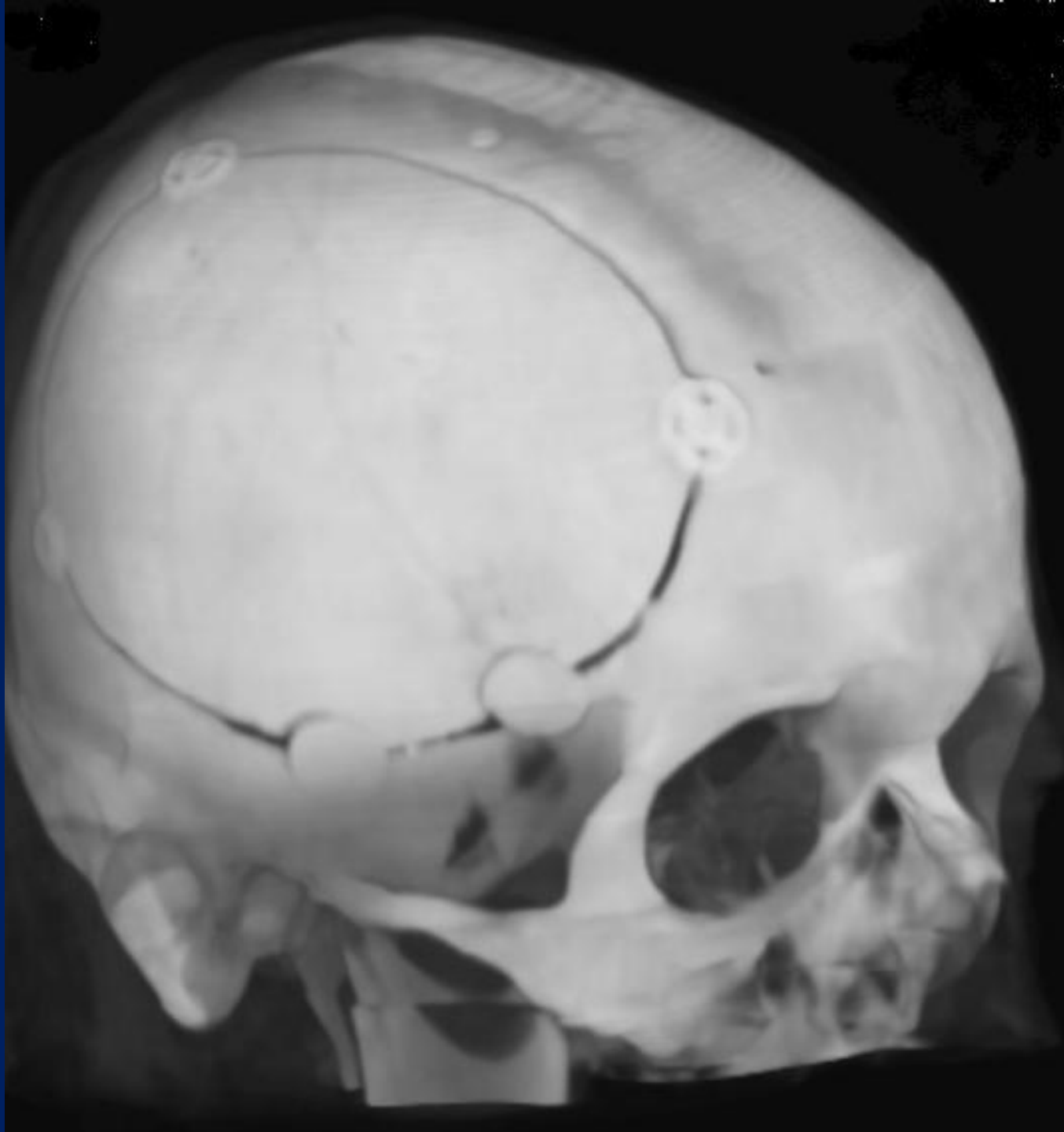
Device for Graft forming





Results

- The postoperative, three-dimensional, computed tomography showed good application of disc-shaped grafts in the cranial holes with no signs of shifting or sliding, in all patients.



Conclusions

- The expertise developed especially in the last years at the Tissue Graft Bank of “D” is unique and constantly improving, allowing new, safe and effective grafts coming from a variety of tissues for multiple uses.
- The use of the allografts of special formation of “D” along with the drill, allows the safe and effective occlusion of the holes created on the skull during neurosurgery.

Thank you very much!