

TREATMENT

Reconstruction of the skull base after injuriesMatejcik V¹, Steno J¹, Poruban P²

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Abstract

The aim of this study is presentation of 3 cases reconstructive surgery of the skull base after cranio-cerebral injury.

Injuries and methods: Extensive injuries of the skull base result in communication with paranasal cavities.

Diagnostics: The most serious part of the operation is the isolation of the liquor space from the external environment. Reconstruction surgeries of the skull base have significantly improved in recent years due to development of new methods in diagnostics and treatment. 3D CT reconstruction has proven to be particularly valuable for the verification of liquorea even in patients with inactive liquorea at the time of examination, as well as in patients with no CT defects or with normal MR finding.

Treatment: The use of firm and shapeable materials extends the possibilities of reconstruction surgery, the spectrum of surgical methods and approaches for extensive injuries of the skull base (*Fig. 9, Ref. 3*)
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Key words: skull base injuries, reconstructive surgery, liquor space.

Skull base is formed by the frontal, ethmoid and sphenoid bones that form the orbital surface laterally while cribriform, ethmoid and sphenoid cavities form its surface medially. The posterior boundary is formed by tuberculum, alea minores et maiores, optical channels and fissura orbitalis superior. The base of the fossa anterior is formed by planum sphenoidale. Lamina cribriformis and planum sphenoidale are the lowest points. The shape of the base is important for the understanding of mechanisms of the frontobasal injuries and their treatment (1). Fractures of the skull base represent 5–20 % of all craniocerebral injuries. Liquorea occurs in 11 % of these cases, for frontobasal injuries associated with orofacial injuries up to 36 %.

Discussion

Liquorea can be absent in the first days after the injury due to the presence of blood clots, prolapse of the brain or to the mucosal swelling (2).

The complexity of structures of the fossa anterior requires a close collaboration of the neurosurgeon, maxillofacial surgeon, plastic surgeon, otolaryngologist, infectologist, ophthalmologist, psychologist and in the case of polytraumas (multiple traumas) also of the general surgeon during the treatment (3).

The aim of our work is to present the cases of severe and complex craniofacial injuries, in one case associated with complications.

Case report

24 years old female patient after a car accident with a polytrauma (lung contusion, tearing of the arm) with an extensive injury of the soft tissues of head, frontobasal and orofacial damage, but without apparent liquorea. After stabilization on the Clinic of anesthesiology and intensive medicine (CAIM), patient has been transferred to our clinic.

Debridment has been performed after completion of RTG, CT, 3D-CT and after consulting with maxillofacial and plastic surgeons. (Figs. 1–4).

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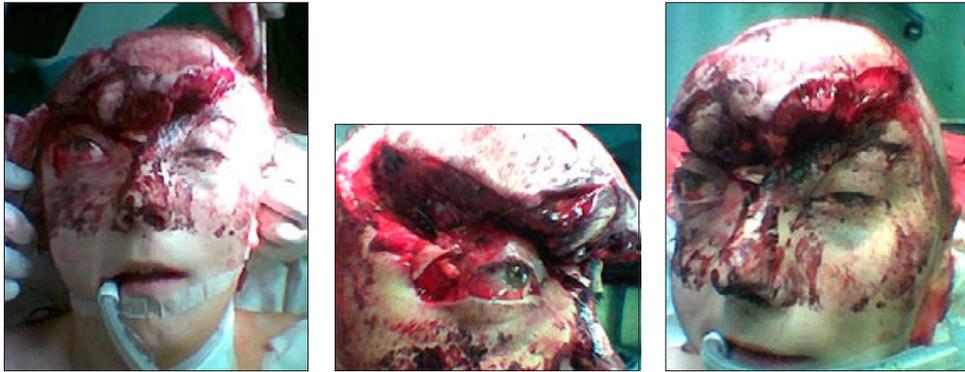


Fig. 1, 2, 3.

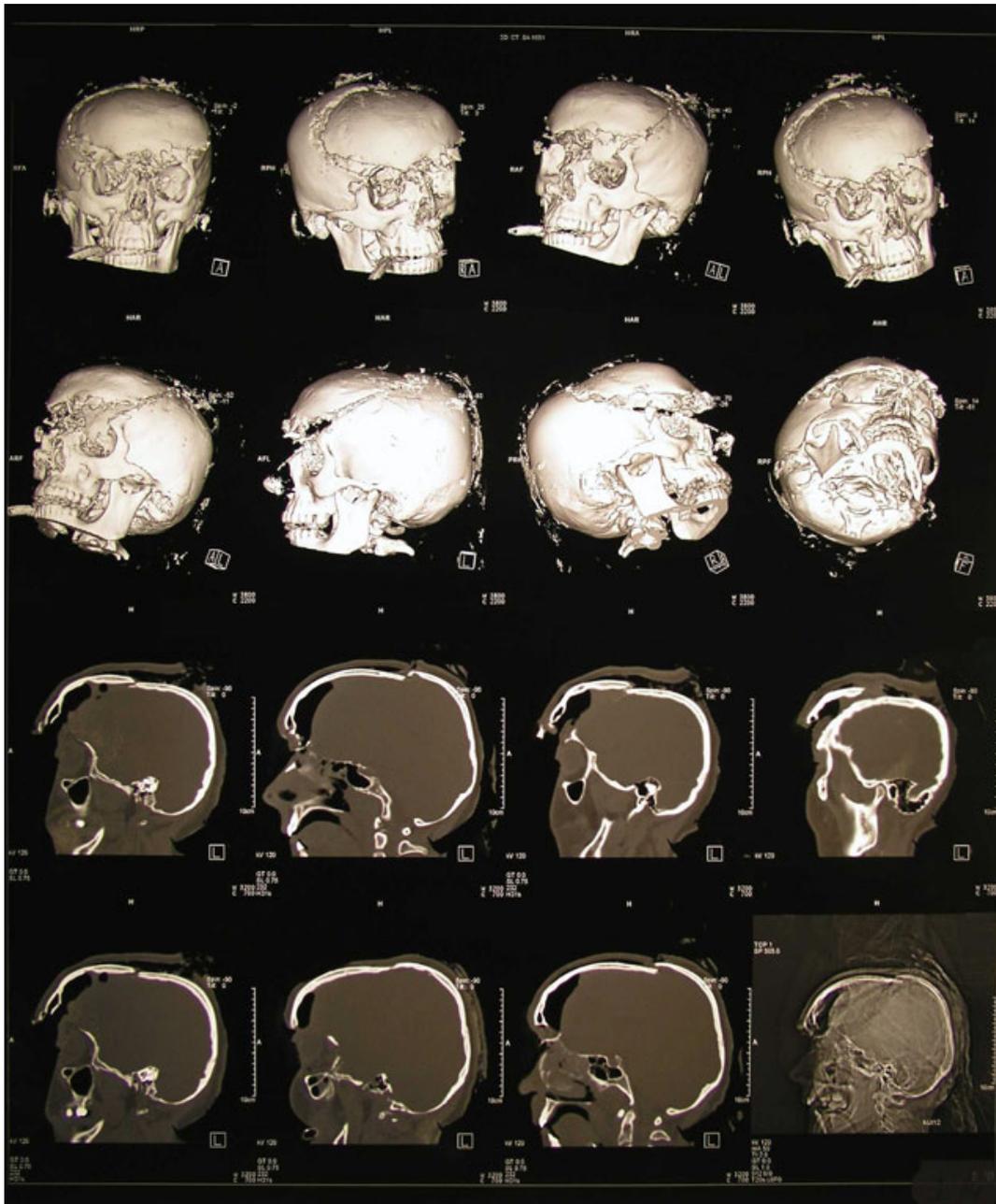


Fig. 4. 3D CT before operation.

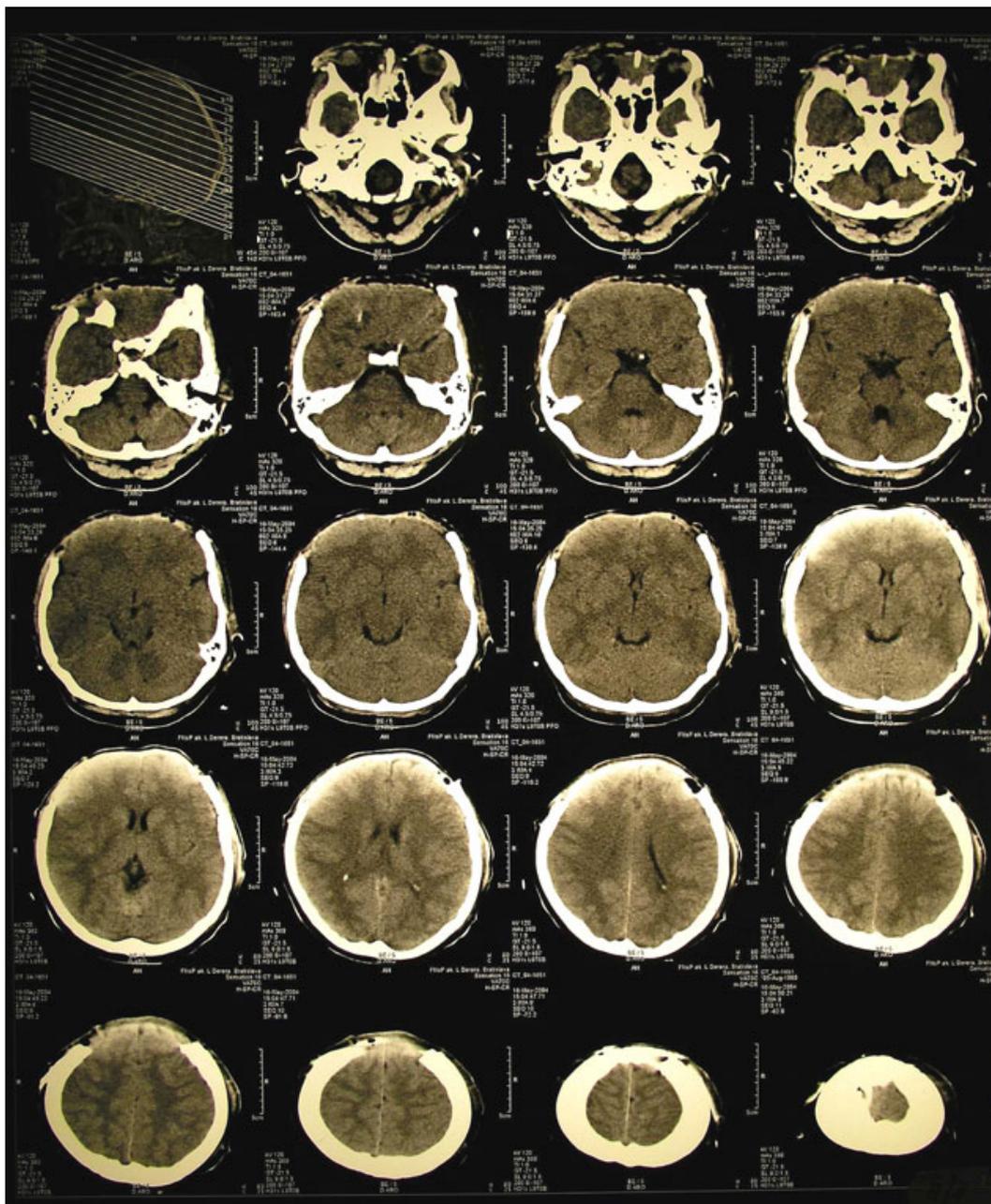


Fig. 5. CT brain.

Bone fragments were shipped to the bone bank (Fig. 5). Treatment of the injury of the right orbit and eyelids, as well as of the basis of the fossa anterior has been performed subsequently, with the fascia taken from the fascia lata up to the planum sphenoidale. Liquorea was absent. The patient has been subsequently transferred back to the Intensive Care Unit.

Next phase was performed after 7 days with the aid of maxillofacial surgeon. Bone fragments were brought from the bone

bank and the base of the skull, orbits, suprarobital arks and the nasal bones were reconstructed with the help of titanium grids (Figs. 6, 7, 8).

Since the injuries included losses in the right orbit, fascia lata has been used for reconstruction once again. Patient has been transferred to her district without neurological deficit and symptoms of infection (Fig. 9).



Fig. 6, 7.

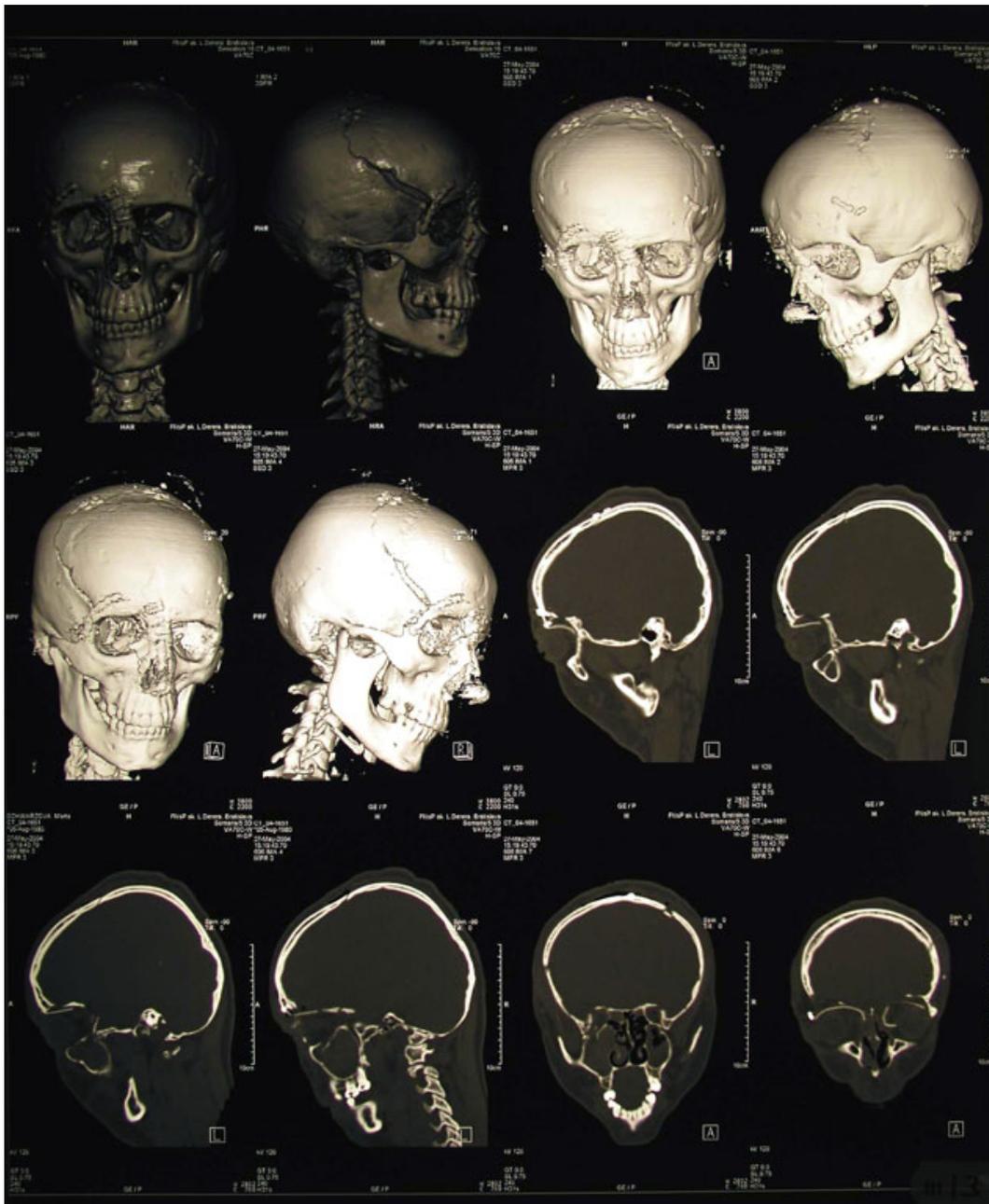


Fig. 8. 3D CT after operation.



Fig. 9.

Conclusion

Patient was hospitalised in our department with complications. Secondary healing of parietal part of the calva: during hospitalisation was defect attended. The patient was reconstituted to district in a good condition, without neurological deficit. In the time period of 6 months after treatment regular neurosurgical controls were performed. In this time we are planning hospitalisation and treatment of osseous defect.

References

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