Fracture and Self-Repair of a CustomBone Implant

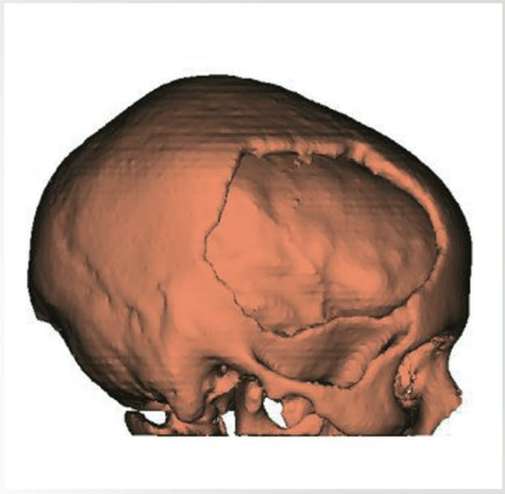

Fig. 1

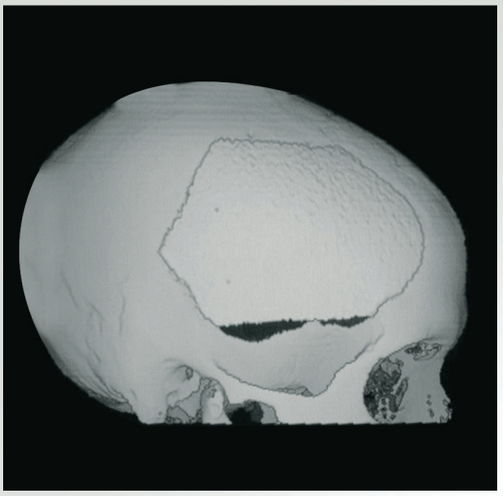

Fig. 2

Fig. 3

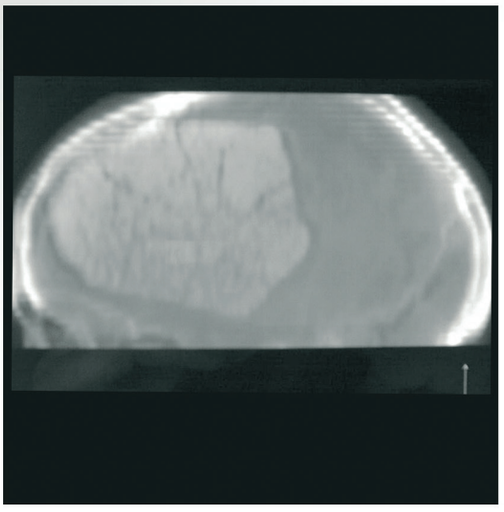

Fig. 4

CustomBone Service

Female, 23-years old: In June 1999, the patient had serious multiple injuries due to a trauma and immediately went into a coma. The CT scan performed in the Emergency Room highlighted an acute right frontal-temporal subdural haematoma with a small underlying parenchymal-frontal laceration and severe oedema in the right hemisphere causing a shift over 1 cm.

The patient thus immediately underwent right decompressive frontal-temporal craniectomy and evacuation of the haematoma. The coma lasted two weeks during the post-operative phase, followed by gradual clinical recovery. Six months after the injury the patient's GCS was 5 (good recovery). After another 7 months, taking into account the extent of the bone defect (Fig. 1) and the patient's aesthetical needs, a CustomBone implant, which was trimmed down in the temporal region due to the difficulty to perform a blunt dissection of muscular tissue, was implanted. The 3D CT scan performed 9 months after the surgery showed good osteointegration of the implant (Fig. 2).

Unfortunately, 11 months after the CustomBone implant, the patient suffered a second cranial trauma with brain concussion caused by a car accident with a direct impact on the implant. Upon arrival at the Emergency Room, the patient's GCS was 14 with retrograde amnesia. The CT scan detected various fractures in the implant and a partial dislocation along its perimeter; however there were no relevant parenchymal lesions (Fig. 3-4).

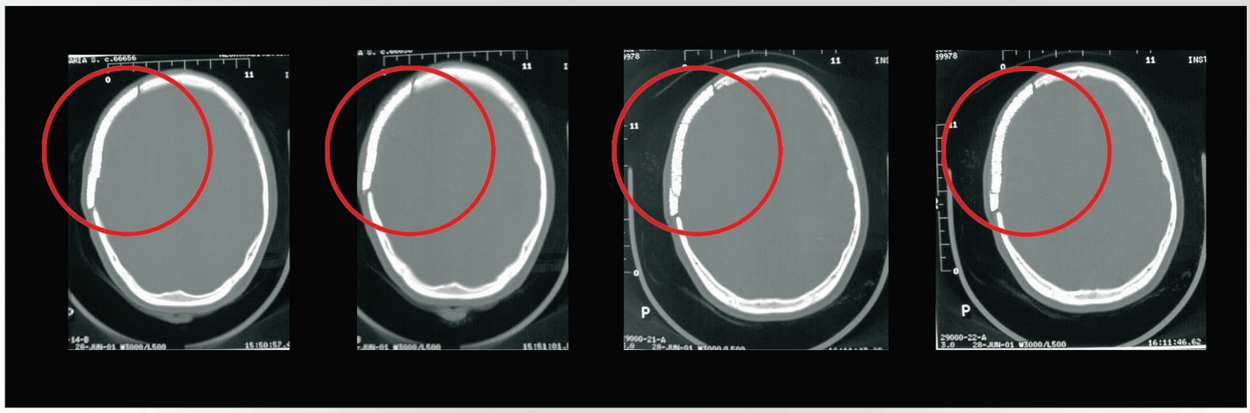

Fig. 5

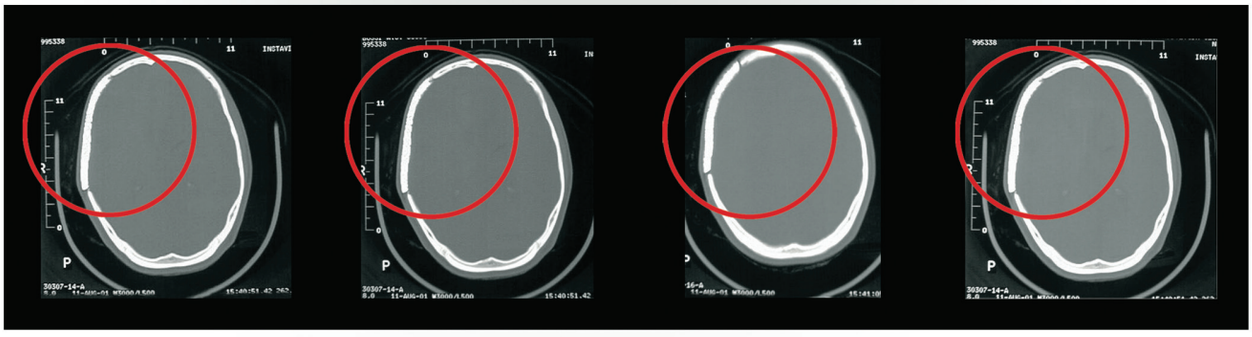

Fig. 6

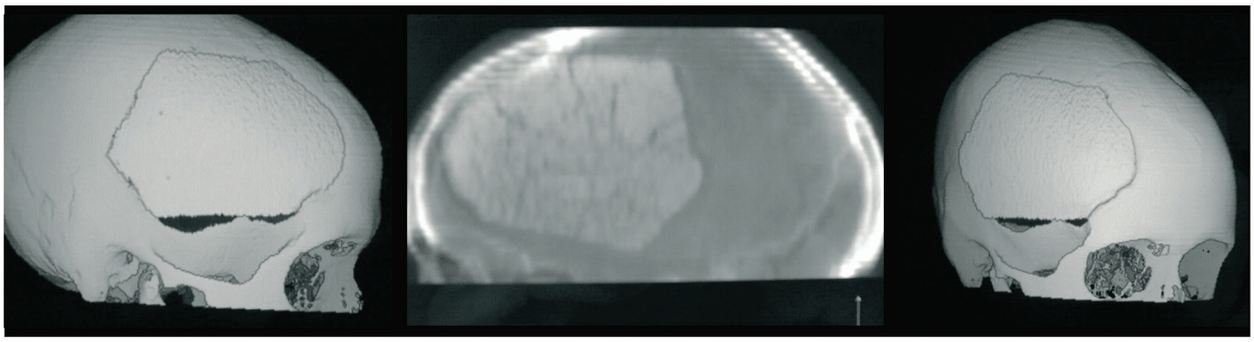

Fig. 7

The patient was treated conservatively and had a complete clinical recovery in a few days. Comparing the CT scans from the day of trauma (Fig. 3-5) with those from the follow-up performed 40 days later (Fig. 6), it is possible to note not only an absence of further deterioration of the implant fractures but the remodelling of the fracture area and an initial new bone fusion between the implant edges and the patient's bone. Fig. 7 summarises the events occurred, illustrating the implant 2 months before the 2nd trauma (left), immediately after the 2nd trauma (centre) and 9 months after the 2nd trauma (right).

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