implants have proved to be a very reliable means for dental rehabilitation, not only in healthy edentulous patients but also in patients with autogenous grafting sides after tumor surgery. In light of these results, we rehabilitated the grafted mandible with dental implants.

The process of demineralization and resorption after fibula bone grafting is marginal and takes place within the first year after augmentation. The fibula provides adequate bone for the insertion of implants, both in quantity and in quality. The amount of grafted bone is available; implant stability depends on bone density, a crucial factor for successful osseointegration.[17] The fibula bone structure has a cortical thickness superior to that of the iliac crest, and fixtures placed in a microvascular fibula bone graft show very good primary stability and osseointegration because of the high bone-implant interface. In our case, dental implants were stable after the operation and after the loading period, but severe resorption was seen during the follow-up. As none of the implants were lost and still stable in this time, the patient is using his overdenture prosthesis without any problem. Gbara and Darwich[18] concluded that the complication rate associated to the loss of implants was 3.4% in free flap rehabilitated with dental implants. Bone resorption was seen around the dental implants in the follow-up period (Fig. 7). Schwartz-Arad et al[19] observed an average resorption of 0.78 to 1.22 mm after 8 years. Resorption of the bone around the implants may be explained by the excess forces transmitted to the neck of the implants being much more because of the high cortical content of the fibula graft. For the reported case, the resorption rate was higher than the literature, but stabilization of the implants was sufficient for occlusal support so prostheses were used in the same way.

CONCLUSIONS

Eosinophilic granuloma lesions could involve large areas of the maxillofacial bones, and so it is very crucial to diagnose the lesions in early stages. Misdiagnosis and delayed treatment may cause extensive lesions and pathologic fractures. Free fibula flap with dental implants is a safe and reliable method for comprehensive functional and aesthetic mandibular defect reconstruction.

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Direct Access to a Frontal Sinus Osteoma and Reconstruction of the Orbital Roof Displaced by the Lesion by Titanium Mesh

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Abstract: Osteomas are the most common benign tumors of the paranasal sinuses. They are usually localized in the frontal sinus and less often in the other paranasal sinuses. In this article, we report the surgical treatment of an unknown frontal sinus osteoma discovered after an acute exophthalmos. We have chosen an external approach to obtain a radical excision of the tumor, but we prefer a direct frontal incision following a horizontal wrinkle to the classic bicoronal flap to avoid an unsightly scar because of patient's hair loss. We discuss the surgical approach, the reconstruction of the roof of the orbit involved, and patient's satisfaction.

Key Words: Frontal sinus, osteoma, exophthalmos, frontal sinusitis

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Osteomas are the most common benign tumors of the paranasal sinuses. They are usually localized in the frontal sinus and less often in the other paranasal sinuses.[1,2] Osteomas are commonly an incidental finding in 1% of plain sinus radiographs and 3% of computed tomographic (CT) scans.[3,4] Generally, conservative treatment with periodical radiographs or CT scans is recommended for asymptomatic osteomas.[1–3]

In this article, we report the surgical treatment of an unknown frontal sinus osteoma discovered after an acute exophthalmos.

MATERIALS AND METHODS

This work has been approved by the "Maxillofacial School Committee," the official institution's review board of the Maxillofacial Department of the University of East Piedmont "A. Avogadro." The patient, a 62-year-old white man, has come to our observation because of an increasing headache affecting the left frontal orbital region associated to an acute exophthalmos of the left eye. Computed tomographic scan of paranasal sinus showed an inhomogeneous bony neoplasm, which displaced caudally the orbital roof invading the intraorbital space. It occupied also the major part of the endosinusal volume generating a frontal sinusitis and an orbital cellulitis (Figs. 1 and 2).

The patient, initially treated by intravenous antibiotic and corticosteroid therapy, underwent surgical treatment. We have chosen an external approach to obtain a radical excision of the tumor, which had involved the posterior wall of the sinus. The classic bicoronal flap would provide a very evident scar because of the patient's hair loss. Under general anesthesia, we performed a direct frontal incision following a horizontal wrinkle about 3 cm above the eyebrow line and a subperiosteal flap up to the superior orbital rim. According to CT scan, a polygonal area of frontal bone was cut with a Lindmann burr and then removed with a small chisel. The osteoma was easily separated from the surrounding bony walls by the same chisel and then removed by a clamp.

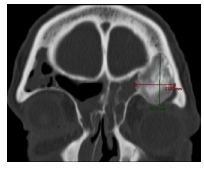

FIGURE 1. Computed tomographic slide showing endosinusal bony mass.

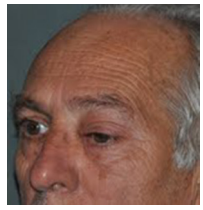

FIGURE 2. Clinical evidence of left eye exophthalmos.

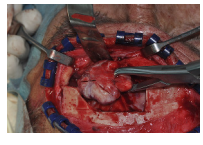

FIGURE 3. Removal of the osteoma.

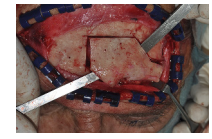

FIGURE 4. Frontal sinus wall bony flap.

The orbital roof was partially removed with the tumor, and then we restored it by a preplated titanium mesh 0.8 mm thick, fixed to the bony flap of the anterior wall of the frontal sinus by 2 screws of 1.5 mm. The continuity of the orbital roof has been perfectly reconstructed (Figs. 3 and 4).

The bony fragment, previously removed, was set back in place and fixed with 3 preplated titanium plates (Fig. 5). The flap was sutured by layers and the skin by intradermic 3-0 nylon suture. The surgical procedure lasted 45 minutes.

RESULTS

The histological examination of the specimen confirmed the radiologic diagnosis of osteoma with prevalent amounts of compact bone. Postoperative CT scan showed the correct reconstruction of the anterior wall of the frontal sinus and of the orbital roof (Fig. 6).

Hertel exophthalmometry performed at admission was 24 mm on the left eye and 17 mm on the right one. The exophthalmos regressed after 5 days of drug therapy, and 15 days after surgery, the new value was 18 mm on the left eye. Also, the Hess-Lancaster scheme has improved after regression of exophthalmos. A month later, the frontal scar was almost invisible (Fig. 7). Recovery of skin sensitivity has been slow. After 8 months, skin was still numb at the frontoparietal junction. The patient, who was previously informed about this complication, has confirmed that he absolutely prefers a mild discomfort rather than an unsightly scar.

DISCUSSION

Exclusion criteria for the unique endonasal endoscopic treatment are as follows: frontal osteomas with a lateral localization respect to the sagittal plane passing through the lamina papyracea, intracranial extension, complete involvement of the posterior and anterior wall of the frontal sinus, and anteroposterior sinus pavement smaller than 1 cm.[5] The classic external approach is a hemicoronal or bicoronal flap with an incision starting from the tragus placed 2 cm posterior to the hairline. This surgical incision often gives rise to an unsightly

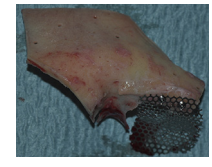

FIGURE 5. Reconstruction of the orbital roof by a preplated titanium mesh 0.8 mm thick.

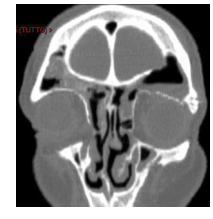

FIGURE 6. Postoperative CT scan.

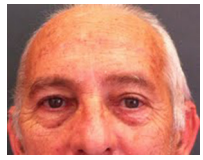

FIGURE 7. Clinical evidence of a minimal frontal scar after 2 months from surgery.

scar, especially in patients with hair loss. When indicated, we use the horizontal frontal approach also in the osteosynthesis of the fractures of the anterior wall of the frontal sinus, especially if the patient already has traumatic cutaneous wound.

The loss of sensitivity due to the cut of the branches of the supraorbitalis and supratrochlearis nerves is the main discomfort reported by patients in the postoperative course. In our experience, patients do not completely recover skin sensitivity a year after surgery. However, they declare to prefer an incomplete but satisfactory sensitivity recovery rather than a coronal scar. We prefer a direct horizontal incision in the wrinkles of the forehead to reduce operatory time, to avoid anesthetic scars at the expense of a minimal loss of sensitivity.

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Magnetic Resonance Imaging in Isolated Sagittal Synostosis

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Abstract: Isolated fusion of the sagittal suture is the most prevalent form of craniosynostosis. Although the typical clinical appearance usually points the way to the right diagnosis, computed tomographic (CT) scans are still recommended as necessary tools for both the diagnosis of scaphocephaly and the preoperative planning. Because CT scans are accompanied by the biological effects of ionizing radiation, some authors have already postulated the use of magnetic resonance imaging (MRI) especially because MRI seems to be valuable for detecting intracranial anomalies compared with CT scans. Hence, we investigated the preoperative MRIs of 42 children with isolated sagittal synostosis to evaluate the frequency of brain anomalies and their therapeutic consequences.

In our study, 10 patients (23.8%) showed pathologic MRI findings such as ventricular dilatation and hypoplastic corpus callosum, whereas 32 patients (76.2%) had an unremarkable MRI except a pathognomonic secondary deformation of the brain caused by the abnormally shaped skull, which was present in all patients. Seven patients showed clinically significant symptoms including papilledema or psychomotoric developmental delay; however, the clinical appearance was not predictive for pathologic MRI findings and vice versa.

As the detection of brain anomalies had no influence on the surgical procedure or led to any additive therapy in our patients, we conclude that evaluation of possible pathologic brain findings does not legitimate the general use of MRI in clinically normal children with isolated sagittal synostosis.

Key Words: Sagittal synostosis, craniosynostosis, MRI, papilledema

Scaphocephaly is the morphologic consequence of the premature sagittal suture synostosis. Isolated fusion of the sagittal suture is the most prevalent form of craniosynostosis, occurring with a frequency of 1 case per 2000 to 4000 live births, and shows a typical male predominance. Typical clinical hallmark is the long narrow head, widest in the temporal regions and narrowing toward the top of the head, with associated ridging over the fused sagittal suture.[1–6]

Patients with isolated sagittal synostosis are at risk for increased intracranial pressure (ICP), which can be identified clinically as papilledema.[7] Furthermore, studies have shown an increased risk for neurodevelopment delays in patients with scaphocephaly; however, the exact reasons for this association are still unclear.[8–11]

The treatment is complex and requires surgical intervention before the age of 1 year for correction. The objectives of this treatment are to induce normal brain development, to prevent increased ICP, and to achieve an acceptable cranial morphology.[9,12]

Although this characteristic clinical appearance should point the way to the right diagnosis, computed tomographic (CT) scans are still recommended as necessary tools for both the diagnosis of scaphocephaly and the preoperative planning.[12–15] Besides these well-known reasons, some authors further justified the use of CT scans with its capacity to discover structural brain abnormalities.[12] However, with the recent concerns of radiation exposure in early childhood, it is increasingly clear that these radiographic investigations should be used judiciously, and alternative imaging methods should be discussed.[14]

To avoid radiographic examination in childhood, magnetic resonance imaging (MRI) can be a helpful tool in the preoperative diagnostic and imaging of patients with isolated sagittal synostosis. Magnetic resonance imaging opens to researchers a window to the underlying brain, leading to gross observations that the overall shape of the brain may be dysmorphic in craniosynostosis.[16,17] Magnetic resonance imaging is an excellent technique for the diagnosis of

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