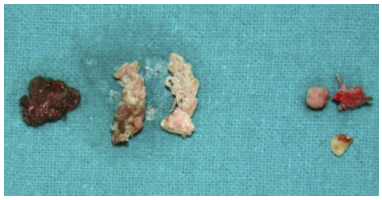

FIGURE 3. The foreign bodies retrieved from the maxillary sinus constituting a large amount of Alveogyl dressing material, zinc oxide Eugenol gauze dressing, and multiple root fragments.

The patient felt relief in pain over the right side and improvement in nasal stuffiness following the 10th post operative day; the intraoral wound healed uneventfully.

DISCUSSION

The floor of the maxillary sinus is usually thin and in certain cases devoid of any bone if the roots of the maxillary posterior teeth are elongated; here, the Schneiderian membrane of the maxillary sinus covers the root apices and separates sinus from the oral cavity. In these instances, there is a high tendency for an oroantral communication to be developed if a dental extraction is to be done; hence, a cautious approach is required when involved in such procedures.

The roots of the maxillary posterior teeth are the most common foreign body that gets displaced into the maxillary sinus, but there are instances where an entire tooth has been displaced.[4] Other foreign bodies that have been previously reported in various literatures include dental burs,[5] gutta-percha points, silver points,[6] and dental implants.[7]

The foreign body in our patient was an iatrogenically induced material, which was due to misdiagnosis of a dry socket; hence, the patient was kept on long-term local dressings to aid healing. However, the dental physician did not realize that every subsequent dressing which was done were migrating into the sinus cavity; when the patient's symptoms seem to aggravate over a period of time with no signs of closure of the wound, the patient was referred to our center for diagnosis and management.

CONCLUSIONS

When dealing with acute or chronic wounds of the posterior maxilla, a thorough evaluation has to be done to rule out any communication with the sinus cavity. Apart from clinical findings, radiographic aids should be sought after to identify the status of the sinus margins. Such precautions help avoids complications that can aggravate the patient's condition.

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Utilization of Intraoperative 3D Navigation for Delayed Reconstruction of Orbitozygomatic Complex Fractures

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Abstract: Reconstructive goals for orbitozygomaticomaxillary complex fractures include restoration of orbital volume, facial projection, and facial width. Delayed reconstruction is made more difficult by malunion, nonunion, bony absorption, loss of the soft tissue envelope, and scar. Three-dimensional intraoperative navigation, widely used in neurosurgery and sinus surgery, can improve the accuracy with which bony reduction is performed. This is particularly useful in the setting of bony absorption and comminution. We report a case of delayed reconstruction of an orbitozygomaticomaxillary complex fracture using intraoperative navigation and review this technology's utility in this setting.

Key Words: Intraoperative navigation, facial fractures, zygomatic complex fractures

Restoration of anatomic facial architecture after skeletal facial trauma is best accomplished acutely.[1] This is occasionally not feasible due to confounding comorbidities, requiring a delayed approach to repair. Secondary correction may also be required if the outcome from primary management is suboptimal. Previous studies after delayed repair have noted increased postoperative facial width if a coronal incision was not utilized to align the zygomatic arch in addition to classic 3-point rigid fixation at the zygomaticofrontal junction, inferior orbital rim, and lateral maxillary buttress.[2,3]

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Improper placement of an orbital implant can also lead to increased orbital volume with persistent enophthalmos.[4]

Three-dimensional (3D) intraoperative navigation based on preoperative CT scans is utilized in skull base surgery, orthognathic and implant surgery, sinus surgery, neurosurgery, as well as orbital surgery.[5] Planning software may be combined with this technology to simulate surgical movements based on preoperative images, using intraoperative navigation to confirm anatomic reduction. Previous studies have demonstrated that precise orbital volumetric reconstruction can be performed with this navigation technology.[6] We present the utility of this technology in delayed orbitozygomaticomaxillary reconstruction, allowing precise anatomic reduction and fixation without the need for a coronal incision and exposure of the zygomatic arch.

CLINICAL REPORT

A 22-year-old man presented 2 years after a gunshot wound to the face. Initial injuries included mandibular fractures, a comminuted displaced right orbitozygomaticomaxillary complex fracture with associated orbital floor and lateral wall blowout fractures, and globe rupture. He was initially cared for by another surgeon, who treated the mandibular fractures acutely with maxillomandibular fixation, but could not address the midface and orbital fractures as the patient could not tolerate an extended general anesthetic secondary to intracranial injury. He sought delayed reconstruction 2 years later to improve facial symmetry and enable placement of a prosthetic globe. Preoperative CT scan demonstrated an inferiorly displaced orbitozygomaticomaxillary complex with nonunion and increased orbital volume (Fig. 1).

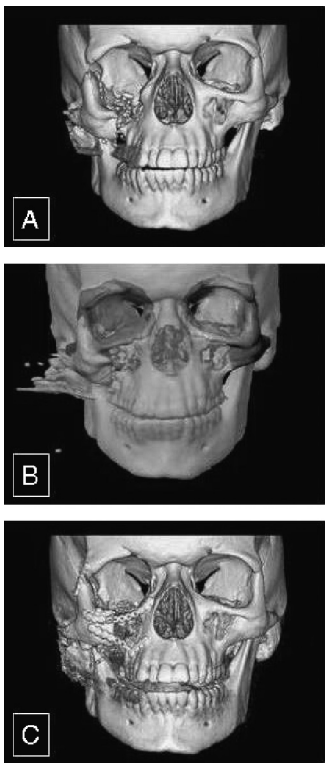

FIGURE 1. A, Preoperative CT scan demonstrating a right orbitozygomaticomaxillary complex fracture with nonunion, inferior displacement, bony absorption, and increased orbital volume. B, Preoperative plan to restore facial symmetry is based on mirror image of left zygoma and orbital floor. C, Postoperative CT scan demonstrating reduction and fixation of right orbitozygomaticomaxillary complex.

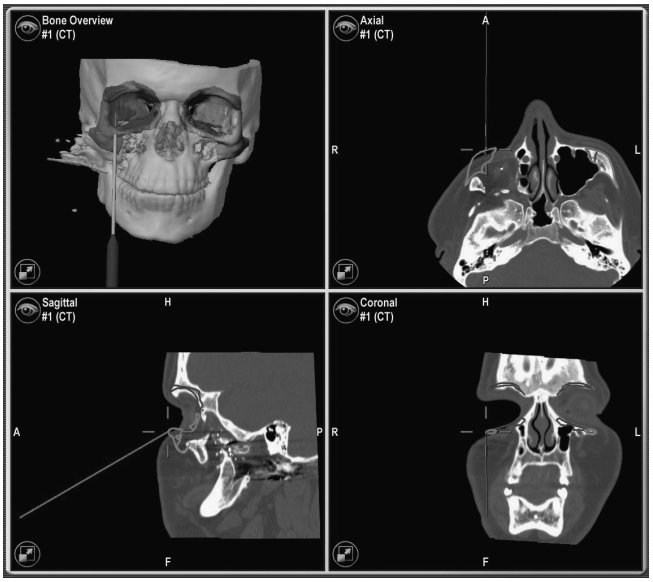

FIGURE 2. Intraoperative screen shot of image guidance software, confirming planned zygomatic movement via a localization probe. The planned zygomatic position is based on contralateral mirror image to restore facial projection and width.

Using Brainlab iPlan cranial software (Brainlab Inc, Westchester, IL), we mirrored preoperative CT images of the normal left zygoma and orbital floor to the injured right side to guide restoration of facial symmetry (zygomatic width and projection) and orbital floor implant placement. The orbitozygomaticomaxillary complex was exposed utilizing right upper buccal sulcus, lower lid, and lateral upper blepharoplasty incisions. Following wide subperiosteal elevation and exposure, the zygomaticomaxillary complex was repositioned and temporarily fixated at the zygomaticofrontal junction with a wire as a pendulum. We assessed zygomaticomaxillary complex position in real time using the Brainlab VectorVision navigation platform. The software allowed intraoperative 3D positioning for anatomic reduction based on preoperative CT (Fig. 2), which proved crucial as bony absorption at the orbital rim and lateral maxillary buttress precluded reduction based on bony landmarks alone. After confirming anatomic reduction, the zygomaticofrontal junction, inferior orbital rim, and lateral maxillary buttress were fixed with plates and the orbital rim and floor reconstructed with a titanium/porous polyethylene implant.

The patient tolerated the procedure well, and postoperative photographs and CT scans demonstrated anatomic reduction of the orbitozygomatic complex with improvement in facial appearance and restoration of orbital volume (Fig. 1). He went on to receive an ocular prosthesis.

DISCUSSION

In summary, we report the use of 3D intraoperative navigation as an adjunct in delayed repair of complex facial fractures. This technology allows accurate anatomic reduction in situations in which bony loss or scar might otherwise lead to malposition, and mitigates the need for a coronal incision to align the zygomatic arch and establish proper facial projection. In our experience, combining preoperative planning with intraoperative navigation increases accuracy and shortens operative time in these complex cases.

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Microvascular Decompression for the Patient with Painful Tic Convulsif After Bell Palsy

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Abstract: *Painful tic convulsif* is referred to as the concurrent trigeminal neuralgia and hemifacial spasm. However, painful tic convulsif after ipsilateral Bell palsy has never been reported before. We report a case of a 77-year-old woman with coexistent trigeminal neuralgia and hemifacial spasm who had experienced Bell palsy half a year ago. The patient underwent microvascular decompression. Intraoperatively, the vertebrobasilar artery was found to deviate to the symptomatic side and a severe adhesion was observed in the cerebellopontine angle. Meanwhile, an ectatic anterior inferior cerebellar artery and 2 branches of the superior cerebellar artery were identified to compress the caudal root entry zone (REZ) of the VII nerve and the rostroventral cisternal portion of the V nerve, respectively. Postoperatively, the symptoms of spasm ceased immediately and the pain disappeared within 3 months. In this article, the pathogenesis of the patient's illness was discussed and it was assumed that the adhesions developed from inflammatory reactions after Bell palsy and the anatomic features of the patient were the factors that generated the disorder. Microvascular decompression surgery is the suggested treatment of the disease, and the dissection should be started from the caudal cranial nerves while performing the operation.

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Key Words: Bell palsy, trigeminal neuralgia, hemifacial spasm, microvascular decompression, surgical strategy

As one of the most hyperactive cranial rhizopathies, trigeminal neuralgia (TN) and hemifacial spasm (HFS) account for most cranial nerve diseases; however, the case of TN in concurrence with HFS is rare.[1–3] It was Cushing[4] who first described the concurrent TN-HFS in 1920 and coined the term *painful tic convulsif* (PTC). Since then, 71 cases of the disease have been reported in the literature (Table 1). Frequently, a neoplasm or a tortuous vertebrobasilar artery could be observed in the ipsilateral posterior fossa for those cases.[5–8] However, no case of PTC after facial paralysis has been reported yet. In the article, we report a case of PTC after Bell palsy. The possible pathogenesis of the disease was discussed and the surgical management was focused.

MATERIALS AND METHODS

A 77-year-old woman with a complaint of a 7-year proximal twitching associated with 5 years of pain on the left side of her face was referred to our department in January 2011. According to her narrative, approximately 6 months before the spasm, she had an abrupt facial palsy in the same side, which had been diagnosed as Bell palsy and treated in a local clinic. A couple of weeks later, the symptom of paralysis improved gradually and she recovered within 3 months. After another 3 months, the patient felt a twitching in her left eyelid. It was involuntary and, sometimes, could be induced by emotion. Approximately 2 years later, she began to have episodes of face pain, which was synchronous with the spasm in the ipsilateral side. She had not been anxious of it in the beginning because the spasm and the pain had not actually bothered her very much for a prolonged period. Until 1 year ago, the spasm extended from the eyelid to the entire left side of the face and the attack of pain deteriorated progressively. She was medicated by carbamazepine in the early stage of the pain. It could relieve the pain and the spasm in the first months, but it soon did not work anymore even with an increased dosage. There was a trigger in the left wing of the nose,

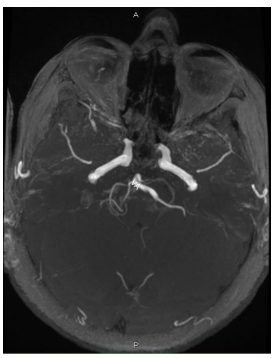

FIGURE 1. The preoperative magnetic resonance imaging findings. The vertebrobasilar artery that deviated to the symptomatic side was revealed.