UNUSUAL NEUROLOGIC COMPLICATIONS FOLLOWING ORTHOGNATHIC SURGERY

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INTRODUCTION

Orthognathic surgery, also known as corrective jaw surgery, is designed to treat irregularities of the jaw bones and realign a patient's bite. Known post-operative complications include temporomandibular disease, nerve injury and dental injuries. This poster discusses two cases of patients who experienced unusual complications after surgery, which may require special consideration for future surgical planning.

CASE HISTORY I

A 16 year old male patient with no significant medical history, presents to the Oral and Maxillofacial Surgery (OMFS) clinic for evaluation and treatment of maxillary and mandibular hypoplasia.
The patient has a BMI of 17 and is a cross country runner.
Treatment was planned for a LeFort I, Sagittal Split osteotomy and inverted L with inter-positional bone grafting.

EXAMINATION

- Post-operative day 3, patient reports mid-calf pain to deep palpation
- Duplex ultrasound was taken to rule out signs of deep vein thrombosis
- Paresthesia of the Deep Peroneal nerve developed over subsequent days
- After one week follow up, patient is unable to fully dorsiflex the left foot.

DIAGNOSIS

The symptoms, clinical findings and imaging results ruling out DVT, were highly suggestive of damage to the deep peroneal nerve.
The patient was referred to orthopedic surgery, who diagnosed the patient with peroneal nerve palsy in the setting of compression injury. Referral was made to neurology, who confirmed the diagnosis and the patient underwent rehabilitation.

Fig 1. Clinical presentation of right foot drop due to peroneal nerve palsy

DISCUSSION

The common peroneal nerve innervates the skin over the upper lateral and lower posterolateral leg. Also, it supplies (via branches) cutaneous innervation to the skin of the anterolateral leg, and the dorsum of the foot. The deep peroneal nerve, a terminal branch of the common peroneal nerve, innervates the anterior compartment of the lower leg. The muscles includes the tibialis anterior, extensor hallucis longus, extensor digitorum longus, and peroneus tertius muscles. Activation of these muscles by the deep peroneal nerve is primarily responsible for dorsiflexion of the foot, the extension of the toes. An injury to this nerve can cause "foot drop". The patient was unable to dorsiflex the left foot one week after surgery. Risk factors include age, gender and BMI. In 2017, a study by the National Journal of Oral and Maxillofacial Surgery discussed likelihood of peroneal nerve palsy in the maxillofacial surgery setting. While it is an uncommon complication, the author considers this to be a result of compression to the leg and patient positioning, as a result of prolonged use of compression stockings during surgery. The nerve deficit is not a direct result of the surgery itself, but an indirect cause.

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CASE HISTORY 2

A 38 year old male patient, presents to the Oral and Maxillofacial Surgery clinic for treatment of isolated mandibular hyperplasia.
Treatment was planned for a right sided sagittal split osteotomy and left inverted L osteotomy with left sided anterior iliac crest graft.
Surgery was completed with no complications. 4 weeks post-operatively, patient experienced bilateral, symmetric paresthesia and paralysis.

EXAMINATION

- Patient presents to ED for bilateral symmetric paresthesia and paralysis .
- Patient reported loss of 8 kg after surgery
- Initial diagnosis was polyneuropathy secondary to nutritional deficits in the OMFS setting. Nutritional deficit was then ruled out.
- Loss of reflexes and weakness in all four extremities was suggested Guillain Barre syndrome (GBS).
- Infectious disease workup showed no evidence of etiology

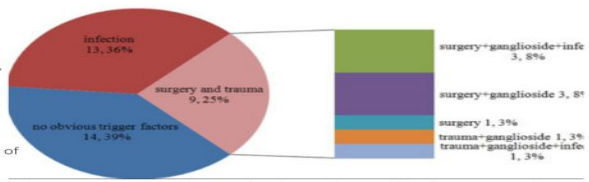

Fig 2. shows percentage distribution of etiological factors of Guillain Barre syndrome

DIAGNOSIS

Neurology consult confirmed diagnosis of Guillain Barre syndrome. Treatment was initiated with IVIg. Patient received 5 treatments of IVIg with improvement of his ascending paralysis bilaterally. Routine follow ups and physical therapy have shown promising results for recovery, as patient is nearing his baseline.

Author, Year	Age (yr), Gender	Procedure	Symptom Onset Timing	Treatment	Outcome
Shuart and Gamble,[16] 1972	61, M	Closed reduction of mandibular condyle fracture	POD 10	Steroids, antibiotics, and supportive care	Death due to respiratory failure
Dawson,[2] 1994	19, M	Surgical removal of 4 impacted third molars	POD 13	Supportive care	Full recovery at 6 mo
Lin et al,[3] 2006	22, F	Open reduction and internal fixation of zygomatic, orbital, and maxillary sinus wall fractures	POD 3	Supportive care	Complete recovery 5 wk later
Current study	39, F	Open reduction and internal fixation of mandibular body and parasymphysis; closed reduction of mandibular condyle fracture	POD 3	Supportive care and ventilation assistance	Full recovery at 6 mo

Table 1. shows patients who underwent maxillofacial surgery with subsequent presentation of Guillain Barre syndrome

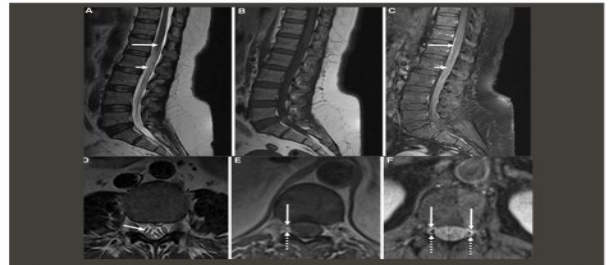

Fig 4. post-contrast enhancement is evident in the conus medullaris, as well as ventral (solid arrows) and dorsal (dashed arrows) nerve roots (f)

DISCUSSION

Guillain Barre syndrome (GBS) is a disease of unknown etiology, where the body attacks its own peripheral nervous system. It is characterized by symmetric, bilateral weakness, areflexia and paralysis. The timeline for (GBS) is rapid onset, usually days to weeks, and may lead to respiratory failure requiring ventilation. IVIg and plasmapheresis lessen the severity of the illness and increases likelihood of recovery. 70% have complete recovery, and the remaining 30% will experience some weakness at the 3 year mark. Studies show the majority of GBS cases are due to preceding infection, with C. jejuni, CMV, EBV and HHV being implicated as potential culprits. A study by Samieirad et al. (2016), discusses the unusual presentation of GBS after oral and maxillofacial surgery. A 39 year old female underwent oral reduction and internal fixation of the mandibular body and parasymphysis, with onset of GBS 3 days post-operative. GBS has also been reported in two cases occurring after allergenic bone grafting in the OMFS setting, of which the cause may be attributed to an immunological response. A retrospective study by the Journal of Neuroimmunology discuss the possible triggers of GBS. The majority of cases involving surgery (16%)- have an increased risk of GBS with underlying infection or malignancy. Surgery alone has a 3% risk with no other comorbidities. When treating patients in OMFS, It is important to consider each patient's individual risk as it relates to their past medical history. Certain predisposing conditions may put them at increased risk of GBS, which may not be a direct result of the surgery itself.

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