

Lipoma Excision Leading to Facial Nerve Paralysis

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ABSTRACT

A lipoma is a common benign soft tissue tumor which is composed of fat. It can be of variable sizes and may present at any location where fat cells are present. The posterior neck space is the most common site for head and neck lipomas [1]. However, when present in the anterior neck space, excision of the lipoma may result in

injuries to the structures within anterior neck, namely the marginal mandibular nerve, which may have an impact on the patient's appearance and function of the lower lip. We report a case of a 28 years old woman who presented with a lipoma of the anterior neck and developed left marginal mandibular nerve palsy following excision.

Keywords: Lipoma; Marginal Mandibular Nerve; Excision

INTRODUCTION

Fifteen percent of the lipomas are located in the head and neck region. They are usually asymptomatic and may gradually increase in size. In most cases, lipoma appears as a solitary lesion; however, multiple sites may be involved, especially in alcoholics, diabetics, and in syndromes such as Madelung's disease and Kobberling Dunnigan's syndrome [2]. The diagnosis of a superficial lipoma is simple and is based on a thorough history and physical examination with occasional need for further tests, such as fine needle aspiration and cytology (FNAC) or biopsy. FNAC of the mass will confirm diagnosis of a lipoma by the presence of adipocytes.

Deep-seated lipomas, especially those of the head and neck region may present with complications because of their intimate relationship to vital neurovascular structures. On presentation, the lipoma may be enclosed within a fascia without any clinical features of nerve involvement. In the neck, the presence of peripheral branches of facial nerve increases the risk of nerve damage by any surgical resection in this area. The marginal mandibular nerve travels close to the skin in the region below the jaw. It lies just below the platysma in the sub-platysmal plane, about 1 cm inferior to the angle of mandible [3]. Various studies have described the incidence of marginal mandibular nerve palsy following level Ib and IIa neck dissection, where level Ib involves the submandibular triangle and level IIa

involves the area between the posterior belly of digastric muscle superiorly and the hyoid bone inferiorly in patients with head and neck cancer [4]. Yet, when the tumor is a benign lesion such as a lipoma within the anterior neck, the potential complication of marginal mandibular nerve palsy must be discussed with the patient as it would be unfavorable to have a distorted smile following surgery for a non-cancerous lesion.

CASE REPORT

A 28-year old Malay woman with no prior medical illnesses presented to our center with a slow-growing swelling on the left side of her neck for the past three years. Swelling was painless, and did not cause any obstructive symptoms. On examination, there was a soft non-tender lobulated mass extending from the left level Ia to level IIb region of the neck measuring 11cm x 6cm (Figure 1). The overlying skin was normal. FNAC findings were suggestive of a lipoma. The patient was keen for the excision of mass for aesthetic reasons. Preoperatively, the cranial nerve examination was normal, and the patient was informed of the potential risk of nerve injury during surgery.

We proceeded with the excision of the left neck lipoma under general anesthesia. In our patient, the lipoma overlaid part of the submandibular triangle. Hence, a facial nerve monitor was set up once the patient was under general anesthesia in view of anticipation of encountering the marginal mandibular nerve. A 6.0cm transverse cervical

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Figure 1: A giant lipoma of the anterior neck measuring 11.0cm x 6.0cm



Figure 2: Intraoperative view of the giant anterior neck lipoma with retracted sub-platysma skin flap.



Figure 3: Left marginal mandibular nerve palsy (House-Brackmann Grade 3) with loss of depression of left lower lip due to paralyzed left *depressor labii inferioris* and *depressor anguli oris*



incision was made along the left side of the neck (Figure 2). The incision was placed 2 finger's breadth below the mandibular border, and extended from the left angle of mandible medially to the midline anteriorly. It was made more than 2cm below the lower border of the mandible to avoid injury to marginal mandibular nerve since the nerve usually lies 1cm below the angle of mandible. Facial nerve monitor was used intra-operatively to identify the nerve, with the aid of surgical loupes for better visualization. A thick sub-platysmal skin flap was raised superiorly as well as inferiorly exposing the capsule of the mass. The thicker flap was raised with the intention of protecting the marginal mandibular nerve, by retracting the flap together with the nerve superiorly. The dissection was continued medially slowly releasing the lipoma with particular attention to the hypoglossal and lingual nerves at the floor of the submandibular triangle. Once the lipoma had been excised, the wound cavity was irrigated with warm saline. The subcutaneous layer was closed with vicryl 4/0, and the skin with Dafilon® 4/0. We did not place any surgical drain. On the first postoperative day, the patient was noticed to have left marginal mandibular nerve palsy (House-Brackmann grade 3, see Figure 3). She was started on intravenous dexamethasone for three days and was discharged on the fourth postoperative day on oral steroid taper. At three months follow-up, her left marginal mandibular palsy had improved to House-Brackmann Grade 1.

DISCUSSION

Lipomas are soft tissue tumors of mesenchymal origin and are very common. Only 15% lipomas occur within the head and neck region. Lipomas larger than 5 cm are termed "giant lipomas" [5]. Due to their benign nature, the decision for excision is usually made for aesthetic reasons or if the patient complains of any symptoms in relation to the mass. However, when a lipoma presents in the region of anterior neck, it is important to know the structures which run beneath the skin and subcutaneous tissue to warn the patient of the potential risks of neurovascular injury, especially of a branch of facial nerve, the marginal mandibular nerve.

The anterior triangle of the neck consists of the sub-mental, submandibular, carotid and muscular triangles. The marginal mandibular nerve, a branch of the facial nerve is located within the sub-platysmal plane in the layer which is

immediately external to the superficial layer of the deep cervical fascia [6]. This is a fine nerve, and in most cases, it requires magnification loupes for its identification and preservation. The marginal mandibular branch of the facial nerve supplies the circumoral musculature, namely the depressor labii-inferioris, depressor anguli oris and mentalis. Any injury to this nerve may cause asymmetry and weakness of the mouth with the elevation of the angle of the mouth, which could cause the patient to develop a distorted smile [7]. The reporting of facial nerve injury has been standardized by the House-Brackmann scale which grades the facial nerve function from grade I to grade VI, where grade I is normal function in all nerve branches, grade II is for mild dysfunction, grade III moderate dysfunction, grade IV moderately severe, grade V severe dysfunction and grade VI total paralysis [8]. There have been other scales to classify and score the facial nerve such as the Yanagihara grading system for facial nerve palsy and the Pietersen scale [9].

The use of a facial nerve monitor intra-operatively has been proven to minimize the risk of possible iatrogenic injury to the facial nerve [10]. In addition, it is important not to overstimulate the nerve intra-operatively as this also can cause temporary facial nerve palsy. The voltages also need to be lowered when the stimulator is used directly on the nerve [11]. These precautions were taken intra-operatively in our patient. Apart from the unintentional severing of the marginal mandibular nerve, the traction and manipulation of the nerve during the operation may lead to nerve paresis, which is temporary. If the nerve is transected, the injury is permanent [12]. Other vital technique that can be practiced intra-operatively is by raising a thicker skin flap which incorporates both, the platysma muscle and the marginal mandibular nerve together with the subcutaneous tissue; the flap is retracted superiorly, thus preserving and protecting the nerve [13].

Despite all the precautions and identification of the nerve intra-operatively, our patient developed left marginal mandibular nerve paresis and developed an asymmetrical smile and elevation of lower lip on the affected side. This could be due to excessive traction during the surgery or overstimulation of the nerve during the nerve identification process. This type of paresis, however improves with time, but not if the nerve was transected.

There are various management options in the treatment of the nerve palsy due to an isolated marginal mandibular branch of the facial nerve. Botulinum toxin chemo denervation and anterior belly of digastric muscle transfer has been practiced in some centres [14]. However, in our patient, we used intravenous dexamethasone as a less-invasive method of treatment. The use of corticosteroids such as dexamethasone has been proven to show reduction in facial synkinesis on follow-up [15]. Some evidence suggests that there is a possibility of re-innervation of the nerve from the surrounding cutaneous nerves as evidenced by the improvement of symptoms with time [16]. This can be supported with evidence from patients who underwent submandibulectomy and superficial parotidectomy and sustained facial nerve palsy but showed improvement of the facial asymmetry over time during outpatient clinic follow up [17, 18].

CONCLUSION

Lipomas are benign lesions that may be surgically excised if symptomatic, large, or enlarging rapidly. Giant lipomas of the submandibular triangle pose significant risk to the facial nerve branches during their excision. Patients with lipomas of this specific region must be thoroughly counselled of the potential injury to the marginal mandibular nerve during the preoperative evaluation, and risk of significant, potentially permanent, cosmetic deficit postoperatively.

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