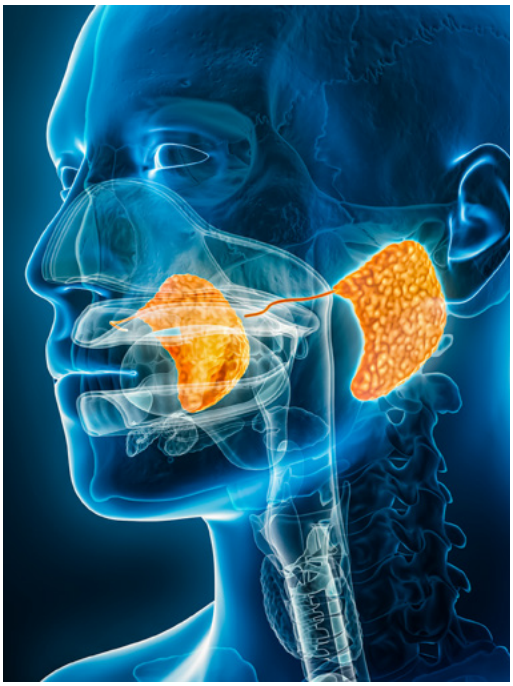
An approach to the postoperative parotidectomy patient in primary care



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Background
Parotid gland masses form part of a heterogenous subset of head and neck pathology. Surgery for both benign and malignant disease is relatively common in Australia and is associated with a diversity of idiosyncratic postoperative phenomena that might represent a challenge to identify and navigate in the primary care setting.

Objective
The aim of this paper is to provide the primary care physician with a useful guide for the assessment, evaluation and initial management of common and not-to-be-missed clinical presentations post parotid surgery, and a framework for appropriate escalation and referral.

Discussion
Primary care can be a valuable setting for the identification and initial management of common complaints post parotid surgery and providing patient access to escalation and onward referral where necessary. Ambiguous, unresolving or worsening presentations should be referred to the treating (or local) surgeon or department.

PAROTID GLAND NEOPLASMS comprise a diverse subgroup of head and neck pathology. Up to four in five parotid neoplasms are benign, with pleomorphic adenoma and Warthin tumours being the most common.[1,2] Malignancy of the parotid is uncommon, comprising 20% of parotid tumours and 3–6% of all head and neck malignancies.[3] However, in Australia, high levels of solar ultraviolet light exposure lead to a concomitantly elevated rate of cutaneous malignancy, increasing the frequency of metastatic parotid lesions such as squamous cell carcinoma.[4]

The location of the parotid gland within the complex anatomical regions of the neck and face and its proximity to important neurovascular structures, including the facial nerve, warrant careful surgical technique to minimise complications.[1,5] Despite this complexity and risk, operative intervention for parotid disease – namely parotidectomy – has remained a mainstay of treatment for both benign and malignant disease.[6–9] It also continues to be of particular relevance in the treatment of benign disease secondary to the risk of malignant transformation of lesions, including pleomorphic adenoma and Warthin tumours.[7,10]

No procedure is without risk, and both common and rare presentations and complications after parotid surgery are well documented in the literature. Given the relative frequency of parotid surgery in Australia and the diversity of complaints patients might present with to their general practitioner (GP) thereafter, the aim of this article is to guide the primary care clinician in identification, triage, initial management and referral when encountering these complaints in general practice.

Anatomy and function of the parotid gland

Of the paired major salivary glands, the parotid glands are the largest.[11] They are exocrine glands responsible for the production and release of saliva – an acidic, mucoserous secretion – into the oral cavity.[11] Saliva is produced by acinar cells within the glands and has a key role in lubrication of the oral cavity, which aids taste, mechanical and enzymatic breakdown of food, and deglutition. It also has a role in pH buffering, humoral immunity and maintaining the health of dentition.[11] The parotid glands are responsible for 20% of unstimulated saliva flow and more than 50% of stimulated flow.[11]

The parotid is located within the parotid space, a deep compartment of the neck at the lateral neck and face.[12] It is bordered superiorly by the zygoma, posterosuperiorly by the external auditory meatus and posteroinferiorly by the styloid process.[13] Inferiorly, the tail of the gland overlies the

angle of the mandible.[14] The gland comprises two lobes separated by the facial nerve and its branches: a superficial and a deep lobe.[14] The superficial lobe overlies the masseter, with the deep lobe positioned deep to the ramus of the mandible.[14] Stensen's duct, the main excretory duct of the parotid, originates from the superficial lobe, coursing superficial to the masseter until piercing the buccinator to emerge in the oral cavity opposite the superior second molar.[14] Other structures within the gland include the retromandibular vein, external carotid artery and auriculotemporal nerve (part of V_3), which also receives secretomotor parasympathetic fibres from the otic ganglion.[13,15]

Typical postoperative course

After a parotidectomy, and in the absence of complications, patients will typically have an inpatient stay of at least two nights. For a minimum of 48 hours, the surgical drain is left in situ and then removed provided that the drain output is less than 20–30 mL in a 24-hour period. As an inpatient, the patient's facial nerve function will be assessed clinically, and any issues with the wound will be noted.

Upon discharge, patients will usually be reviewed in the outpatient setting 7–10 days postoperatively. If skin closure was performed with non-absorbable sutures, at this visit, the sutures will be removed. The wound is also reviewed at this time in addition to the patient's facial nerve function. The histology results will have a further role in determining the type of follow-up. In the case of benign masses completely excised with clear margins, non-urgent follow-up several months after the procedure is usually recommended. Depending on the type of benign mass, the patient might still undergo surveillance thereafter or be discharged to the referring GP. For malignant masses, patients will typically be discussed at a head and neck multidisciplinary team meeting to guide further treatment and follow-up, which will include regular review with at least a three-monthly frequency.

Evaluation and initial management of common presenting complaints post parotid surgery

Parotid surgery can be associated with several postoperative presentations relating to nerve function, the surgical wound, infection, operative site swelling and the function of eating (Table 1).[5,16] These phenomena might present at various time points after surgery (Table 2).

Facial muscle weakness

One of the most pertinent risks of parotid surgery is the risk of injury to the facial nerve, and its associated consequences. Patients can present with facial muscle weakness and asymmetry in the immediate postoperative period depending on the branches of the nerve affected, and facial nerve function should be regularly monitored clinically. It is not uncommon for traction on the facial nerve to occur intraoperatively, particularly when the tumour abuts the nerve,[7] leading to a neuropraxia that typically resolves within 4–6 weeks after surgery.[16] Nerve monitoring, which can provide an indication of facial nerve function intraoperatively, is commonly used, but injury – unless observed during surgery – might only be apparent after the procedure. At this stage, patients should be reassured that this is likely temporary, and the operator should be made aware of the patient's status and outcome.

Persistence of this weakness and asymmetry, and synkinesis, might be a sign of long-term or permanent injury to the facial nerve.[5] This can result in a cosmetic and functional problem for the patient. Any facial muscle weakness resulting in incomplete closure of the eye at any point following surgery should be managed with regular lubricating eye drops, accompanied by eye protection at night.[5] Persistence of poor eye closure warrants review by an ophthalmologist for consideration of tarsorrhaphy[5] and/or implantation of a gold weight in the eye lid. More generally, referral to a plastic surgeon might also be considered for facial reanimation, depending on the type of parotidectomy performed and nerve branches affected. It is recommended that the treating surgeon or unit be involved throughout this course.

Altered cutaneous sensation

Altered facial, neck and ear sensation is a common complaint after a parotidectomy. The great auricular nerve (GAN) provides cutaneous sensation to the earlobe and inferior to the pinna.[7] It is routinely sacrificed during parotidectomy to facilitate surgical access and aid dissection.[7] Patients in which this has occurred will be notified by their surgeon and should expect lifelong hypoesthesia in the sensory distribution of the nerve. Although this is often very noticeable in the immediate postoperative period, patients will usually become accustomed to this over time.

Disruption of cutaneous nerves at the incision site is also common, and an area of hypoesthesia that decreases in size and severity over time is expected. However, the surgical scar will remain insensate. Likewise, altered sensation in the distribution of the auriculotemporal nerve might be expected, given its anatomical relationship to the parotid.

Pain and trismus

Operative site and wound pain is to be expected in all patients after surgery and is usually adequately controlled with regular simple analgesia. This should subside by approximately 14 days after surgery. Any pain that is persistent or out of proportion to the surgical incision or wound status is rare and should be escalated to the treating surgeon for further management.

The presence of facial pain and spasm in the parotid region on the first bite of a meal that diminishes over subsequent bites might be indicative of first bite syndrome, which is associated with surgery to the deep lobe of the parotid.[17] Incidence can be as high as 10% and generally presents within the first three months after surgery.[17] Conservative management with simple analgesia and behaviour modification might be instituted at first instance, with speech pathology review and surgical follow-up recommended in the medium to long term. This is not to be confused with trismus, which might arise from masseteric inflammation and is usually mild and self-limiting with jaw exercises.[5] Trismus in the setting of infective signs and symptoms is more concerning for a deep neck space infection and care should be escalated immediately.

Gustatory sweating

Frey syndrome, or gustatory sweating, is a phenomenon that arises later from aberrancy of the parasympathetic secretomotor innervation of the parotid gland with autonomic cutaneous innervation of the face.[5,7,10] This is documented to arise in

as many as 25 to 60% of patients, with a median time to presentation of 11 months after surgery, and presents with flushing and sweating with meals.[9,10] Patients with Frey syndrome should be referred to their treating surgeon for consideration of treatment with botulinum toxin.[5,19]

Neck swelling

Neck swelling is most often observed in the immediate postoperative period. It is usual practice in Australia for a surgical drain to be kept in the neck for 48 hours postoperatively to safeguard against the formation of a haematoma and to aid in its early detection.

New, rapidly progressive neck swelling with or without the presence of bleeding is uncommon and should be managed with compression and timely referral to the local emergency department for ongoing management.[2] Infection, including the presence of a collection, is also uncommon and might present with neck swelling in addition to overlying erythema and induration at the site. The patient might also present with systemic features of infection. Minor superficial infection might be amenable to treatment with oral antibiotics but in general should be referred early to the local emergency department or treating team for consideration of cross-sectional imaging, intravenous antibiotics and surgical intervention.

Table 1. Summary of common presenting complaints, features and initial management

Presenting complaint (differentials)	Frequency	Features	Red flags	Investigations/treatment/ escalation
Facial muscle weakness (iatrogenic facial nerve injury, neuropraxia or sacrifice)	• Common – temporary (up to 42%)[9] • Rare – permanent, synkinesis (<1%)[9]	• Partial or complete weakness of one or more branches of the facial nerve on the operated side – 38% resolve within 1 month, 78% within 3 months[9] • Weakness of eye closure can increase the risk of corneal injury	• Progression of weakness	• Conservative management initially – reassurance and monitoring • Nocte eye protection, lubricating eye drops, ophthalmology referral if indicated (weakness of eye closure) • Monitoring and review with treating surgeon/unit • Speech pathology referral for synkinesis and long-term or permanent dysfunction • Ophthalmology or plastic and reconstructive surgery referral for consideration of tarsorrhaphy/gold weight and facial reanimation for long-term/severe dysfunction • Progression warrants urgent surgical referral
Altered sensation, particularly in GAN distribution (iatrogenic GAN sacrifice or injury)	• Common (34%)[18]	• Altered facial and/or ear sensation	• Increase in severity of sensory loss or paraesthesia	• Conservative management – reassurance and monitoring • Progression warrants urgent surgical referral
Scarring	• Common (affects all patients to an extent) • Uncommon – keloid or hypertrophic scarring (4%)[18]	• Scarring occurs to varying degrees in all patients	–	• Reassurance – should fade over time • Scar massage • Vitamin E cream • Surgical referral in severe instances for consideration of scar revision or steroid injection
Asymmetry of facial contour	• Common (affects all patients to an extent)	• Depression or hollowing of the face at the surgical site, which matures over time	–	• Reassurance
Facial gustatory sweating and flushing (Frey syndrome)	• Common (up to 60%)[10] • Uncommon – severe symptoms (up to 15%)[5]	• Facial flushing and sweating with meals	–	• Re-referral to treating surgeon for consideration of botulinum toxin injection
Pain on first bite that improves with subsequent bites (first bite syndrome)	• Common (10%)[17]	• Typically arises within the first 3 months after surgery[17]	–	• Conservative management with simple analgesia, (soft) diet and behaviour modification (chewing with contralateral side) might be instituted at first instance, with speech pathology review and surgical follow-up recommended in the medium to long term

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Table 1. Summary of common presenting complaints, features and initial management (cont'd)

Presenting complaint (differentials)	Frequency	Features	Red flags	Investigations/treatment/ escalation
Trismus	• Uncommon	• Usually associated with masseteric inflammation and typically mild and self-limiting	• Association with local or systemic features of infection • Association with neck swelling and reduced neck range of motion • Association with new neck mass/ lymphadenopathy	• Jaw-opening exercises • In the case of trismus associated with infection, US or cross-sectional imaging, commencement of oral antibiotics and urgent referral to the treating surgeon or local emergency department (depending on severity) is recommended • Trismus associated with a new neck mass/lymphadenopathy might be concerning for recurrence or new malignancy and should be urgently referred to the treating surgeon
Neck swelling excluding infection (haematoma, sialocoele, seroma)	• Uncommon – sialocoele (5%),[20] haematoma (3%)[18] • Rare – seroma[5]	• Slow-forming cystic collection of saliva at surgical site – sialocoele • Gradual to rapid collection of blood at surgical site with firmness to palpation and overlying discolouration – haematoma • Cystic collection of serous fluid at surgical site ± serous fluid leak – seroma	• Bleeding/haematoma, pus/abscess, rapid increase in size of neck swelling	• First aid measures (in active bleeding) • Full blood count, coagulation profile (in haematoma) • CRP (in infection) • US ± cross-sectional imaging • For haematoma or active bleeding, refer urgently to the local emergency department • The treating surgeon should be notified in all instances of postoperative neck swelling to expedite next surgical review
Wound dehiscence	• Uncommon (1–4%)[1,8]	• Separation of wound margins	• Association with infective signs and symptoms	• Occlusive dressing, urgent surgical referral
Flap necrosis	• Uncommon (2%)[18]	• Discolouration and devitalisation of the soft tissue flap used in wound closure	• High extent of necrosis • Association with infective signs and symptoms	• Occlusive dressing, urgent surgical referral
Wound site or systemic features of infection	• Uncommon (2%)[18]	• Local swelling, erythema, tenderness • Pus exudate • Palpable collection • Trismus, decreased neck range of motion • Fevers and other sequelae of systemic infection	• Presence of collection or systemic features of infection	• Send swab for microscopy/culture/ sensitivities (if applicable) • Commencement of empirical oral antibiotics • Consider cross-sectional imaging (CT) • For active infection beyond minor soft tissue infection, refer urgently to the local emergency department for consideration of admission for IV antibiotics and surgical input • Notify the treating surgeon
Cutaneous saliva leak (parotid fistula)	• Uncommon (5%)[18]	• Continuous saliva leak onto skin	• Association with infective signs and symptoms	• US, empirical oral antibiotic cover, surgical referral
Neck mass/ lymphadenopathy (recurrence, amputation neuroma)	• Uncommon (1–4%) for pleomorphic adenoma and typically occurs 7–10 years postoperatively[7] • Uncommon (up to 5%) when malignant disease included and typically from 5 months to 9 years (median 5 years)[9]	• Differs in benign vs malignant disease • New neck mass in operated field with or without associated lymphadenopathy • New neurological (motor or sensory) symptoms or signs consistent with nerve involvement • Constitutional symptoms such as fevers and night sweats	• Any concern for a new neck mass should be urgently investigated and followed up	• Investigation with US ± cross-sectional imaging • Tissue biopsy with fine needle aspiration or core biopsy where possible • Referral back to treating surgeon or nearest otolaryngology (ear, nose and throat) service

CRP, C-reactive protein; CT, computed tomography; GAN, great auricular nerve; IV, intravenous; US, ultrasound.

Table 2. Time to onset after surgery of common presenting complaints

Time to onset	Presenting complaint
<72 h	• Pain • Bleeding • Neck swelling • Facial muscle weakness/facial muscle asymmetry • Altered sensation • Trismus
Up to 2 weeks	• Pain • Bleeding • Neck swelling • Local or systemic features of infection • Wound dehiscence, flap necrosis • Altered sensation
>2 weeks	• Gustatory sweating (Frey syndrome) • Altered sensation • Pain on first bite (first bite syndrome) • Cutaneous saliva leak (parotid fistula) • Scarring • Asymmetry of facial contour • Neck mass/lymphadenopathy

The presentation of a serous fluid leak onto the skin that increases with meals might be a sign of a parotid fistula.[5] The added finding of a mobile cystic swelling that is slow growing in the absence of infective signs might be further consistent with sialocoele or seroma (less common) formation.[5] Evaluation with ultrasound (US) is initially useful. These complications are associated with wound healing issues and should be referred early to the treating surgeon for further investigation and management.[20]

Neck mass

The formation of a neuroma from the amputated free end of the GAN is a less frequent complication[5] and might first present as a painful, tender mass up to 10 years postoperatively.[21] The pain might also radiate to the face and neck, and treatment is usually by excision.[21,22] However, any new mass in the surgical field or neck postoperatively should be investigated as a potential recurrence of disease and referred appropriately until proven otherwise.[21,22]

Over the course of months, the development of a new mass in the surgical field with or without associated lymphadenopathy is concerning for recurrence and should be evaluated with US ± cross-sectional imaging and re-referred early to the treating surgeon for review.[9]

Wound complaints

A degree of scarring is to be expected in all patients postoperatively, with a smaller likelihood (4%) of hypertrophic and keloid scarring in predisposed individuals.[5,18]

Patients should be reassured at first instance that scarring usually fades over time, and this might be aided with conservative measures such as scar massage and vitamin E cream. Any requests for further intervention, such as steroid injection and/or scar revision,[5] should be referred back to the treating surgeon.

Flap necrosis characterised by discolouration and devitalisation of the soft tissue flap used in wound closure should be recognised early and referred to the local emergency department. Wound dehiscence should be covered with an occlusive dressing and referred to the treating team for early review.

Facial contour asymmetry on the operated side should be expected postoperatively due to loss of tissue mass.[18] This usually presents as a depression or hollowing of the face at the surgical site that matures over time, and reassurance should be given.[18]

Conclusion

The relative frequency of parotid surgery as a subset of head and neck surgery in Australia makes familiarity with its consequences and potential complications beneficial in general practice. As this article demonstrates, presentations post parotidectomy can be diverse and idiosyncratic. Common complaints relating to nerve function and the wound can often be conservatively managed and monitored in the primary care setting. Although less frequent, more acute presentations (eg those relating to haematoma, necrosis and infection) cannot be missed and warrant effective early management and escalation to the patient's surgeon or, in some instances, the emergency department. More generally, and especially where there is ambiguity or new concern regarding a patient's status, early involvement of the surgical treating team is always advisable.

Key points

- Benign and malignant parotid gland neoplasms often receive surgical intervention and represent a diverse group of pathology.
- Parotid surgery is associated with a variety of idiosyncratic postoperative presentations in the immediate and long-term postoperative periods, which might present a conundrum in primary care.
- Becoming familiar with the early recognition, differentiation and triage of common presenting complaints post parotid surgery will aid initial management and appropriate referral.
- Acute complications in the immediate postoperative period should be escalated early to the local emergency department with surgical cover.
- Unclear, persistent or progressive complaints should be referred to the treating (or local) surgeon or department.

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