

Parotidectomy for Benign Parotid Tumors



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KEYWORDS

- Pleomorphic adenoma • Recurrent pleomorphic adenoma
- Extracapsular dissection • Parotidectomy • Microparotidectomy
- Deep lobe parotid tumor • Frey's syndrome • Facial nerve paresis

KEY POINTS

- Facial nerve anatomy and variable risk of injury in different areas of the parotid gland.
- Pleomorphic adenoma's histologic characteristic leading to microscopic positive margins in most if not all cases, and its significance.
- Extracapsular dissection (limited parotid surgery) compares favorably with superficial parotidectomy in terms of outcomes but requires extensive experience to avoid morbidity.
- There are a great number of surgical approaches and incisions to access the parotid, and with greater experience less invasive approaches are appropriate.
- Recurrent pleomorphic adenomas are very difficult to cure, and the treatment plan needs to take into account the nature and extent of the primary surgery, and the role of adjuvant radiation therapy.
- Adjuvant radiation therapy plays a role in treatment of recurrent pleomorphic adenoma.

INTRODUCTION

Surgical treatment of benign parotid tumors in the early twentieth century was, as it is today, shaped by the significant risk to the facial nerve, and a lack of clear understanding of tumor biology. Surgery for benign tumors such as pleomorphic adenoma (PA) focused on intracapsular enucleation, in which the tumor capsule is opened and the contents removed.^{1–3} Joseph McFarland from University of Pennsylvania in the 1940s is credited with recognizing a high rate of recurrence after parotidectomy.⁴

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Recurrence was observed in up to 45% of patients treated by intracapsular enucleation.^{5,6}

As the reports for recurrence began to mount in the midcentury, and more in-depth pathologic studies were undertaken, the technique and philosophy of parotidectomy for benign parotid lesions were refined.⁷ The resection of the tumor capsule and a margin of surrounding healthy tissue was advocated, as well as complete facial nerve dissection in an anterograde or retrograde direction.⁸ This approach evolved into standard and obligatory dissection of the facial nerve and its branches and in most cases removal of the superficial parotid gland, and less frequently the totality of the gland, which is the philosophy of care in a great many centers around the world presently. Nevertheless, great controversy exists as to the appropriate extent of surgical treatment of benign disease.

Clinicians who support complete facial nerve dissection with superficial parotidectomy point to increased safety for the facial nerve and a decreased rate of recurrence in the long term. Other surgeons think that there is less risk and morbidity when meticulous dissection is done outside the tumor capsule without preidentification or exposure of the main trunk of the facial nerve (extracapsular dissection).^{9,10} These surgeons also claim that dissection of the facial nerve increases the risk of intraoperative nerve damage, and causes scarring in the area of the nerve, which makes revision surgery much more difficult and risky.^{11–15}

Just as in other fields of surgery, salivary gland surgery is moving toward minimally invasive techniques that reduce the length of incision and surgical dissection, thereby potentially decreasing the risk of short-term and long-term complications. However dealing with parotid tumors presents certain inherent complexities: (1) facial nerve anatomy is widely variable and unpredictable, and (2) fine-needle aspiration (FNA) diagnostic pathology carries a high false-negative rate (4%–7%).^{16,17} These two factors demand that parotid surgeons have a high degree of expertise so that during the operation they can make decisions as to the appropriate extent and type of procedure, and how to address or avoid facial nerve injury. There is evidence to support both surgical philosophies in addressing benign parotid tumors, which means a nuanced approach must be considered.

CONSIDERATIONS IN PAROTID TUMORS

PAs represent the most challenging benign tumors to address because of their predominance, histologic characteristics, high recurrence rate, and potential for malignant transformation. The treatment that is appropriate for this type of tumor could be effectively used for other benign parotid tumors as well.

Facial Nerve Anatomy and Dysfunction

The facial nerve has widely variable branching anatomy that is akin to a tree; no two facial nerves are alike. During parotidectomy surgery, the facial nerve branches often abut the tumor. Most studies have indicated that risk factors for transient facial nerve dysfunction include size of tumor, inflammatory condition, patient's age, malignancy, and the type of surgical procedure.^{18–23} However, the location of the tumor within the parotid is of utmost importance. Laws of real estate govern parotid tumor's involvement of the nerves as well; the areas that have more substance and allow a separation between the tumor and the branches of the facial nerve, such as the parotid tail or the posterior inferior parotid, are less likely to have nerve involvement. Areas of less substance, including superiorly where the superior division branching occurs or anteriorly over the masseter muscle, show a greater involvement with the nerve, and thus a

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