Recurrent Pleomorphic Adenoma: Facial Nerve Protection and Lower Recurrence with Retrograde Nerve Dissection

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OBJECTIVE
The benefits of using retrograde dissection during the initial resection of pleomorphic adenomas (PA) have been well documented [1,4,6]. With this approach, recurrence occurs in ~4% of cases and the rate of facial nerve damage approaches zero. When recurrences do occur, although surgery is the accepted treatment, the safety and effectiveness of specific surgical techniques have not been studied to date. Following resection of recurrent pleomorphic adenoma (RPA), the risk of permanent facial nerve deficits has been reported as high as 25% and the recurrence rate increase to nearly 10% [8]. The objectives of this presentation are: 1. To show that a retrograde approach to RPA parotidectomy with use of facial nerve monitoring (EMG) not only preserves nerve function but also prevents recurrence of disease. 2. To present a case in which separate localizations of a multicentric RPA adenoma (CXPA) in a single patient after 10 surgical resections.

METHODS
• A retrospective analysis of medical records for seven patients who underwent retrograde resection of RPA between 2000-2010.
• The study analyzed the prevalence of surgical complications (facial nerve paralysis) and new recurrences following treatment.
• All subjects had been operated on at least one time previously, with between 1 and 10 recurrences and 3 had permanent facial weakness prior to repeat surgery.
• Surgical procedures ranged from superficial to total parotidectomy (3 superficial, 4 total), with 1 cm margins obtained whenever feasible while preserving as much healthy parotid tissue as possible.
• Facial nerve electromyographic monitoring (EMG) and harmonic scissors were used in all cases.
• After recovery from surgery, facial nerve function was assessed and compared with pre-operative function.
• Patients were then followed for surveillance of tumor recurrence.

RESULTS
• All patients returned to baseline facial nerve function within 10 days except for the patient with an 8th recurrence of disease who had additional mild weakness of left lower face on grimace.
• Patients were followed for a mean of 4.5 years (range 1.6-8.1 years) without any further recurrences or complications.
• Tumor sizes ranged from 5 to 33 mm and were multifocal in 6 patients.
• All surgical margins were negative.
• One patient's tumor was multinodular and found to have transformed to myoepithelial CXPA at all but one site and she underwent postoperative radiation.

DISCUSSION
Following primary resection, the risk of recurrent pleomorphic adenoma (RPA) varies greatly depending upon the initial technique used: from upwards of 25% with enucleation to approximately 4% with adequate parotidectomy [1,4,6]. Although pleomorphic adenoma tends to have a benign nature, there is a risk for malignant degeneration to sarcoma ex pleomorphic adenoma, which increases with the duration of the tumor from approximately 2% and 10% for tumors present for less than 5 and more than 15 years respectively [4,6]. Recurrences tend to be multicentric and have an increased risk of malignancy up to 15% [4,6]. Because of this, complete surgical excision of the adenoma with wide margins at the time of diagnosis is considered the standard of care. Both antegrade and retrograde methods for identification and dissection of the facial nerve have been well documented in the literature for primary tumor resection [1,4,6,8]. Although repeat surgery is considered the standard of care for RPA, the surgical techniques used during resection have never been compared or standardized. Furthermore, the risk of facial nerve damage is especially high for repeat procedures due to the difficulty of finding the nerve in and dissecting it away from scar tissue, increasing from 4% for the initial surgery to up to 29% for recurrences [11]. In this study, retrograde dissection of the facial nerve with EMG monitoring obviated nerve damage in 7 of 8 cases without further recurrences.

CONCLUSIONS
Retrograde dissection of recurrent pleomorphic adenoma with EMG facial nerve monitoring can significantly decrease the risk of nerve damage and is a valuable technique for the prevention of future recurrences.

CASE REPORT
A 73 yo F with a history of nine resections of recurrent left parotid pleomorphic adenomas at other institutions presented with a tenth recurrence. Her facial nerve had been permanently damaged during one of her previous surgeries and she had baseline left frontal and mid-face palsy, in addition to upper lip and eyelid weakness. The resection was challenging, as the facial nerve and tumor were encased in deep scar tissue, thus a retrograde dissection and EMG monitoring of the facial nerves were employed. There were no complications during the case. Afterwards, the patient’s left eyelid and frontal areas were weaker than baseline, but this resolved at the 10-day followup. The pathology was reported as myoepithelial CXPA in all nodules except for one, indicating synchronous transformation of several sites. All margins were clear. As her disease had transformed, the patient opted to undergo post-operative radiation for prevention of future recurrences and remains tumor free two years later.

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Fig1. Patient with 8th recurrence of pleomorphic adenoma. a. Surgical scars from multiple previous resections of RPA. b&c. MRI images of RPA prior to surgery. d. Facial nerve shown diving into tumor during retrograde dissection of RPA. e. Partial bed following retrograde dissection showing preserved branches of facial nerve.

Fig2. a. Patient immediately prior to surgery with tumors outlined. b&c. CT imaging showing multiple foci of tumor. d&e. Tumor resection at different stages of surgery (prior to and after tumor resection).