

*Short Communication*

## Comparative analysis of parotid gland surgery techniques for pleomorphic adenomas

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**Pleomorphic adenoma is the most common neoplasm of the parotid gland This study was carried out to evaluate tumor recurrence following extracapsular dissection of pleomorphic adenomas of the parotid gland. Previous studies have shown that extracapsular dissection (ECD) is an alternative approach to superficial parotidectomy (SP) for pleomorphic adenoma parotid tumours, associated with low recurrence rates equal to those following SP, but with significantly reduced morbidity. We conducted a retrospective evaluation and clinical follow-up of the patients who underwent extracapsular dissection of a pleomorphic adenoma as primary surgery in the otolaryngologic department of the Cumhuriyet University Clinics during the period from 2004 to 2012. 25 (89.3%) of 28 patients in the study were applied SP technique and 3 (10.7%) of them were applied ECD technique and no recurrence was detected. This study demonstrates that Extracapsular dissection is a viable alternative to superficial parotidectomy for the majority of parotid pleomorphic adenomas, associated with reduced morbidity.**

**Keywords:** Parotid gland,extracapsular dissection, pleomorphic adenoma,recurrence

### INTRODUCTION

Parotid neoplasia are relatively frequent, representing approximately 2 % of all tumors in the neck/facial area (De Campora, 1996). The pleomorphic adenoma shows a varying incidence of between 60.6% to 76.2% with respect to other parotid neoforations<sup>3</sup> and in general occurs between the second and fourth decades of life, more often in the female sex (M / F ratio = 1 / 1.4) (Laccourreye et al., 1994).

It is a benign tumor composed of epithelial and

myoepithelial cells arranged in various morphological patterns. Thinning or absence of the pseudocapsule and the presence of fingerlike projections of the tumor have been observed in all histologic subtypes of pleomorphic adenoma, in particular the myxoid type (Stennert et al., 2001).

Historically, parotid surgery evolved from surgical enucleation to superficial lobectomy or total parotidectomy with facial nerve (FN) dissection and preservation. Tumour enucleation resulted in high rates of permanent FN palsy and tumour recurrence (20 – 45 per cent) (Leverstein et al., 1997).

The treatment of choice for pleomorphic adenoma is complete removal of the tumor (O'Brien, 2003). Besides

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**Table 1.** Operation technique and following durations

Operation Technique	Following Durations X ± S
ECD	48.96 ± 26.98
SP	40.00 ± 6.92
Result	P = 0.911

ECD: extracapsular dissection  
SP: superficial parotidectomy

the prospect of slow but constant tumor growth, there is also a risk of malignant degeneration into a carcinoma ex pleomorphic adenoma. The frequency of this malignant transformation is variously reported as between 3% and 15% (Nouraei et al., 2008; Gleave et al., 1979). Furthermore, the supposedly benign pleomorphic adenoma can develop into a source of distant (eg, pulmonary) metastases (Nouraei et al., 2008).

Extracapsular dissection (ECD) is an alternative approach to the removal of such lumps involving meticulous dissection immediately outside the tumour capsule while still preserving the facial nerve (Gleave et al., 1979), and is distinct from enucleation.

## MATERIALS AND METHODS

An approval (no 2012 – 05 / 15) was taken from Cumhuriyet University Medical Faculty Ethical Committee on 22.05.2012.

We have conducted a retrospective test on a sample of 28 patients affected by pleomorphic adenoma and surgically treated for this parotid neof ormation at the Department of otolaryngology at the University of Cumhuriyet, from 2004 to 2012. We analyzed the patient files and detected the diagnoses and operation techniques applied. The patients were dialed one by one and information was taken about their health. They are invited to the hospital and ultrasound imaging was taken.

## RESULTS

25 patients (89.3 %), were applied extracapsular dissection (ECD) and 3 patients (10.7 %) were applied superficial parotidectomy (SP).

Of the 28 individuals, minimum age was 20 and maximum age was 80, the mean age was 44.35 ± 16.25. 14 of (50 %) these individuals were male and 14 was (50%) female patient. In our patients the mean follow-up period of patients were 6-96 months 48.00 ± 25.66 months.

None of the cases had recurrence. There wasn't any serious complication after surgery. Operation technique and following durations were given in table 1.

As seen in table 1 there wasn't any significant

difference between following durations. Although following durations of ECD applied patients were longer than SP applied patients, no recurrence was detected.

## DISCUSSION

The pleomorphic adenoma is the most frequent benign tumor of the parotid gland, optimum therapy of which is complete surgical removal.

The choice of treatment of pleomorphic adenoma of the parotid gland depends on the aggressiveness of the tumor, the extension of the mass, and its relation with the facial nerve. The surgical treatment of benign tumor of the parotid gland can consist of enucleation, enucleoresection, and superficial or total parotidectomy with preservation of the facial nerve, where possible. In accordance with the opinions of Mehle (Mehle et al., 1993), the superficial parotidectomy and/or total parotidectomy with preservation of the facial nerve gives excellent results in the excision of the neoplastic mass with very low case histories of lesions of the cranial nerve VII.

Surgical intervention planning should also take into account the fact that the pleomorphic adenoma is a benign lesion and that, frequently, singular tumors with circumscribed dimensions are diagnosed that present in the clinical examination as mobile and near to the surface. For this reason, the procedure should be as minimally invasive as possible, with low risk levels for postoperative complications and limitations; an important objective to keep in mind here is preservation of the functional integrity of the facial nerve.

Tumour recurrence is thought to arise from these small projections, which may be left behind at operation and may explain the high recurrence rate (20 – 45 per cent) when enucleation

was the procedure of choice (Leverstein et al., 1997). Recurrence may also occur if the tumour is multicentric. Multiple tumours are rare, however, being detected in only one of 256 previously untreated pleomorphic adenomas of the parotid gland (Leverstein et al., 1997).

The currently recommended procedure of superficial lobectomy with FN preservation for benign tumours is not a pure en bloc resection in most cases (Donovan and Conley, 1984).

The main argument often used against partial resections of the parotid gland, and against extracapsular dissection in particular, is the postulated higher risk of recurrence of pleomorphic adenomas (Stennert et al., 2001; Guntinas-Lichius et al., 2004).

Arguments used in support of a potentially higher recurrence risk with circumscribed resections of a pleomorphic adenoma include above all peculiarities of the capsule structure of this histologic entity, also called a pseudocapsule, since histologic analysis of the tumor capsule reveals only a thin and partially discontinuous structure (Zbaren and Stauffer, 2007).

There are, however, studies that contradict this conclusion. Donovan and Conley (Donovan and Conley, 1984), for example, have demonstrated that the tumor capsule is at least partially exposed in 60% of cases of superficial or total parotidectomies as well. This can be explained above all by the proximity of the tumors to the facial nerve, making it necessary to do the preparation close to the capsule to avoid injury to the nerve. The postulated en bloc resection is thus, strictly speaking, not practiced in most cases anyway. Ghosh et al demonstrated in 2003 that leaving a thin layer of connective tissue on the tumor was sufficient to minimize the risk of recurrence when removing a pleomorphic adenoma. They investigated 83 cases of pleomorphic adenoma with an average follow-up period of 12.5 years. In the cases in which the tumor extended to the edge of the resection, the investigators found a recurrence rate of 17.6% that, however, was reduced to 1.8% for the cases in which a thin capsule layer (in some cases < 1 mm) was detectable. Only 5% of clinically benign parotid tumours were carcinomas.

and notably two-thirds of these were low-grade cancers (acinic cell and low-grade mucoepidermoid carcinomas). Half required postoperative radiotherapy but this did not represent overtreatment of Stage I disease (Frankenthaler et al., 1991).

As long-term low recurrence rates are now the norm for parotid pleomorphic adenomas, there is an emerging trend towards low morbidity surgery. Recent studies have advocated a more conservative parotidectomy, partial superficial parotidectomy, and report lower transient facial nerve rates (20 – 33%) and Frey's syndrome rates (7 – 20%) (Yamashita et al., 1993; Helmus, 1997; Leverstein et al., 1997) Still lower rates of morbidity have been reported, following ECD (Prichard et al., 1992) with 3 – 11% transient facial nerve palsy and 0 – 5% Frey's syndrome.

## CONCLUSION

This study establishes extracapsular dissection (ECD) as a viable alternative surgical approach to superficial parotidectomy in such tumours, for it has the advantage

of reduced morbidity without untoward effects on oncological outcome.

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