**Aim:** We aimed to compare the preoperative fine needle aspiration biopsy (FNAB) and postoperative histopathology findings in parotid masses and to determine the diagnostic sensitivity, specificity, and accuracy of FNAB.

**Material and Method:** Preoperative FNAB and postoperative histopathology findings of 133 patients who had been operated for parotid masses between 2010-2015 were included. The specificity and sensitivity values of fine-needle aspiration biopsy as a diagnostic test were calculated.

**Results:** 105 of the patients (78.9%) were male and 28 (21.1%) were female with a mean age of 48.6 (22-77) years. FNAB was benign for 120 patients (90.2%) and malignant for 9 patients (6.8%). FNAB was nondiagnostic in 4 (3%) of the 133 patients. 119 of the patients (92.2%) were reported as benign and 10 of the patients (7.8%) were reported as malignant at postoperative histopathological examination. The sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy rates were 80%, 99.1%, 88.8%, 98.3% and 97.6%, respectively. Discussion: FNAB is a reliable method of preoperatively assessing parotid tumors.

**Keywords**
Parotid Tumors; Fine Needle Aspiration Biopsy; Specificity; Sensitivity
Introduction
The diversity of the cells in the parotid gland has given this gland a rich histological structure. Neoplastic characterization of these cells is responsible for the emergence of many tumor types that display different biological behaviors. The histological type determines the tumor behavior and is closely related to its treatment. Histopathological diagnosis of parotid tumors is very important for this reason. An open biopsy in parotid masses is contraindicated because of the risk of tumor seeding to the skin. This is why FNAB is gaining importance. FNAB is an easy diagnostic method that can be performed without harming the patient.

Even the most experienced cytologists cannot interpret fine needle aspiration biopsy with 100% success [1,2]. Therefore, it may not be possible to obtain a definitive diagnosis in the preoperative period. Nevertheless, the administering of FNAB for every patient with parotid mass is a generally accepted practice. It can make a differential diagnosis of inflammatory, infectious, non-neoplastic masses, and lymphoma, and in some cases it can prevent unnecessary surgeries [3].

The purpose of this study was to demonstrate the diagnostic value of FNAB in the benign-malignant discrimination comparing preoperative FNAB findings in parotid tumors with postoperative histopathologic diagnoses. In addition, the national literature of Turkey is reviewed to investigate the diagnostic value and accuracy of FNAB in parotid tumors applied in conditions in our country.

Material and Method
Between 2010 and 2015, the files of 143 patients who underwent parotidectomy for parotid tumors in the 3rd stage center were retrospectively scanned. Ethics committee approval was obtained (decision number 19/1 dated 10.02.2016). Preoperative FNAB and postoperative histopathology results of 133 patients were included in the study. The preoperative FNAB and postoperative histopathology results were compared and the diagnostic accuracy of the FNAB was investigated.

In the FNAB technique, aspiration was performed with a 22-gauge needle and 20 cc injector under ultrasound guidance without local anesthesia; after four plates were spread, the materials were fixed with alcohol and sent to the cytology laboratory. Histopathological examinations of FNAB and excised masses were performed in the pathology clinic of the same center.

SPSS 17.0 program was used for statistical evaluation and sensitivity, specificity, positive and negative predictive values, and accuracy percentages were calculated in the benign-malignant differentiation of FNAB.

Results
105 (78.9%) of the patients were male, 28 (21.1%) were female and the mean age was 48.6 (22-77) years. Total parotidectomy was performed in 10 patients (7.5%) and superficial parotidectomy was performed in 123 patients (92.5%). In the postoperative histopathology of 120 patients with FNAB results that had been reported as benign, 118 patients were reported as benign and 2 patients were reported as malignant. In the postoperative histopathology of 9 patients whose FNAB results were reported as malignant, 1 patient was reported as benign and 8 patients were reported as malignant. Total of 4 patients whose FNAB results were not diagnostic were excluded. Since the clinical and radiological findings of these 4 patients were benign, superficial parotidectomy and mass excision was performed. Results of postoperative histopathology were also reported as benign (3 pleomorphic adenomas, 1 Warthin tumor). The histopathological distribution of postoperative tumors is shown in Table 1.

Sensitivity value, specificity value, positive and negative predictive value, and test accuracy value of FNAB in our study were calculated as 80%, 99.1%, 88.8%, 98.3%, and 97.6%, respectively. The comparison of FNAB and postoperative histopathological findings are summarized in Table 2.

Discussion
Because the parotid gland is subcutaneously localized and tumors of this gland are frequently located in the superficial lobe region, the first symptom in these tumors is often swelling. There are many clues to the difference between benign and malignant in the patient history and physical examination, but parotidectomy is often necessary both for the treatment and for the definitive diagnosis. FNAB can make a differential diagnosis of inflammatory, infectious, non-neoplastic masses, and lymphoma. This can prevent unnecessary surgeries [3,4]. FNAB reliability is not 100%, however it is generally accepted in cases of parotid masses. FNAB of the parotid gland or lymphadenopathy may be useful in making a simultaneous neck dissection decision with parotidectomy and informing the patient before the surgery.

Several factors may be effective in obtaining FNAB appro-
FINE NEEDLE ASPIRATION BIOPSY AND HISTOPATHOLOGICAL FINDINGS IN THE DIAGNOSIS OF PAROTID TUMORS


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Table 3. National studies on the diagnostic value of FNAB in parotid tumors.

<table>
<thead>
<tr>
<th>Publication, Year</th>
<th>n</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>Positive Predictive value (%)</th>
<th>Negative Predictive value (%)</th>
<th>Accuracy Rate (%)</th>
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<td>96</td>
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<td>100</td>
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<td>89</td>
<td>87</td>
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<td>91</td>
<td>58</td>
<td>93</td>
<td>86</td>
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<tr>
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<td>80</td>
<td>96.4</td>
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<tr>
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<tr>
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<td>93.6</td>
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Competing interests
The authors declare that they have no competing interests.

References

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