

## ORIGINAL ARTICLE

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## Histopathological results of adenoidectomy and/or tonsillectomy: 14 years of experience

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### Abstract

The necessity of routine pathologic examinations is still debatable considering the cost and the increase in workload. With a very wide spectrum of patients, this study aims to examine the cases collected in our hospital archive for the past 14 years retrospectively and to contribute to the literature on a subject that is still controversial. The results of adenoidectomy and/or tonsillectomy specimens of 5.658 patients who underwent adenoidectomy and/or tonsillectomy under general anaesthesia were evaluated. The number of patients who underwent only adenoidectomy was 2.057 (36.3%), whereas the number of patients who underwent only tonsillectomy was 978 (17.2%). Adenoidectomy together with tonsillectomy was performed on the remaining 2.623 (46.5%) patients. A total number of 11.882 specimens from 5.658 were evaluated histopathologically. The results showed that 2.846 (50.3%) patients had lymphoid hyperplasia, 1.651 (29.1%) had chronic inflammation, 1.012 (17.8%) had coexistence of lymphoid hyperplasia and chronic inflammation, 113 (1.99%) had Actinomyces granules, nine (0.15%) had squamous papilloma, three (0.05%) had epidermoid cyst, two (0.03%) had Aspergillus spherules and 1 (0.01%) had foreign object reaction. None of the patients who underwent tonsillectomy without a pre-diagnosis of malignancy were diagnosed with cancer. However, a 12-year-old patient without a pre-diagnosis of malignancy was reported to have undifferentiated nasopharyngeal cancer (1/4.680, 0.021%). It's possible that routine pathological examination, especially on patients under the age of 10, is not necessary when there is no finding that raises suspicion for malignancy.

**Keywords:** Adenoidectomy, tonsillectomy, pathological examination

### Introduction

Adenoidectomy and tonsillectomy are two of the most frequently performed surgical interventions in any ear, nose and throat disease clinic, especially in children [1]. Among the indications for tonsil surgery, chronic inflammatory processes and obstructive causes are the most common in all age groups [1]. The situation may differ in adenoid hypertrophy. While adenoidectomy is frequently performed in children due to obstruction, the approach is different when adenoid tissue is detected in adults. It is important to exclude the possibility of nasopharyngeal carcinoma in adults [2]. In addition, suspicion of malignancy,

such as lymphoma, is among the indications [1].

Today, there is a tendency for all surgical specimens, including adenoidectomy and tonsillectomy specimens, to be sent for pathological examination because of medicolegal concerns. However, the necessity of routine pathological examinations after surgical procedures performed on tonsil and adenoid tissue for reasons other than cancer suspicion is still controversial in terms of cost and increased workload [3-5]. The premise of advocating for routine pathological examinations opens the possibility of unexpected pathological results, such as malignancy. Studies on this subject have reported that the risk of malignancy is between

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0% and 0.19% [3-6]. There are also studies discussing that histopathological examinations are not necessarily due to this low positive rate [7-9].

With a large patient series, we aimed to conduct a retrospective analysis of the cases accumulated in the past 14 years in our clinic archive and to contribute to the literature on a subject that is still controversial.

Material and Methods

This study, which was planned as a retrospective archival review, was approved by the Clinical Research Ethics Committee of Istanbul Medeniyet University (2022/0325). Histories, complaints, physical examination findings and histopathological results of adenoidectomy and/or tonsillectomy specimens of 5.658 patients (3.186 males and 2.472 females with an age range of 1–82 years and a mean age of 9.04 years) were analysed. All adenoidectomy and/or tonsillectomy surgeries were performed under general anaesthesia between January 2008 and May 2022. All specimens of every patient who had surgery were sent for histopathologic evaluation in 10% formaldehyde solution, without age restrictions. The pathology clinic was informed about the presence of possible malignancy findings, such as asymmetrically enlarged tonsils, ulcerated tonsillar tissue, difficulty in swallowing, swelling in the neck.

Results

The number of patients who had only adenoidectomy, only tonsillectomy, and adenotonsillectomy was 2,057 (36.3%), 978

(17.2%) and 2,623 (46.5%), respectively. The number of patients who were 18 years old and over was 684 (12%), while there were 4.964 (88%) under 18. When considering the tissues of the right and left tonsils, as well as the adenoid tissues, a total of 11.882 samples were evaluated histopathologically. The findings indicated that out of the total patients, 2.846 (50.3%) displayed signs of lymphoid hyperplasia, while 1.651 (29.1%) exhibited symptoms of chronic inflammation. Additionally, 1.012 individuals (17.8%) showed both lymphoid hyperplasia and chronic inflammation, and a smaller number, 113 (1.99%), were identified with Actinomyces granules. A mere nine cases (0.15%) were diagnosed with squamous papilloma, while only three cases (0.05%) were found to have an epidermoid cyst. Two cases (0.03%) were detected with Aspergillus spherules, and just one case (0.01%) was identified as having a foreign object reaction. Among the patients who underwent tonsillectomy without a prior malignancy diagnosis, none were ultimately diagnosed with cancer, resulting in a cancer diagnosis rate of 0%. However, there was an exception involving a 12-year-old patient who, without a pre-existing malignancy diagnosis, was found to have undifferentiated nasopharyngeal cancer, with an incidence rate of 1 in 4.680 (0.021%).

The histopathological results of patients who underwent surgery for chronic infection or obstruction without suspicion of malignancy are given in Table 1.

Malignancy was found in all 20 cases who underwent tonsillectomy with the suspicion of malignancy. The detailed diagnoses of these patients is given in Table 2.

Table 1. Distribution of pathological results of surgeries performed without suspicion of cancer in the adult and paediatric groups

|                               |         | Paediatric group |      | Adult group |      | Overall percentage |
|-------------------------------|---------|------------------|------|-------------|------|--------------------|
|                               |         | n                | %    | n           | %    |                    |
| Reactive lymphoid hyperplasia | Tonsil  | 361              | 7.3  | 244         | 35.6 | 50.3               |
|                               | Adenoid | 2229             | 44.8 | 12          | 1.8  |                    |
| Chronic inflammation          | Tonsil  | 2276             | 30.5 | 373         | 18.7 | 29.1               |
|                               | Adenoid | -                | -    | 14          | 0.7  |                    |
| Actinomyces granules          | Tonsil  | 98               | 1.9  | 15          | 2.1  | 1.99               |
|                               | Adenoid | -                | -    | -           | -    |                    |
| Squamous papilloma            | Tonsil  | 6                | 0.12 | 3           | 0.4  | 0.15               |
|                               | Adenoid | -                | -    | -           | -    |                    |
| Epidermoid cyst               | Tonsil  | 3                | 0.06 | -           | -    | 0.05               |
|                               | Adenoid | -                | -    | -           | -    |                    |
| Aspergillus spherules         | Tonsil  | -                | -    | 2           | 0.2  | 0.03               |
|                               | Adenoid | -                | -    | -           | -    |                    |
| Foreign body reaction         | Tonsil  | -                | -    | 1           | 0.14 | 0.01               |
|                               | Adenoid | -                | -    | -           | -    |                    |
| Nasopharyngeal                | Tonsil  | -                | -    | -           | -    | -                  |
|                               | Adenoid | 1                | 0.02 | -           | -    |                    |

**Table 2.** Distribution of pathological results of patients who underwent tonsillectomy with suspicion of malignancy

|                          | Paediatric group |   | Adult group |      | Overall percentage |
|--------------------------|------------------|---|-------------|------|--------------------|
|                          | n                | % | n           | %    |                    |
| Lymphoma                 | -                | - | 17          | 2.4  | 0.3                |
| Squamous cell carcinoma  | -                | - | 2           | 0.2  | 0.03               |
| Mucoepidermoid carcinoma | -                | - | 1           | 0.14 | 0.01               |

Discussion

Routine histopathological examination of specimens after adenoidectomy and/or tonsillectomy, which is frequently performed in otorhinolaryngology clinics, has been a topic of discussion for a long time. As a result of routine histopathological examination without clinical suspicion of malignancy, the most common pathology is chronic lymphoid hyperplasia [2-9]. In our study, histopathological diagnosis of lymphoid hyperplasia was made in 68.1% of 5.658 patients, which was consistent with the literature. The diagnosis of chronic inflammation follows this with 46.9%.

Unexpected malignancy rates have been investigated in many studies, and extremely low rates have been reported [7-9]. While these rates were 0.18% in the study of Garavello et al., they were reported as 0.087% in the meta-analysis study of Randall et al. and 0.01% in the meta-analysis study of Schrock et al. [10-12]. In another meta-analysis study by Verma et al., covering a total of 20.560 cases, they reported unexpected findings in three (0.015%) cases [13]. One of them was glycogen storage disease, and two were non-Hodgkin lymphoma. Williams et al. reported lymphoma in three out of 4,070 cases in their study [14]. Felipe et al. reported malignancy in four (0.19%) out of 2.103 patients in which they examined adult and paediatric adenotonsillectomy specimens, and they reported that there was already a suspicion of malignancy, such as mucosal irregularity, stiffness, asymmetry and cervical lymphadenopathy, in these four cases preoperatively [15]. In the current study, malignancy was reported histopathologically in all 20 patients who were suspected of preoperative malignancy (Table 2). According to the results of the current study, in patients who underwent tonsillectomy with the preliminary diagnosis of chronic infection or obstruction, no malignancy was found (0%), whereas a histopathological diagnosis of the undifferentiated type of nasopharyngeal carcinoma was reported in a 12-year-old female patient who underwent adenoidectomy. Accordingly, the unexpected malignancy rate in our study was 0.01%, which is similar to the results of Schrock et al.'s and Verma et al.'s meta-analyses [12,13].

Apart from malignancy, different benign pathologies are also reported as a result of routine histopathological evaluation. Tonsil epidermoid cyst is one of the extremely rare benign tonsillar masses. It is thought to occur as a result of recurrent

infections [16]. This topic, in the literature, is generally based on case reports 16. In an original study conducted by Torun, epidermoid cysts were found in two (0.36%) out of 555 patients after adenotonsillectomy [17]. In our study, epidermoid cysts were in three adult patients (0.05%).

Actinomyces is an anaerobic Gram-positive bacterium and is a member of the normal oral flora. Bhargava et al. reported the colonisation of Actinomyces between 2%–30% and stated that it may be among the predisposing factors for tonsil and adenoid tissue hypertrophy [18]. In our study, Actinomyces colonisation was detected in 113 cases (1.99%). This result is consistent with the literature.

As stated in many studies, in the presence of a mass, asymmetry between the tonsils, immunosuppressed patients, symptoms such as concomitant cervical lymphadenopathy, weight loss and night sweats, surgical specimens should definitely be pathologically examined. Beaty et al. reported that a history of cancer, tonsillar asymmetry, clearly visible or hard lesions in the tonsil, neck mass and weight loss are risk factors for tonsillar malignancy [19]. Among these studies, Ikram et al. found non-Hodgkin lymphoma in one smoker patient (0.3%) with preoperative tonsillar asymmetry in their study on 400 tonsillectomy materials [20]. In another study examining paediatric cases, with 47 asymmetric tonsils, no malignancy was found [21]. In the current study, malignancy originated from the tonsils in all 20 patients who were diagnosed with histopathological malignancy, had tonsillar asymmetry and/or ulcerative lesions with suspicious appearance. Of these 20 patients, 17 were diagnosed with non-Hodgkin lymphoma, two with squamous cell carcinoma and one with mucoepidermoid carcinoma (Table 2). A 12-year-old female patient was coincidentally diagnosed with nasopharyngeal carcinoma as a result of adenoidectomy performed for obstructive adenoid hypertrophy. This patient had no complaints or pathological physical examination findings other than obstruction findings prior to the surgery.

As stated in the literature, it may be thought that the low rate of incidental malignancies in routine adenoidectomy and/or tonsillectomy materials without suspicion of malignancy imposes unnecessary workload on pathology departments and is not cost-effective. As a result of their cost analysis, Nelson et al. do not recommend routine examination in the presence of limited health resources. However, as a result of the quality-adjusted life-year cost analysis, they reported that specimen examination would be cost-effective [22].

When we focus on the population of patients under 18 years of age, 4.563 of 4.964 (92%) patients were under the age of 10. Especially in this age group, operations are performed due to obstructive causes and recurrent infections. In large case analyses in the literature, it is seen that the patient population consists of patients under the age of 10 [2-9]. In the current study, both in the adenoid and tonsil tissues of patients under 10 years of age, the unexpected malignancy rate was 0%. In studies on unexpected

malignancy rates in the literature, the rate of malignancy detected in patients under the age of 10 was found to be 0% in almost all studies [2-9]. According to these data, it should be discussed whether routine pathological examination of patients under the age of 10 without preoperative suspicion is necessary, when cost and labour force are considered.

## Conclusion

In conclusion, histopathological examination must be performed especially in asymmetric tonsil hypertrophy, persistent cervical lymphadenopathy, irregularity and stiffness on the tonsil surface, history of malignancy, history of immunosuppression and organ transplantation, night sweats and weight loss. However, histopathological examination of adenoidectomy and/or tonsillectomy specimens performed due to obstruction or chronic recurrent infection without suspicion of malignancy is still a controversial issue. As in the literature, the unexpected malignancy rate was quite low in the current study. In the literature, the current study, in which the results of 11.882 specimens of 5.658 patients were reported, has the highest number of cases ever performed in one centre. In this study, the coincidental malignancy rate was 0% in tonsil tissue, 0.02% in adenoid tissue and 0.01% in total. In cases of patients aged 10 years and younger, the coincidental malignancy rate was found to be 0% in both groups. Similar with the literature, according to the results of the current study, if there is no finding to raise suspicion for malignancy, it can be considered that routine histopathological examination may not be necessary, especially in patients under 10 years of age.

## Conflict of Interests

*The authors declare that there is no conflict of interest in the study.*

## Financial Disclosure

*The authors declare that they have received no financial support for the study.*

## Ethical Approval

*This study, which was planned as a retrospective archival review, was approved by the Clinical Research Ethics Committee of Istanbul Medeniyet University (2022/0325).*

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