Should the Contralateral Tonsil Be Removed in Cases of HPV-Positive Squamous Cell Carcinoma of the Tonsil?

Christine M. Kim, MD; Maie A. St. John, MD, PhD

BACKGROUND

Human papillomavirus-positive (HPV+) head and neck squamous cell carcinomas (SCC) are increasing in incidence worldwide. The palatine tonsils are the most commonly involved anatomical subsite, followed by the base of tongue and then the soft palate. Secondary primary malignancy (SPM) is a well-established phenomenon among patients with head and neck SCC and can present in up to 36% of patients within 20 years of their original diagnosis. Furthermore, synchronous tumors are defined as those that occur simultaneously with the index cancer; these tumors are present in approximately 4% of cases.

SPM is thought to arise secondary to field cancerization, a biological process by which prolonged exposure to carcinogens leads to independent malignant transformation at multiple sites. The prevalence of synchronous bilateral HPV+ SCC of the tonsil (SBTC) is largely unknown, and there is much controversy regarding routinely removing the contralateral tonsil. Fear of increased pain, bleeding, circumferential scarring, and functional impairment have all been cited as reasons to avoid contralateral tonsillectomy in these scenarios. Proponents of contralateral tonsillectomy, however, raise concerns over the potentially fatal consequences of missing occult contralateral disease. Another advantage is the resulting symmetric appearance of the palatal arches, which allows for improved oncologic surveillance and easier detection of tumor recurrence.

Given the important prognostic and therapeutic implications of identifying a SBTC, should the contralateral tonsil routinely be removed in cases of HPV+ squamous cell carcinoma of the tonsil (TSCC)?

LITERATURE REVIEW

Several case reports have described cases of SBTC. Roeser et al. presented a 51-year-old male with a left cystic neck mass consistent with SCC by fine needle aspiration. A positron emission tomography-computed tomography (PET-CT), however, demonstrated asymmetric fluorodeoxyglucose (FDG) activity in the contralateral palatine tonsil and neck. This patient ultimately underwent bilateral transoral robotic surgery (TORS) oropharyngectomy, which confirmed a diagnosis of SBTC. Similarly, Theodoraki et al. presented the case of SBTC in a 52-year-old male with a preoperative diagnosis of cancer of unknown primary (CUP). Although both tonsilar sites appeared unsuspicious clinically, a PET-CT revealed ipsilateral enhancement of the tonsil area. The final pathology revealed SBTC. In both cases, although the clinical exam appeared benign, PET-CT findings guided surgical management by demonstrating suspicious activity in the tonsil.

Dziegielewski et al. performed a retrospective review specifically in patients who underwent TORS for known tonsillar cancer. Of the 79 consecutive patients with HPV+ TSCC who underwent primary TORS radical tonsillectomy, 30 patients also underwent contralateral tonsillectomy. They found that three patients (10%) had SBTC on final pathology. None of these three patients had a SBTC identified on preoperative PET-CT or clinical examination. Furthermore, they found no differences in complications, gastrostomy tube rates, or length of stay (P > 0.05) between patients who underwent unilateral versus bilateral tonsillectomy. The only statistically significant difference was an increased operative blood loss of 11.5 cc more in the patients who underwent bilateral surgery (P = .001). Of note, contrary to the findings from Roeser et al. and Theodoraki et al., Dziegielewski et al. found that the contralateral tonsil exhibited metabolic activity at physiological levels on PET-CT in their three patients. These authors caution that contralateral TSCC...
may be more indolent and easily missed on imaging and thus recommend that all patients who are undergoing primary TORS for TSCC also undergo contralateral tonsillectomy to obtain definitive tissue diagnosis.

To determine the prevalence of SBTC, Rokkjaer et al.1 performed a retrospective review of all patients diagnosed with TSCC between 2000 and 2015 at Aarhus University Hospital, Denmark. They found that seven of 211 (3.3%) consecutive patients with tonsil cancer who had either undergone bilateral tonsillectomy (n = 180) or unilateral tonsillectomy (clinically normal side) combined with contralateral tonsil biopsy (clinically suspicious side) (n = 31) had SBTC. An additional two patients had moderate-to-severe dysplasia in the contralateral tonsil. In none of the SBTC patients was bilateral cancer suspected preoperatively. Furthermore, patients with unilateral versus SBTC had similar clinical and tumor characteristics. Given their findings of a 3.3% rate of SBTC, the authors concluded that bilateral tonsillectomy should be recommended in all patients with suspected or biopsy-proven TSCC (unilateral or bilateral) and in those with CUP.

Patel et al.,3 however, describe a complicated scenario of bilateral surgical intervention in cases of SBTC. They report a case series of four patients with known SBTC who were treated with either TORS or transoral laser microsurgery. Complete swallowing failure, as characterized by the Functional Outcome Swallowing Scale, was seen postoperatively in three of these patients, whereas the last patient had postoperative swallowing dysfunction but was lost to follow-up. All four patients required a gastrostomy tube postoperatively. These authors therefore highlight a devastating complication of performing bilateral radical surgery and thus recommend nonsurgical treatment in the role of definitive chemother-

Table I. Summary of Evidence for Addressing the Contralateral Tonsil in Cases of HPV + Tonsillar SCC.

| Author            | Year | Study Design (Level of Evidence) | No. Patients With SBTC | Treatment                                                                 | Recommendation                  |
|-------------------|------|---------------------------------|------------------------|---------------------------------------------------------------------------|----------------------------------|
| Roesser et al.5   | 2010 | Case report (4)                 | 1                      | Bilateral TORS radical tonsillectomy                                      | Remove contralateral tonsil      |
| Theodoraki et al.4 | 2017 | Case report (4)                 | 1                      | Bilateral tonsillectomy                                                  | Remove contralateral tonsil      |
| Dziegielewski et al.2 | 2017 | Retrospective review (3)        | 3                      | Primary TORS radical tonsillectomy + contralateral tonsillectomy          | Remove contralateral tonsil      |
| Rokkjaer et al.1   | 2018 | Retrospective review (3)        | 7                      | Bilateral tonsillectomy OR unilateral tonsillectomy + contralateral tonsil biopsy | Remove contralateral tonsil      |
| Patel et al.3      | 2015 | Case series (4)                 | 4                      | Bilateral TORS radical tonsillectomy                                      | Consider chemoradiation to avoid bilateral radical surgery |

HPV+ = human papillomavirus-positive; SBTC = synchronous bilateral HPV+ SCC of the tonsil; SCC = squamous cell carcinomas; TORS = transoral robotic surgery.

LEVEL OF EVIDENCE

These recommendations are based on three case reports1–3 (level 4 evidence) and two retrospective chart reviews1,2 (level 3 evidence).

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BEST PRACTICE

The contralateral tonsil should routinely be removed in cases of suspected or known unilateral HPV+ TSCC (Table I). Furthermore, preoperative clinical exam findings and imaging studies including PET-CT should not be used to exclude the possibility of SBTC. Although there are reports of significant complications resulting from bilateral radical surgery,4 performing a routine contralateral tonsillectomy does not appear to increase rates of morbidity or complications,2 and the resulting symmetric palatal arch could potentially improve oncologic surveillance and detection of recurrence. Furthermore, identifying a contralateral TSCC can dramatically alter treatment and prognosis. The patient may need further surgery and/or radiation therapy to the contralateral oropharynx and neck, which otherwise would not be indicated in unilateral disease. Although the true incidence of SBTC remains unknown, the oncologic outcome of missing the second primary and delaying treatment can be devastating and even fatal.4 Future prospective studies should be performed to identify any clinical disparities or differences in tumor characteristics that could improve preoperative identification of SBTC patients.

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