

Spindle Cell Carcinoma of the Larynx: Radiation vs. Surgery

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ABSTRACT

Title: Spindle Cell Carcinoma of the Larynx: Radiation vs. Surgery

Objectives:

1. Describe the clinicopathologic features of two patients with Stage 1 (T1aN0M0) Spindle Cell Carcinoma (SpCC) of the larynx.
2. Discuss challenges in obtaining a diagnosis of SpCC.
3. Address controversies in management of SpCC.

Methods: Prospective case series. Two cases of T1aN0M0 SpCC of the larynx treated at a tertiary care hospital. Subjects were two Caucasian men, ages 61 and 64, with over six month history of dysphonia. Direct laryngoscopy and biopsy revealed SpCC. Interventions were partial cordectomy in one patient and external beam radiation after an excisional biopsy in the other. These two patients were compared descriptively based on their clinical presentation, gross and microscopic histopathology, and management methods.

Results: Both patients had extensive smoking history. The first patient had a pedunculated, polypoid lesion on the right true vocal cord (TVC) with a history of a right TVC granuloma that presented a diagnostic dilemma. The second patient's right TVC lesion was leukoplakic, with evidence of ulceration. On histology, both showed immunoreactivity to vimentin, lack of immunoreactivity to keratin, and adjacent squamous epithelium consistent with SpCC. The first patient underwent partial cordectomy due to slow progression of the disease. The second patient underwent radiation therapy for the ulcerated lesion. Both patients are without evidence of disease at the current follow-up.

Conclusion: Immunohistochemistry plays a key role in the diagnosis of SpCC. There appears to be no outcome difference between the management of Stage 1 SpCC of the larynx by surgery versus radiation therapy. Management recommendations should be based on clinical presentation and the rate of disease progression.

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INTRODUCTION

Treatment of spindle cell carcinoma is controversial as is the histogenesis of this tumor. Earlier literature regarding spindle cell carcinoma used various terminologies including sarcomatoid carcinoma, carcinosarcoma, pleomorphic carcinoma, pseudosarcomatous carcinoma, and pseudosarcoma.¹ Its histopathology has been debated ranging from superficial tumors with good prognosis similar to squamous cell carcinoma of the same anatomical region to more aggressive tumor behavior and worse prognosis for invasive tumors when compared to squamous cell carcinoma.

Prior studies on spindle cell carcinoma showed majority of the SpCC found in glottis when compared to other sites of upper aerodigestive tract. Smoking has been shown to be a risk factor for developing SpCC. Many different gross description of the tumor also exists such as polypoid, bulky or pedunculated, gray lesion on the vocal cord. In Olsen et al., surgical therapy in early stage glottic lesions remains the mainstay in management, however, radiation therapy for spindle cell carcinoma has been suggested to be equally effective for the superficial and early stage cancer as with squamous cell carcinoma of the glottis.

METHODS AND MATERIALS

Prospective case series. Two male patients with biopsy proven T1aN0M0 SpCC of the larynx diagnosed between January, 2008 and January, 2009 at LSUHSC-S were observed from the time of the diagnosis for 12 months. Interventions were partial cordectomy in one patient with the polypoid lesion and external beam radiation after an excisional biopsy in the ulcerated invasive lesion. These two patients were compared descriptively based on their clinical presentation, gross and microscopic histopathology, and management methods.

RESULTS

Subjects were two Caucasian men, ages 61 and 64, with over six month history of dysphonia. Flexible scope showed pedunculated polypoid mass on right TVC in the first patient and leukoplakic lesion with ulceration on the right TVC in the second patient. Bilateral TVC were mobile in both patients. Direct laryngoscopy with and biopsy revealed SpCC.

Both patients had extensive smoking history.

On laryngoscopic evaluation, one lesion showed pedunculated polypoid mass, the other showed leukoplakic lesion with ulceration.

Gross description: Pedunculated lesion with superficial ulceration in Figure 1. Gray lesion, irregular surface with ulceration in Figure 5.

Figure 3 displays post-op outcome of right TVC partial cordectomy 8 months post-op with some scarring of the surgical site but without evidence of recurrence. Figure 6 shows 5 months post-XRT without evidence of recurrence.



Figure 1. SpCC with pedunculated, polypoid appearance on right TVC.



Figure 2. 8 months post-op right TVC partial cordectomy for SpCC shown in Figure 1.

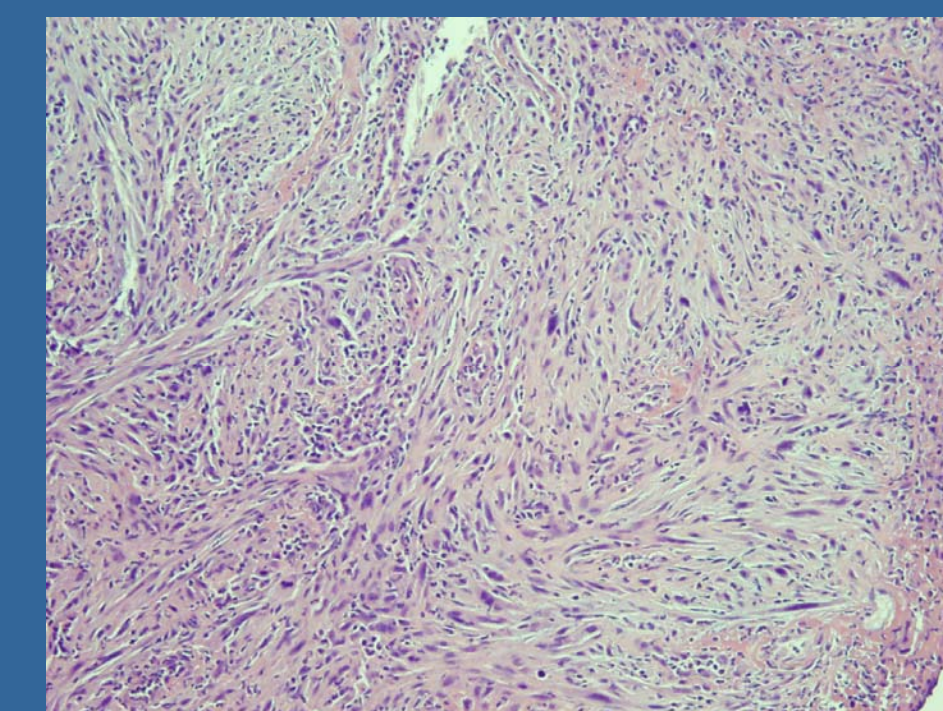


Figure 3. Loss of surface epithelium with fibrinoid necrosis is characteristic for SpCC. Atypical, hyperchromatic nuclei within the spindle cells of the stroma may be the dominant finding as seen here

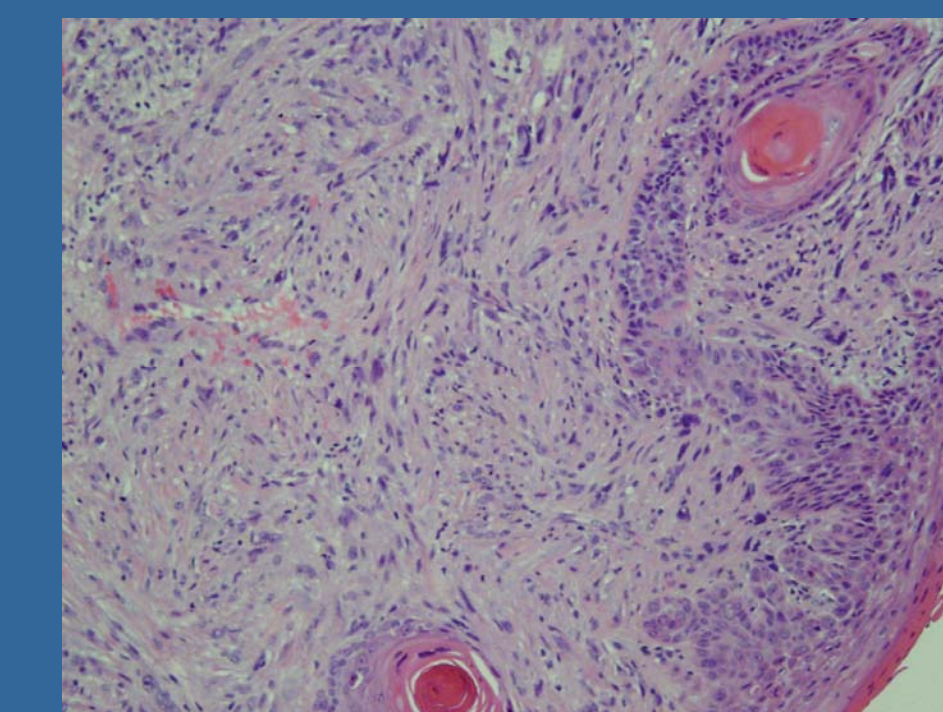


Figure 4. Carcinomatous and sarcomatoid components directly abutting one another in SpCC

RESULTS

On histology, the spindle cell components made up a majority of the pathologic specimen with adjacent squamous epithelium consistent with SpCC (Figure 3).

Microscopic description:

Dysplastic and ulcerated surface epithelium with fibrinoid necrosis, pleomorphic squamous epithelium and keratin formation, with bulk of the tumor composed of spindle cell population.

Immunohistochemistry stain:

Smooth muscle actin and vimentin immunoreactivity in the spindle cell population while desmin and ALK-1 immunoreactivity were negative. Immunostain for pankeratin show immunoreactivity in the surface epithelium.

Histologic evaluation of the tumor shows loss of surface epithelium characteristic of SpCC and atypical nuclei within the spindle cells of the stroma dominating the surgical specimen (Figure 3). Figure 4 displays both the carcinomatous and sarcomatous components of the surgical specimen adjacent to each other.

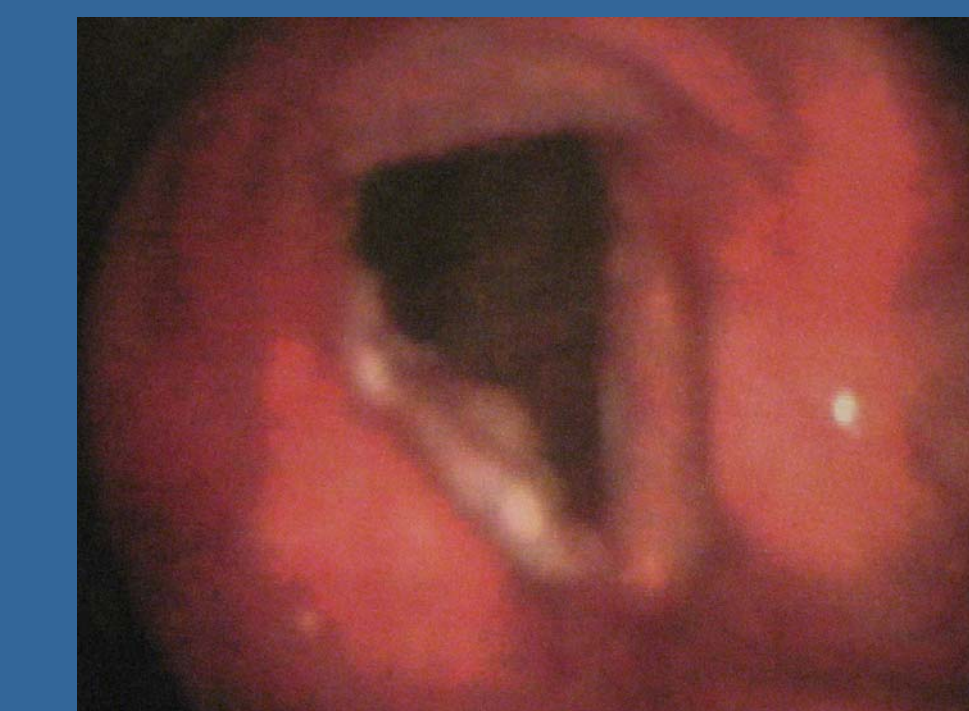


Figure 5. SpCC with ulcerated leukoplakic appearance of the right TVC



Figure 6. Post-XRT for SpCC right TVC shown in Figure 5.

DISCUSSION

Spindle cell carcinoma should be considered in the differential for vocal cord masses especially in the setting of smoking history and hoarseness. Most SpCC are found in the glottis (75.8%) and classified as T1 tumors.² On microscopic review, concurrent presence of carcinomatous and sarcomatoid cells accompanied by immunohistochemical marker confirmation adds to accuracy of the diagnosis.

Epithelial marker in SpCC are keratin involving the surface epithelium, whereas vimentin and actin characteristically are present in the spindle cell component. The non-reactive tumors on immunohistochemistry tend to have better clinical prognosis.

Often history of vocal cord granuloma causes a diagnostic dilemma when looking at a stage 1 SpCC with superficial involvement of the cord. The first patient showed much more indolent course with polypoid appearance of the vocal cord lesion and therefore underwent partial cordectomy. The second patient underwent radiation therapy for the clinically aggressive ulcerated lesion.

Both patients tolerated their treatment modality with good voice outcomes and without developing co-morbid conditions such as aspiration.

Both patients are without evidence of disease at 12 months follow-up.

CONCLUSIONS

Tissue diagnosis with histological special stains and immunohistochemistry plays a key role in the diagnosis of SpCC. There is no outcome difference between the management of Stage 1 SpCC of the larynx by surgery versus radiation therapy. Management recommendations should be based on clinical presentation and the rate of disease progression.

Though early stage and superficially involved SpCC have a favorable prognosis with a single modality treatment, much like an early stage squamous cell carcinoma (SCC) of the glottis, an advanced stage and invasive SpCC of the glottis has shown higher rates of locoregional and metastatic potential with poorer prognosis compared to an invasive SCC.

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