

# Total mandibulectomy in a patient with verrucous carcinoma turning into squamous cell carcinoma of the oral cavity: a rare case report

Chandrashekhar R. Bande<sup>1</sup>, Dinesh Mohale<sup>2</sup>, Manjiri Thakur<sup>3</sup>, Pravin Lambade<sup>4</sup>

## ABSTRACT

<sup>1</sup>Associate Professor, <sup>4</sup>Professor & Head, Dept. of Oral and Maxillofacial Surgery,  
<sup>2</sup>Post Graduate student, <sup>3</sup>Professor & HOD, Dept. Oral & Maxillofacial pathology and Microbiology, Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital, Waddhamana road, Wanadongari, Hingna, Nagpur-440010, Maharashtra, India

**Address for Correspondence:**  
Dr. Chandrashekhar R. Bande  
Dept. Oral & Maxillofacial pathology and Microbiology,  
Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital,  
Waddhamana road, Wanadongari, Hingna, Nagpur-440010, Maharashtra, India  
Email: drcrbande@yahoo.co.in

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Verrucous Carcinoma is a rare type of low grade, well differentiated squamous cell carcinoma. The author herein reports a case of squamous cell carcinoma arising within verrucous carcinoma of mandible. A 65-year old women reported to hospital with the history of swelling over the gums of lower jaw since 1yr. Her swelling was painless and gradually had spread to the whole mandible. Incisional biopsy and histopathologic examination revealed verrucous carcinoma which was treated with total Mandibulectomy.

**Keywords:** Verrucous Carcinoma, Total Mandibulectomy, Squamous Cell Carcinoma

## INTRODUCTION

Oral Verrucous Carcinoma is characterized by predominantly Exophytic overgrowth of well differentiated keratinizing epithelium having minimal atypia and with locally destructive pushing margins at its interface with underlying connective tissue. It is distinct in its slow growth and ability to become locally aggressive if not treated appropriately. However, even with local tumors progression, it is intriguing that regional or distant metastasis is rare. Oral Verrucous Carcinoma has unique histopathological features.<sup>1</sup>

An accurate pathological diagnosis is challenging and is facilitated by an adequate tumor sample for study and more importantly, a close collaboration between the clinician and the pathologist. The 19th and 20th century reflect the development of head and neck oncology in the era of science based medicine. Almost all of our current understanding of head and neck oncology, our diagnostic methods and treatment

strategies have been developed in these two centuries.<sup>2</sup>

The prognosis of verrucous carcinoma is generally good since nodal metastases does not occur. However, in 20% of cases, verrucous carcinoma co-exists with conventional squamous cell carcinoma with a consequent reduced prognosis.<sup>3</sup>

We report a case of squamous cell carcinoma arising within oral verrucous carcinoma of mandible which was treated with total Mandibulectomy and reconstruction of a total mandibular defect that involved the entire mandible.

## CASE REPORT

A 65 year old female patient (Fig.1) reported to the hospital with a history of swelling since 6-8 months, the lesion was extended from left premolar area to right premolar area (Fig.2). Patient was not ready for treatment. She was taking ayurvedic medicine for 6 months .Patient however reported 6 months later with swelling involving entire mandible including condyle bilaterally and with pathological fracture at right side of condylar neck (Fig.3). Submandibular and submental Lymph nodes were enlarged and tender on palpation.

Incisional Biopsy was taken. The general histopathological characteristics of the specimens revealed acanthosis, hyperkeratosis of the epithelium with keratin plugging. There was minimal atypia or

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mitotic activity. Verrucous carcinoma was diagnosed following histopathological examination.

For definitive diagnosis, the entire masses with their surrounding tissues had to be excised. Operative procedure was planned under general anaesthesia with nasal intubation. Bilateral Apron flap was taken with midline split from left corner of mouth, layer by layer dissection was done.

The supra-omohyoid neck dissection-The skin flap was raised in sub platysmal layer up to inferior border of the mandible anteriorly and to tip of mastoid process posteriorly. The inferior flap was also raised taking care of anterior jugular vein. The venous perforators going to platysma were cauterized, the lower level of dissection ended inferior to the intersection of sternocleidomastoid and superior belly of omohyoid muscle. The posterior border of the sternocleidomastoid was dissected free from adjoining fibrofatty tissue. The external jugular vein was ligated. The spinal accessory nerve, anterior border of sternocleidomastoid was dissected till its exposed entire length. The sternocleidomastoid was separated from all the attachments. The sternocleidomastoid was skeletonised and retracted posteriorly. The carotid sheath was opened, middle thyroid and common facial veins were ligated. After the entire fibrofatty tissue was separated along with the embedded lymph nodes, the superior belly of omohyoid was defined. The fibro fatty tissue and lymph nodes between omohyoid and anterior aspect of internal jugular vein were mobilized enblock from base of carotid triangle to the level of digastric muscle. Then, the dissection was carried in the posterior triangle. The skeletonised spinal accessory nerve, internal jugular vein common carotid artery was retracted. The cutaneous branch of c3 and c4 roots were lifted block and were divided. The spinal accessory nerve up to sternocleidomastoid and the fibro-fatty tissue around were dissected. The dissection then goes superiorly to parotid gland which was palpated and lifted carefully and the lymph nodes were excised. The dissection was then carried anteriorly and the retromandibular vein was ligated. Tumor mass was defined first on right side from midline to condyle and sparing all the muscles of speech and mastication on buccal as well as lingual side. Same way dissection was carried out in the left side from midline to condyle. After the excision of the specimen, the margins were found clear. In the neck submandibular and submental nodes were hypertrophic, and were excised separately.

Disarticulation of mandible was done first on the left side with thorough separation of tumor from the normal tissue, disarticulation of right condyle was also done in same fashion. In this way total mandible was resected (Fig.4).

The complete mandibular reconstruction plate prosthesis (Fig.5) which was planned by using the patient's x-rays was used for reconstruction purpose. However, minor adjustments were still required to place the prosthesis in harmony with maxilla.

All muscles of mastication and the tongue were sutured back to the reconstruction plate in place (Fig.6). Three layer closure was done from intraoral to extraoral site with placement of bilateral suction drain. (Fig.7)

Post resection specimen was sent for histopathological evaluation and the details of which are as follows:

**Histopathological report:** (Fig 8 a,b,c)

The section shows hyperplastic stratified squamous epithelium showing mild to moderate dysplasia. There is hyperparakeratinization with formation of keratin plugging. Rete ridges are bulbous invading deep into connective tissue. Pattern of invasion is of pushing type. Connective tissue is infiltrated with sheets of squamous epithelial cells with lots of keratin formation. Little nuclear pleomorphism is seen. Number of mitosis seen is 0-1 per high power field. There is scanty connective tissue with moderate amount of chronic inflammatory cell infiltration. Bony flakes are present at some places.

Histopathology of lymph node shows normal architecture. Lymph nodes are negative for metastasis.

**Diagnosis:** Well-differentiated squamous cell carcinoma. (Bryne's grade I type).<sup>8</sup>

Postoperative course was uneventful and patient was disease free even after six month follow up period. (Fig: 9 a, b)



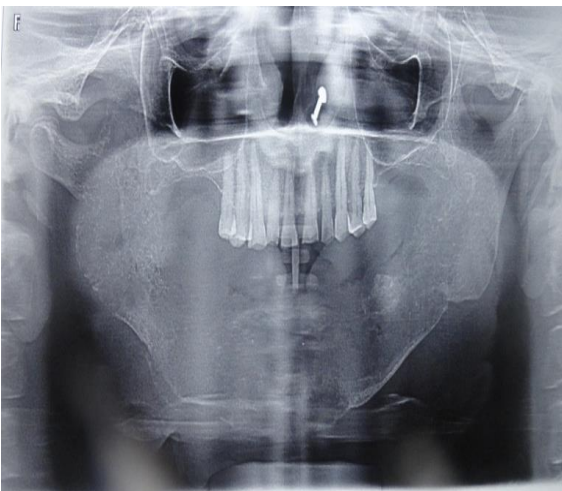
Fig. 1: Preoperative extraoral view of patient



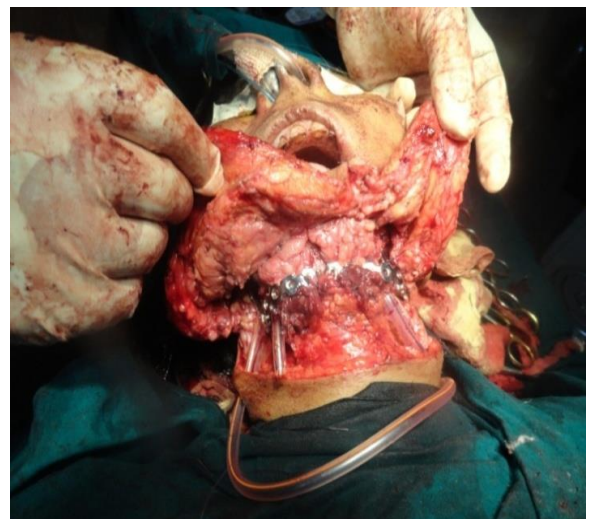
**Fig. 2: Preoperative intraoral view**



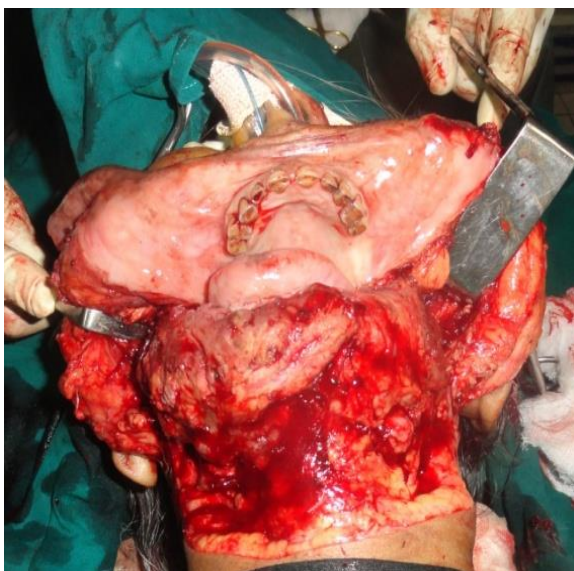
**Fig. 5: Mandibular reconstruction plate**



**Fig. 3: Radiograph reveals a lytic lesion in the mandible extending bilaterally towards condyles**



**Fig. 6: Reconstruction plate in position**

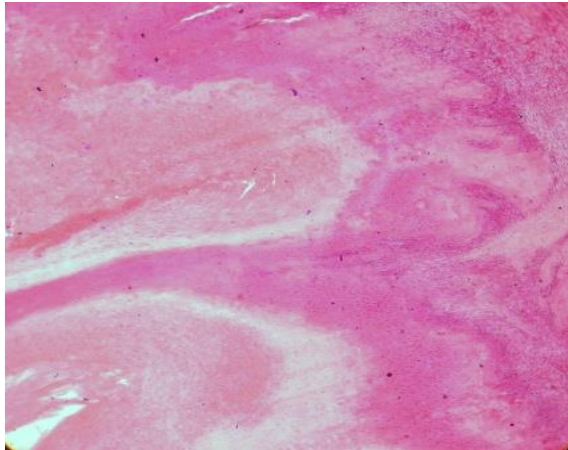


**Fig. 4: Showing Resected Mandible**

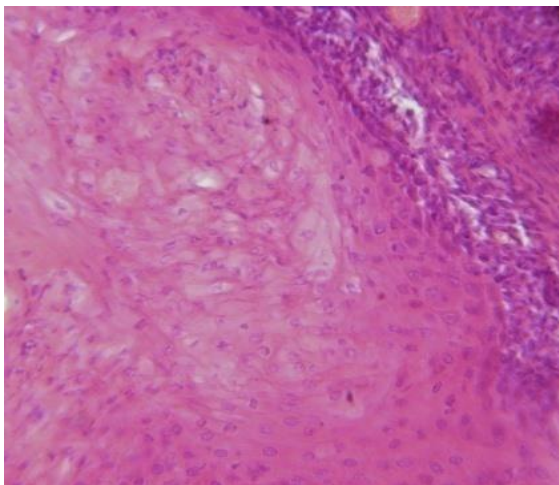


**Fig. 7: Flaps sutured and placement of drains**

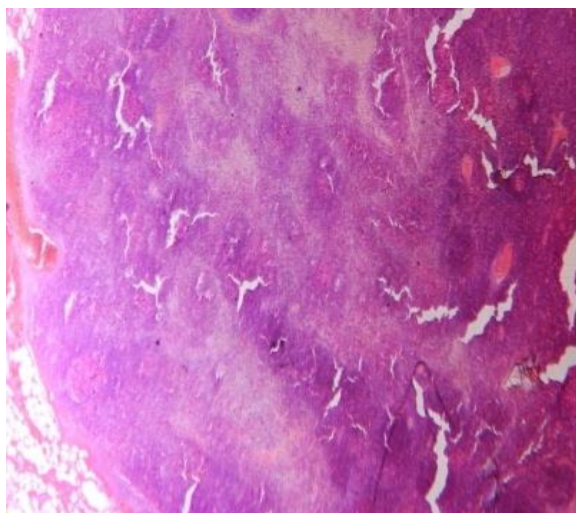




**Fig. 8 (a):** Photomicrograph showing Islands of epithelial cells with parakeratin pluggings. (H and E, 10x)



**Fig. 8 (b):** Photomicrograph showing epithelial cells with mild dysplasia (H and E, 10x)



**Fig. 8 (c):** Photomicrograph of lymph node showing normal architecture (H and E, 4x)



**Fig. 9:** Postoperative patient view after 6 months

## DISCUSSION

The etiopathogenesis of Oral Verrucous Carcinoma is unclear, however, studies have shown strong associations with tobacco use, including inhaled as well as smokeless tobacco, alcohol, and opportunist viral activity associated with human papilloma virus (HPV). More recently, studies have further confirmed the association between HPV and Verrucous Carcinoma by detecting HPV-DNA types 6, 11, 16, and 18 by polymerase chain reaction (PCR), restriction fragment analysis, and DNA slot-blot hybridization. Surgical excision with adequate margins of resection seems to be the clear preference for treatment.

Verrucous carcinoma tends to destroy bony structures such as the mandible, on a broad front, eroding with a sharp margin rather than infiltrating the marrow spaces.<sup>1</sup> In our case there was associated pathological fracture of right condylar neck of mandible. The prognosis of verrucous carcinoma is generally good since nodal metastases do not occur. However, in 20% of cases, verrucous carcinoma co-exists with conventional squamous cell carcinoma with a consequent reduced prognosis.

Preoperative diagnosis of mandibular invasion by squamous carcinoma is not accurate for early lesions. A combination of clinical examination, plain radiographs, and CT imaging will provide the most information. Among patients treated with some form of mandibular resection because of suspected Squamous Cell Carcinoma invasion (excluding cases of clear gross involvement), less than half (39% to 45%) are proved to have histologic invasion of the cortex. Therefore, conservative mandibular surgery will not jeopardize complete tumor excision for most patients with “suspected” but not proven carcinoma in the mandible.<sup>4</sup> Buccal squamous cell carcinoma has traditionally been treated surgically, with postoperative radiation therapy reserved for patients with high-risk histopathologic findings, such as perineural invasion, lymphovascular invasion, bone invasion, extracapsular spread, or close margins.<sup>5</sup>

Reconstructive options includes Vascularized osseous free tissue transfer for mandibular reconstruction. The long-term excellent functional and aesthetic outcomes of this technique have recently been reported. The most commonly used osseous free flaps for mandibular reconstruction are the fibula, iliac crest, and scapula. Each of these typically accepts endosseous implants improving functional outcomes. The use of mandibular reconstruction plates and coverage with a soft-tissue flap is a reconstructive option for selected patients. The latest refinements in technique include temporary intraoperative external fixation, the use of periosteal free flaps and development of biodegradable biopolymer scaffolds for mandibular defects.

In our reported case, the whole mandible along with both condyles was removed. As verrucous carcinoma demonstrated transformation of the lesion in to squamous cell carcinoma in depth of resected mandible. Loss of mandibular continuity results in alteration in speech, swallowing and mastication, and in the appearance of the patient. The restoration of a defect that involves the entire mandible is a rare and challenging problem for surgeons after ablation of malignant and aggressive tumors.<sup>6</sup> The purpose of reconstruction is mainly to rehabilitate the patient esthetically by improving the contour of the mandible, thereby minimizing facial deformity from the defect. The patient is rehabilitated functionally and the occlusal disturbance is minimized.<sup>7</sup>

## CONCLUSION

It is mandatory to rule out hybrid carcinoma including Verrucous Carcinoma and conventional squamous cell carcinoma. But, in any scenario, timely and correct diagnosis of the lesion and appropriate surgical management is of extreme importance to minimize postoperative morbidity and to improve quality of life of the patient.

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