

# Vocal Cord Paralysis Following Percutaneous Embolization of a Vagal Paraganglioma

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## ABSTRACT

Tumors of the head and neck region that frequently require embolization include meningiomas, paragangliomas and angiofibromas, owing to their rich vascularity. Serious complications following embolization are uncommon. We report an unusual case of vocal cord palsy following embolization.

**Keywords:** Vocal cord paralysis, Paraganglioma, Vagus nerve.

## INTRODUCTION

Paragangliomas are highly vascularized tumors of neural crest origin that involves the walls of the blood vessels or specific nerves within the head and neck region.<sup>1,2</sup> Surgical removal is often associated with significant intraoperative blood loss because of the vascular nature of the tumor. Preoperative transarterial embolization has proved beneficial to reduce intraoperative blood loss in these tumors.<sup>3,4</sup> Alternatively percutaneous direct intratumoral embolization has been described as a safe and effective technique to achieve the same goal.<sup>5-8</sup> We report a case of vagal paraganglioma where the patient developed vocal cord paralysis following direct intratumoral embolization prior to surgery.

## CASE REPORT

A 38-year-old female presented to us with 4 years of history of painless, progressive left upper neck swelling. There was no history of hoarseness of voice, dysphagia or any other ear, nose and throat complaints. On clinical examination, there was a 3×4 cm neck mass below the angle of mandible on left side. Indirect laryngoscope showed bilaterally mobile vocal cords. The swelling was mobile horizontally, nontender with carotid pulsation felt anteromedial to the swelling. Magnetic resonance angiography was done which was suggestive of a vagal paraganglioma at the left carotid space posterolateral to the common carotid artery and internal carotid artery. There was no evidence of extension of the mass into carotid crotch.

Percutaneous tumor embolization was done using Histoacryl glue (N-butyl-2-cyanoacrylate) as the embolic agent. A 5F diagnostic catheter was placed in the common carotid artery to guide the puncture and to perform control angiography during and after injection of glue. A near complete revascularization of the tumor was achieved following which the procedure was stopped. Postprocedure the patient developed hoarseness of voice. Fiberoptic laryngoscopy was done which showed that the left vocal cord was fixed at the paramedian position. There was no other neurological deficit noticed at the postembolization period. The patient was subsequently operated with complete removal of the tumor maintaining the integrity of the vagus nerve and with minimal blood loss. Postoperatively, the vocal cord palsy was persistent.

## DISCUSSION

The value of preoperative embolization is well established in the management of paragangliomas. Traditionally, it has been performed by superselective catheterization of the supplying branches and transarterial embolization with particulate agents. However, complete devascularization of the tumor bed is frequently not achieved by this method. Direct puncture with intratumoral injection of a liquid adhesive like N-butyl-2-cyanoacrylate permitted higher degree of devascularization.<sup>7,8</sup> Various studies have considered it to be useful, feasible, safe and effective method of preoperative embolization.<sup>5-8</sup> As a result of which this procedure has received wider acceptability over time. Casasco et al have expressed concern over the possibility of reflux of the glue into the intracranial circulation from their past experience. They have also suggested the use of

nondetachable balloons to protect the intracranial branches during the procedure in selective cases.<sup>9</sup> However, besides glue migration, no other significant complication has been reported about this procedure.<sup>8,9</sup> In our case, low concentration of the glue (20%) was injected to achieve homogeneous penetration under fluoroscopic guidance following standard protocols. The complication encountered was unexpected and compelled us to rethink about the need of preoperative embolization in patients who presents with intact cranial nerve function preoperatively.

### CONCLUSION

The complications associated with preoperative embolization are rare. However, the treating physician needs to be aware of the same and counsel the patients accordingly. Careful case selection is a prerequisite prior to embarking on preoperative embolization.

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