



Case Report

Anaesthesia management of a case of huge neck mass due to cervical spine chondrosarcoma with distorted anatomy

Jyoti P Deshpande¹, Akshay M Salunke¹, Noopur D Singh¹, Utkarsha P Bhojane^{1,*}

¹Dept. of Anesthesia, MUHS, Smt. Kashibai Navale Medical College and Hospital, Pune, Maharashtra, India



ARTICLE INFO

Article history:

Received 16-04-2021

Accepted 12-05-2021

Available online 11-11-2021

Keywords:

Chondrosarcoma
Difficult intubation
Fiberoptic intubation
Huge neck mass

ABSTRACT

Chondrosarcoma is the tumor which affects bone and soft tissue with only 2% spinal involvement. Anesthetic management becomes challenging in patients with cervical chondrosarcoma. Here, we are presenting a case of huge neck mass due to cervical spine chondrosarcoma in 70 year old male hypertensive patient. The patient has distorted anatomy with mucosal edema with left tracheal deviation and compression from right side. Awake Nasal Fiberoptic intubation was done with cuffed ETT no 8. The neck mass was removed and Anterior Cervical Discectomy and Fusion (ACDF) with bone grafting. The case was managed with adequate analgesia, replacement of fluids and Blood and Blood products. Considering complex cervical spine surgery and airway edema the patient was shifted to Surgical Intensive Care Unit (ICU) for elective ventilation and advanced monitoring. After serial ABG and proper weaning the patient was extubated next morning smoothly.

Key Message: Extensive preoperative evaluation, planning, clinical judgement and skilled experienced personale are essential for proper execution of difficult airway cases.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Chondrosarcoma is the tumor which affects bone and soft tissue where vertebral body 5% and 2 -12% of spinal involvement occurs.¹ Recurrence is reported at rate higher (up to 100%) when inadequate margins have been accomplished during the operation.

Here, we are presenting a case of 70 year old male huge right sided neck mass measuring of 11.9*12.13*14.13 cm³ arising from C5-C6 with distorted anatomy with deviation of the trachea towards the left in a known case of Hypertension. It was challenging for the anesthetist and surgeon in view of difficult airway, intraoperative blood loss and hemodynamic instability as mass was arising from cervical spine area in Computed tomographs (CT).²

2. Case History

70 year old male (68kg) presented with gradually increasing right sided neck mass since 6 years. There was no History of dysphagia, cough, dyspnea, hoarseness of voice, nausea or vomiting. The patient was a known case of Hypertension since 2 years on T Atenolol 25mg BD.

On examination, the patient pulse was around 54/min, regular with rest of the vitals normal. A firm hard, non tender, immobile swelling of size 15*12 cm² on the right side of neck was present Figure 1. Mouth opening was adequate with Mallampati Classification Class II but the neck flexion and extension were restricted due to the huge mass. His systemic examination were normal with Waddling gait with power being 5/5 in all four limbs.

All routine investigations were normal, Echocardiography suggestive of Mild concentric left ventricular hypertrophy with degenerative changes of

* Corresponding author.

E-mail address: ut.chinnu@gmail.com (U. P. Bhojane).



Fig. 1: Right sided Neck mass of approximately 15*12 cm²

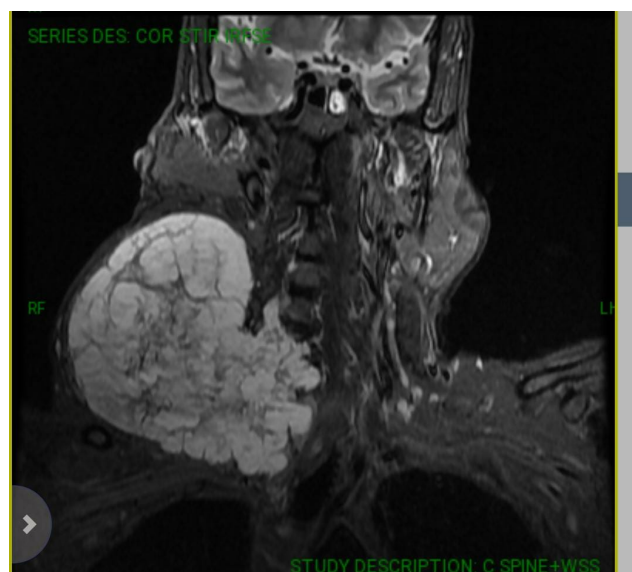


Fig. 2: CT showing mass arising from cervical spine

aortic and mitral valve, Grade 1 diastolic dysfunction. Chest Radiography showed deviation of the trachea to the left. Indirect laryngoscopy was done, suggestive of left sided deviation of larynx with bilateral cords mobile and edematous. Computed tomographs (CT) of neck and thorax said neoplastic bone origin lesion arising from C5-C6 vertebral body likely suggestive of Chondrosarcoma. Figure 2 Medially the lesion is extending into right prevertebral retro laryngeal space at C3-C5 vertebral levels and causing resultant laryngeal and subglottic airway luminal narrowing at same level, narrowest being at C5 level. FDG PET scan showed dense calcification of Right side of neck with destruction of cervical 5th & 6th vertebrae with size of the mass being 11.9*12.13*14.13 cm³. Histopathology FNAC report said neoplastic lesion with Cartilaginous tumors/Chondroma.

Comprehensive contingency plan was developed as it was difficult approach for both the anesthetist and surgeon. Anatomical distortion made the airway difficult and challenging to the anesthetist and bone involvement with extension to the vascular bed for the surgeon. A written informed high risk anesthetic consent for difficult airway, blood loss and postoperative mechanical ventilation in ICU was taken. Psychological preparation was done which involved procedural information, postoperative pain and length of postoperative stay in the Intensive Care Unit (ICU). Preoperative fasting hours were confirmed, ICU bed with ventilatory support was kept ready, adequate blood and blood products were reserved. Preoperatively, nebulization with Lignocaine 4% 2cc for awake fiberoptic intubation (FOI) and premedication with Inj Hydrocortisone 100mg and Inj Dexamethasone 8mg was done.

The patient was taken in the Operation Theater, difficult airway cart, with McCoy laryngoscope, Video laryngoscope, Airtraq laryngoscope, Fiberoptic preparation with Endotracheal tubes of all sizes ranging from 6 to 8.5

were kept ready. All emergency equipment and drugs were kept ready. All the standard monitors ECG, Pulse oximeter, Noninvasive Blood pressure was attached. A wide bore catheter (16G) was taken. Premedication was done with Inj. Glycopyrrolate 0.2mg (antisialagogue), Inj. Midazolam 1mg (anxiolytic) Inj. Ondansetron 4mg (antiemetic), Inj Fentanyl 40 mcg (analgesia) IV. The right radial artery & Left femoral vein with triple lumen catheter were cannulated. Foleys catheterization was done. Fluid warmer and Compression stockings were used.

Proper positioning for FOI with right tilt to the table was given. Superior laryngeal nerve block with assistance was given with Lignocaine 2% 2cc bilateral and transtracheal block with Lignocaine 2% 2cc. After placement of xylometazoline drops, nasal passages were lubricated. The nasal patency was confirmed and continuous oxygen was going on through contralateral nostril with Bains circuit connected to nasal airway. Nasal FOI was guided and on visualization of glottic opening 2 puffs of 10% Lignocaine were given and ETT no 8 cuffed guided through it. During FOI we could see the mucosal edema on lateral sides, distorted anatomy and deviation of trachea to the left Figure 3. No deterioration in hemodynamics, saturation or difficulty in delivering Positive pressure ventilation was seen on giving Inj Propofol 100m, air entry was bilaterally equal on auscultation and confirmed with Etco₂, so muscle relaxant Inj Vecuronium 5mg was given. Ryle's tube no 14 and temperature probe was inserted. Throat packing was done. The patient was stable during the procedure. (Figure 4)

The patient was maintained with sevoflurane, nitrous oxide on Volume control mode with Volume- 400ml, Respiratory rate – 12/min, Peak pressure being – 12-

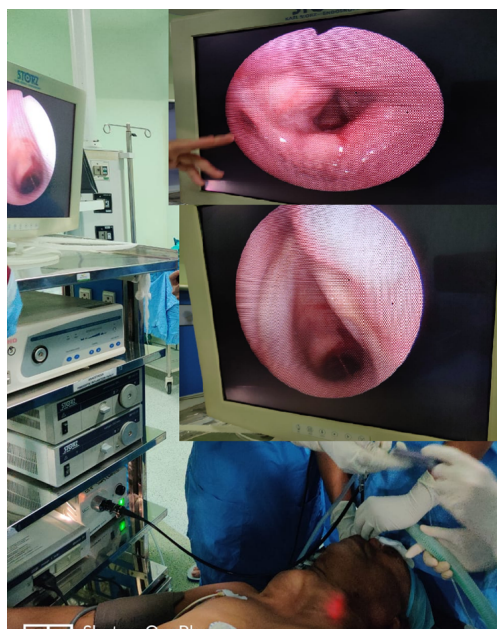


Fig. 3: Distorted anatomy with tracheal deviation towards left



Fig. 4: Intraoperative parameters

14mmHg. For analgesia, we gave Inj Fentanyl 100 mcg IV in titrated doses, IV paracetamol 1gm was given. Anticipating blood loss we gave Inj Tranexamic acid loading dose 1gm, followed by maintenance infusion 100mg/hour.³

Intraoperative patient had one episode of bradycardia (HR < 20% baseline) which was treated with anticholinergic Inj Glycopyrrolate 0.2mg IV. The intraoperative blood loss was replaced with two Packed Cell Volume (PCV) and two Fresh Frozen Plasma (FFP). The serum calcium was 8.2 which was slightly on lower side and considering the reduction in its level after blood transfusion we gave Inj Calcium gluconate 10% 10ml over 10 mins.⁴ Mid Blood

transfusion Inj Lasix 10mg was given.

The surgeon excised the tumor, then the spine surgeon took over and did Anterior Cervical Discectomy and Fusion (ACDF) with bone grafting. Bone graft was taken from right iliac crest and plating was done. The total blood loss was approximately 1000ml, Urine output-600ml, replacement was done with 4 crystalloids, 1 colloid, 2 PCV and 1 FFP.

Considering the patient had airway edema after extensive surgery, joint decision was taken by surgeon and anesthetist to ventilate the patient postoperatively in Surgical ICU. Postoperative all labs were sent and ABG was done. Adequate analgesia was maintained postoperatively with Infusion of Inj. Fentanyl 0.5mcg/kg/hr and Inj Midazolam 0.03 mg/kg/hr. Postoperative Hemoglobin was 11 and serum calcium 7.6, which was corrected. After serial ABG and CPAP and T piece trial the patient was extubated smoothly on next day morning.

3. Discussion

It was huge neck mass with anatomical distortion with tracheal deviation and restricted neck movement, airway management was difficult and challenging for the anesthetist. After discussing various techniques of difficult airway management like noninvasive McCoy laryngoscope,⁵ Video laryngoscopy,⁶ Airtraq video laryngoscope⁷ (difficulty in negotiation), Fiberoptic intubation⁸ (FOI) and invasive like retrograde intubation⁹ (trauma, difficulty in retrieval of catheter), cricothyrotomy and percutaneous dilatational tracheotomy¹⁰ we decided to go for FOI.

FOI offers several advantages such as it maintains airway muscle tone and spontaneous ventilation, consideration of alternative if technique fails, obviates alignment of oropharyngeal-laryngeal axis.⁸ Correct positioning of the ETT can be confirmed with FOI, especially in distorted airway anatomy. So we choose Awake Nasal fiberoptic intubation.

Stephen et al.⁸ has stated that FOI is an effective technique for establishing airway access in patients with both anticipated and unanticipated difficult airway.

The neck mass being long standing since 6 years, there were chances of having tracheomalacia, FOI has added advantage as it being the diagnostic test for tracheomalacia.¹¹

Mondal et al. has studied that dexmedetomidine and fentanyl provides better intubation conditions, sedation along with hemodynamic stability and less desaturation during Awake Fiberoptic intubation (AFOI) (dexmedetomidine>fentanyl).¹² As our patient was Hypertensive on beta blockers with heart rate on lower side we preferred Fentanyl, being cardiostable and potent analgesic agent.

Nasal FOI has been shown to produce the least cervical spine displacement comparing multiple airway techniques, including face mask ventilation, laryngeal mask airway

insertion and direct laryngoscopy.¹³

Spontaneous respiration preserves the negative intrapleural pressure which maintains the airway diameter awake FOI was chosen.¹⁴

Position changes help to relieve the mass effect on tumors.¹⁵ Induction was done on table, which enabled immediate changes in patient's position. The right tilt was given during FOI to decrease tumor related compression pressure.

As CT scan showed narrowing of trachea with the narrowest being at C5 and due to distorted anatomy and unanticipated further narrowing we decided to go for smaller size tube of no 8. Shigeki et al. had concluded that Tracheal diameter measured by X-ray (TD-XP) and Tracheal diameter measured by Computed Tomography (TD-CT) does not correlate with age, height, weight, or BMI.¹⁶ So we included even smaller size tubes in the preparation. Throughout the procedure of FOI, our patient was cooperative and maintained the saturation which was the combined effects of proper preoperative evaluation and planning.

4. Conclusion

Comprehensive preoperative anaesthesia evaluation including image studies, acquisition of skills in the FOI with proper positioning with right tilt and multidisciplinary team approach necessitates in successful management of case of huge neck mass. Besides, the difficult airway scenario, anticipating massive blood loss, intraoperative hemodynamic monitoring and postoperative care was also important in this patient for safer and affirmative outcome.

5. Source of Funding

None.

6. Conflict of Interest

The authors declare no conflict of interest.

References

1. Katonis P, Alpentaki K, Michail K, Lianoudakis S, Christoforakis Z, Tzanakakis G, et al. Spinal Chondrosarcoma: A Review. *Sarcoma*. 2011;2011:378957. doi:10.1155/2011/378957.
2. Kulkarni KS, Karnik PP, Dave NM, Agrawal B. Radiological images through an anaesthesiologists' looking glass: Airway management in cervical lipomatosis in an infant. *Indian J Anaesth*. 2017;61:846–7.
3. Anderson MR, Jeng CL, Wittig JC, Rosenblatt MA. Anesthesia for patients undergoing orthopedic oncologic surgeries. *J Clin Anesth*. 2010;22(7):565–72.
4. Maxwell MJ, Wilson MJA. Complications of blood transfusion. *Continuing Educ Anaesth Crit Care Pain*. 2006;6(6):225–9.
5. Yeh L, Chen SH, Tan PH, Liu PH, Hsieh SW, Hung KC. Difficult fiber-optic intubation in a patient with giant neck masses: The role of McCoy laryngoscope in elevating compressed laryngeal aperture. *Acta Anaesthesiol Taiwanica*. 2021;51(4):180–3.
6. Wasem S, Roewer N, Lange M. Videolaryngoscopy for endotracheal intubation - new developments in difficult airway management. *Anesthesiol Intensivmed Notfallmed Schmerzther*. 2009;44(7-8):502–8.
7. Pascual MC, Batllori M, Gómez-Ayechu M, Iza M, Unzué P, Martín MP, et al. Airtraq optical laryngoscopy. *An Sist Sanit Navar*. 2009;32(1):75–83.
8. Collins SR, Blank RS. Fiberoptic Intubation: An Overview and Update. *Respir Care*. 2014;59(6):865–80.
9. Bagam KR, Murthy S, Vikramaditya C, Jagadeesh V. Retrograde intubation: An alternative in difficult airway management in the absence of a fiberoptic laryngoscope. *Indian J Anaesth*. 2010;54(6):585.
10. Besheya BN, Helmy TA, Asaad HS, Ibrahim EEM. Emergency percutaneous tracheotomy in failed intubation. *Egypt J Chest Dis Tuberc*. 2014;63(4):939–45.
11. Tripathi D, Kumari I. Tracheomalacia: A Rare Complication after Thyroidectomy. *Indian J Anaesth*. 2008;52:328–30.
12. Mondal S, Ghosh S, Bhattacharya S, Choudhury B, Mallick S, Prasad A. Comparison between dexmedetomidine and fentanyl on intubation conditions during awake fiberoptic bronchoscopy: A randomized double-blind prospective study. *J Anaesthesiol Clin Pharmacol*. 2015;31(2):212–6.
13. Brimacombe J, Keller C, Künzel KH. Cervical spine motion during airway management: a cinefluoroscopic study of the posteriorly destabilized third cervical vertebrae in human cadavers. *Anesth Analg*. 2000;91:1274–8.
14. Sibert KS, Biondi JW, Hirsch NP. Spontaneous respiration during thoracotomy in a patient with a mediastinal mass. *Anesth Analg*. 1987;66:904–7.
15. Choi WJ, Kim YH, Mok JM, Choi SI, Kim HS. Patient repositioning and the amelioration of airway obstruction by an anterior mediastinal tumor during general anesthesia-A case report. *Korean J Anesthesiol*. 2010;59:206–9.
16. Sakuraba S, Serita R, Kuribayashi J, Kosugi S, Arisaka H, Yoshida K. Comparison of Tracheal Diameter Measured by Chest X-Ray and by Computed Tomography. *Anesthesiol Res Pract*. 2010;doi:10.1155/2010/269171.

Author biography

Jyoti P Deshpande, Professor

Akshay M Salunke, Assistant Professor

Noopur D Singh, Professor

Utkarsha P Bhojane, Post Graduate Student  <https://orcid.org/0000-0002-6944-4465>

Cite this article: Deshpande JP, Salunke AM, Singh ND, Bhojane UP. Anaesthesia management of a case of huge neck mass due to cervical spine chondrosarcoma with distorted anatomy. *Indian J Clin Anaesth* 2021;8(4):600-603.