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Anaesthesiology

A RARE CASE OF AMELOBLASTOMA OF RIGHT HEMIMANDIBLE FOR EXCISION AND RECONSTRUCTION OF MANDIBLE USING FREE FIBULAR GRAFT- ANAESTHETIC MANAGEMENT

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ABSTRACT Ameloblastoma is a benign tumour of the cells of odontogenic epithelium; most commomly affecting the jaw and is most commomly cystic, slow growing but locally invasive.1 They are recognized for their invasive growth and due to the tendency to recur. Reconstruction procedures are usually prolonged and require meticulous attention to fluid replacement, blood loss, and prevention of hypothermia. 2 Hence they present a challenge to the anaesthesiologist.

KEYWORDS : .

CASE DETAILS:

A 27 yr old male, weighing 70 kg, came to the dental outpatient department with complaints of a visible swelling over right side of the face. It grew to the current size; then of 12 cm by 4cm by 3 cm, which grew over period of 5 months. Initially it was just intraoral but was now visible extraorally too. Patient was found to be an asthmatic since 3 – 4 years and used rotahaler whenever needed; last episode around 1 yr back. His past surgical history was unremarkable. Family and personal histories were non-contributory. The general and systemic physical examination was within normal limits. Upon examining the airway, his mouth opening was asymmetrical, but adequate. He was a grade III on Mallampatti classification, with no loose teeth, short neck and a heavy jaw. On local examination of the swelling, it was a firm, tender swelling, extending from the angle of the mouth to the angle of mandible. CT scan and later biopsy revealed it to be an ameloblastoma of the cystic variety.

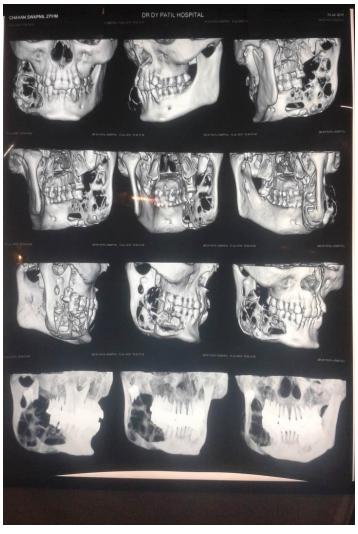

Fig. 1 CT SCAN OF THE PATIENT SHOWING THE GROWTH

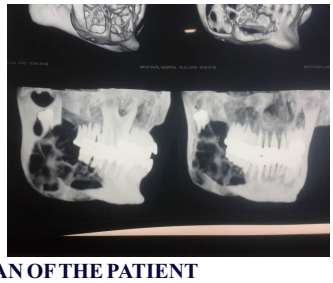

FIG. 2 CT SCAN OF THE PATIENT

Routine investigations came to be normal with Hb of 12.2 and platelets 2.4 lakh/cumm and coagulation profile within normal limits. Patient underwent a thorough pre-anaesthetic check-up. After classifying him as an ASA III patient, we posted him as an elective case with adequate blood booked and with high risk, SICU and ventilator consent.

Patient was kept nil by mouth for 6 hrs prior to surgery. On the operation theatre table, all monitors were attached including a pulse oximeter, ECG and non invasive blood pressure monitor was attached, two iv access 20 G were taken on both hands and colloid (Voluven) was started through one and DNS on the other side.

Patient was then administered with pre- anaesthetic medications including Inj. Glyco 0.004mg/kg, inj. Midazolam 0.02 mg/kg, Inj. Ondansetron 0.1mg/kg, Inj Metoclopromide 24.6 mg, Inj. Fentanyl 200 mcg, Inj. Deriphylline 1 amp, and Inj. Hydrocortisone 100 mg. He was then induced using Inj. Propofol 2mg/kg and then Inj. Scoline 100mg was given. Patient was pre oxygenated with 100% oxygen and was intubated with RAE (northpole) ET tube 7.5 mm nasally, through the right nostril. Bilateral air entry was confirmed on auscultation. Cuff was inflated and tube was safely secured. Throat packing was done and Ryle's tube no. 14 was put through the other nostril.

Patient was mainatained on O2: N2O(50:50) , and sevoflurane at 1.5 initially on IIPV by Bain's circuit, later on volume control with tidal volume 500 ml, respiratory rate 14/ min, PEEP 19. Inj. Vecuronium 0.1mg/kg was given and later top ups of 0.05 mg/kg were given every 45- 50 min.

Exposed body parts were covered with polyethylene surgical drapes and sterile cloth drapes and gamgees to prevent hypothermia. The patient was infused with warm fluids; crystalloids 6ml/kg/hr and colloid(hydoxyethyl startch: Voluven) at 10ml/kg.2500ml of crystalloids and 1500 ml of colloids were given throughout the case of 13 hours, with urine output of 2 litres. Estimated fluid requirement with the blood loss came up to 1170 ml. The duration of anaesthesia was 13 hrs and 30 min; with blood loss of around 650 ml. The excised tumour measured around 12 cm by 4cm by 3cm.

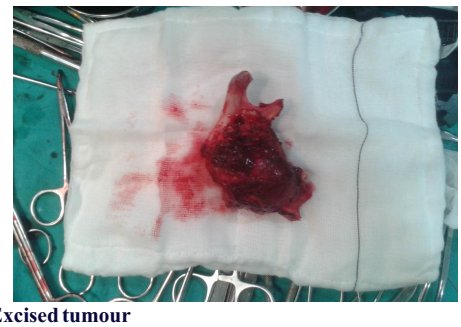

Fig. 4 Excised tumour

Tourniquet time was 1 hour and ischaemia time of 2hrs. Analgesia in form of Inj. Midaz 1 mg and Inj. Fentanyl 50 mcg was repeated prior to raising of free fibular graft.

Inj. Dexmedetomidine 50mcg in 500ml RL was given over 2-3 hours to maintain pulse around 70- 80/ min and blood pressure around 90/ 60 mm Hg.

Inj. Fentanyl 50 mcg was repeated prior to anastomosis of graft to the host tissue.

Inj. Diclofenac 75 mg was given at the time of second anastomosis.

Inj. Tramadol 50 mg was given at the time of third anastomosis.

Inj. Enoxaparin 40 mcg was given subcutaneously and Inj. Dextran at the rate of 30 micodrops / min was started after completion of anastomosis; to maintain the graft patency.

Inj. Butraphenol 5ml was given just prior to the beginning of closure of the mandible and was repeated after closure; prior to shifting of the patient to the SICU.

Intraoperative BSL was 112 mg/dl after half of the operating time. Patient maintained pulse in the range of 70-80/min, blood pressure around 90-100 mm Hg systolic, 60-70 mmHg diastolic, spO2 99-100% throughout the surgery.

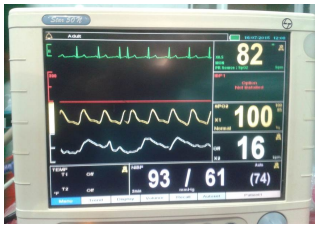

Fig. 5 Intraoperative monitoring of vitals

Throat pack was removed prior to shifting the patient to the SICU. Patient was electively ventilated for 24 hours with Inj. Midaz for sedation and Inj. Vecuronium for neuromuscular paralysis. He was extubated successfully the next morning after reversal of neuromuscular blockade and thorough endotracheal and oral suctioning. Vitals were stable, reflexes were present, response was good, saturation was 100% on room air.

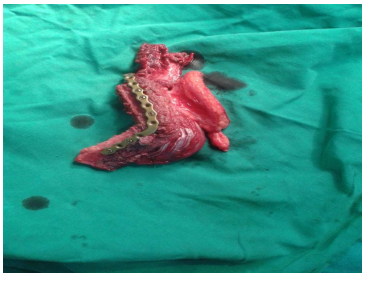

Fig. 6 Free Fibular Graft

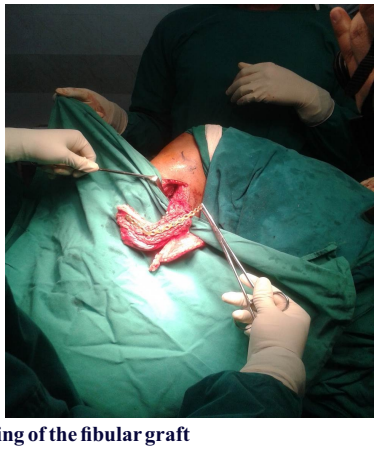

Fig. 7 Raising of the fibular graft

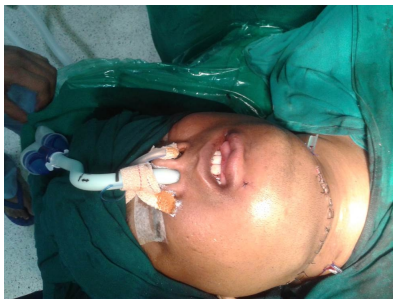

Fig. 8 Post operative picture of the patient after grafting

DISCUSSION:

Ameloblastoma, previously called adamantinoma, is a benign, epithelial, locally-invasive, odontogenic tumour that grows slowly and persistently. The tumour is relatively uncommon, accounting for approximately 1% of all oral tumours. [3] It occurs in all age groups but the lesion is most commonly diagnosed in the third and fourth decades. It typically occurs in tooth-bearing areas of the jaws and appears on X-ray as a cystic lesion. The tumour shows a marked predilection for the mandible with a preponderance that could be as high as 99.1%. [4] Approximately 17% of the tumours reported are associated with an impacted tooth and a follicular (dentigerous) cyst.[5] There is an early spread to paranasal sinuses, the pterygomaxillary fissure, infratemporal fossa and nasal cavity.

Intracranial or orbital invasion may be associated with ameloblastoma. Reports from Nigeria found that the lesions are frequently gigantic and often cause severe grotesque disfigurement. [6, 7] Treatment options include both radical and conservative surgical excision, curettage, chemical and electrocautery, radiation therapy or a combination of surgery and radiation. The prognosis for patients afflicted with this form of neoplastic disease is favourable. [8] Excision of the tumor leaves a defect in the mandible. Primary repair of mandibular defects is widely accepted. [9] Pedicle as well as free osteocutaneous flaps have been used to reconstruct mandibular defects. [10] In our case, a free fibular osteocutaneous graft was used.

Large ameloblastoma can distort the facial contour and make mask ventilation difficult. If the tumour occupies a large part of the oral cavity or severe trismus is present, it may be impossible to insert a laryngoscope or oropharyngeal airway. The intraoral extension can also cause airway obstruction and difficulty in visualizing the glottis. As the tumor size was small and there were no signs of airway obstruction, we induced the patient first with i.v. anaesthetic agents. Direct laryngoscopy can cause airway trauma and bleeding but as the mouth opening was adequate and the tumour was not very large and since it was oral surgery; we attempted nasotracheal intubation with direct laryngoscopy. Other techniques include blind nasal intubation, fibreoptic awake intubation, transtracheal jet ventilation.

As free flap mandibular reconstruction is a long procedure, prevention of hypothermia and fluid management is of paramount importance. In our case, use of polyethylene surgical drapes, sterile cloth drapes and warm gamgees prevented hypothermia in the patient which is an economical alternative to an electrical heating mattress. Infusion of 6% hydroxyethyl starch caused hemodilution and reduced intraoperative and postoperative blood loss; with no need to give intraoperative or postoperative blood transfusion.

Inj. Dexmedetomedine for adequate analgesia and maintainance of the depth of anaesthesia with timely given doses of a combination of analgesics using NSAIDS and opiods helped maintaining the vitals within the desired range as required for the vascular part of the surgery. Also epidural analgesia or spinal anaesthesia with general anaesthesia for the same have also been tried with good results. We proceeded with only general anaesthesia to save induction and anaesthesia time and also to prevent post spinal hypotension.

At the end of surgery, prior to reversal, the oral cavity should be cleared of blood and secretions. The postoperative presence of airway oedema can cause airway obstruction and, in such situations, it may be prudent to leave the endotracheal tube in place. Also, care must be taken to ensure that patient is fully awake. Before extubation, the patient should be alert and extubation should be done only when all of the airway

protective reflexes have returned to normal. Hence we decided to electively ventilate our patient overnight and we extubated him the next day only after he was fully awake and responsive.

Thorough pre-anaesthetic workup, adequate depth of anaesthesia, sufficient analgesia, elective post operative ventilation, alert monitoring and prompt extubation; helped maintain stable intraoperative vitals with an excellent postoperative result.

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3. Dr. Anil Dhole, Intensivist, Surgical Intensive Care Unit, Dr. D Y Patil Medical College, Pimpri, Pune.

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