

# CASE REPORT

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## ANAESTHETIC MANAGEMENT OF A PATIENT WITH COMPLICATED MALIGNANT OTITIS EXTERNA, VOCAL CORD PALSY AND MULTIPLE LEVEL INTERVERTEBRAL DISC PROLAPSE

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**ABSTRACT:** An elderly male patient with Malignant Otitis Externa (MOE) and Polyneuritis Cranialis Multiplex (PCM) presented with chronic osteomyelitis of left foot for Ilizarov application. This case represents a classic case of MOE with significant complications. Intra cranially VI, VII, VIII, IX and X cranial nerves were involved and the patient had intervertebral disc prolapse in the cervical and lumbar region with right vocal cord palsy. Considering multiple cranial nerve palsies and multiple lumbar intervertebral disc prolapses we preferred peripheral nerve block for the surgery. This case was successfully managed with ultrasound guided (USG) popliteal nerve and femoral nerve block.

**KEY-WORDS:** Malignant Otitis Externa, Polyneuritis Cranialis Multiplex, ultrasound guided nerve block

**INTRODUCTION:** MOE is a rare, life threatening complication commonly seen in long standing diabetics. It results from spread of infection from external auditory canal to the skull base. In the advanced stage it affects multiple cranial nerves, temporomandibular joint, parapharyngeal space and meninges. Here we report a case of MOE with PCM who underwent lower extremity Ilizarov application under USG guided popliteal and femoral nerve block.

**CASE REPORT:** A 64 yr old male patient was admitted with history of dysphagia, diplopia, hoarseness of voice and non healing ulcer over the left foot. Previously he underwent right mastoidectomy and debridement of skull base granulation tissue. He was a known diabetic and hypertensive for the last 20yrs for which he was on antihypertensives and oral hypoglycemic agents. On examination, the patient was afebrile, conscious, oriented and haemodynamically stable.

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Neurological examination revealed right eye diplopia, right upper motor neuron(UMN) facial palsy, right conductive deafness with absent gag reflex corresponding to VI,VII, VIII, IX and X nerve palsy. The muscle power was 4/5 in both upper and lower limbs with intact deep tendon reflexes. Sensory system was apparently normal and no cerebellar signs. Airway examination revealed bilateral subluxation of temporomandibular joint (TMJ) with mild restriction of neck extension.

Indirect laryngoscopy revealed right vocal cord palsy and edema of vocal cords involving arytenoid cartilages. Computerized tomography (CT) brain with contrast showed communication between right middle ear cavity and middle cranial fossa with skull base destruction involving anterior arch of C1 vertebrae.MRI spine showed diffuse disc bulge at C5-C6, L3-L4, L4-L5 and L5-S1 level with posterior annular tear indenting thecal sac anteriorly at L4-L5 level. Open mouth cervical spine X ray showed cervical spondylosis with C5-C6 disc disease.

Nerve conduction study showed prolonged latency, reduced amplitude and conduction velocity of left common peroneal nerve and bilateral tibial nerve. On sensory conduction study, there was absent sensory nerve action potential (SNAP) seen in both sural nerves.CSF examination showed raised glucose and protein levels and culture sensitivity showed no growth. Wound culture showed growth of *S. aureus* for which IV ceftriaxone was started. Electrocardiography, echocardiography and haematological and biochemical investigations were normal. Biochemical investigations revealed creatinine of 1.4 mg%, blood urea 12 mg% and potassium of 4.5meq/L

He was diagnosed to have PCM secondary to MOE with chronic osteomyelitis of left foot. He was scheduled to undergo Ray's amputation of 4<sup>th</sup> and 5<sup>th</sup> digit with Ilizarov application to left lower limb. Preoperatively, the patient was commenced on maintenance intravenous dextrose normal saline with insulin and a tight glycemic control was established. In view of PCM, right vocal cord palsy and intervertebral disc prolapse of multiple lumbar segments anaesthetic plan was USG guided popliteal and femoral nerve block. Consent was also obtained for caudal epidural anaesthesia as the second plan in case the USG guided popliteal and femoral nerve block failed. The patient was explained about his diabetic neuropathy status and written anaesthetic consent obtained. The patient was kept nil per orally for 6 hours and premedicated with Ondansetron 4mg and Pantoprazole 40 mg 60 minutes prior to the surgery. Before the procedure, the patient received IV midazolam 1 mg and fentanyl 25 µg and supplemental oxygen administered via face mask. In the theatre patient was positioned in the right lateral position. After local anaesthetic infiltration, the stimuplex needle tip was correctly placed near popliteal nerve under USG guidance and 20cc of 0.375% ropivacaine with 90ug clonidine was injected (Fig 1) around the nerve. The femoral nerve was identified in supine position with USG guidance 15cc of 0.375%ropivacaine was administered. The surgery commenced after loss of pin prick and cold sensation, and lasted for 1hr. Intraoperative blood sugars was controlled with intravenous insulin as per sliding scale. Postoperatively the patient received IV paracetamol for analgesia.

**DISCUSSION:** MOE is a term first coined by JR Chandler in 1968 to describe the severity of the infection of external auditory canal<sup>1</sup>. It is also known as necrotizing otitis externa or skull base osteomyelitis.PCM is a rare and serious complication of malignant otitis externa (MOE)<sup>2</sup>. This is commonly seen in diabetic and elderly patients. In non diabetic patients it usually affects immunocompromised patients secondary to malignancy, HIV, malnutrition and chemotherapy. *Pseudomonas aeruginosa* are most common cause of MOE followed by *S. Aureus* and fungal

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infection<sup>2</sup>. Such patients needing various surgeries may require special consideration while planning anaesthesia.

MOE results from spread of infection from external auditory canal to skull base. Skull base osteomyelitis with intracranial spread has a significant morbidity and mortality rate. Intracranial complications consist of multiple cranial neuropathy, cerebral abscess, dural sinus thrombosis and meningitis<sup>2, 3</sup>. Neurotoxin released by microorganisms and subsequent skull base inflammation is proposed mechanism behind cranial neuropathy<sup>4</sup>. Incidence of PCM has been shown to be 43.5% in the patients with MOE<sup>5</sup>. The most commonest nerve involved is VII nerve at the stylomastoid foramen. As the infection spreads to the apex of petrous bone V and VI nerves are affected while IX, X, X nerve are affected via the jugular foramen. Except for 1<sup>st</sup> cranial nerve all nerves can be affected<sup>3</sup>. In advanced stage even contralateral nerves can get affected<sup>6</sup>. Saha et al reported a case of MOE with PCM who required thyroplasty for vocal cord to control chronic aspiration and to improve quality of voice. Septic thrombosis of internal jugular vein and carotid artery can lead to meningitis and cerebral infarction respectively<sup>7</sup>.

Extracranial complications are seen due to the spread of infection to the cervical spine, nasopharynx, carotid canal and TMJ. The incidence of TMJ involvement has been shown to be 14% and represents resistant disease process<sup>8,9</sup>. The TMJ osteomyelitis is a very rare complication of MOE which lead to abscess formation, subluxation<sup>10</sup> and in extreme case destruction of mandibular condyle<sup>7,8</sup>. It may require surgical debridement of TMJ<sup>11</sup> and correction with prosthesis. Dobbyn et al reported a case where MOE had invaded right TMJ which required replacement of glenoid fossa with a Silastic prosthesis<sup>12</sup>. CT scan remains the initial investigation of choice to define anatomical extension and soft tissue involvement of the disease. MRI, Technetium 99, Gallium 67 scintigraphy can give additional information about disease progress<sup>2</sup>.

Our case represents a classic case of MOE with intracranial and extracranial complications. Such patients are potential challenges for anesthesiologists. To our knowledge there is no literature providing information about anaesthetic considerations in such set of patients. In our patient we preferred peripheral regional block since it was a lower limb surgery. We avoided general anaesthesia as well as central neuraxial block since patient had various problems related to MOE, in addition to multiple level intervertebral disc disease. In the patients requiring general anaesthesia special consideration should be given to preoperative evaluation of airway. TMJ and cervical spine involvement should be ruled out with necessary radiological evaluation. Pharyngeal cellulitis, edematous airway, vocal cord palsy, loss of gag reflex is areas of concern while securing the airway.

Our patient had VI, VII, VIII, IX and X cranial nerve palsies with no signs of active intracranial infection. Although CT scan revealed erosion of the mandibular condyle, symptoms of TM joint osteomyelitis such as tenderness, masseter spasm were absent. He had right recurrent laryngeal nerve palsy, loss of gag reflex which are potential challenges for securing the airway under general anaesthesia. Skull base osteomyelitis had involved C1 vertebrae in addition to C5-C6 disc disease which will need special attention during airway manipulation. Joseph A. first reported a case of MOE causing destruction of upper cervical vertebrae. Cervical spine involvement may occur through surrounding skull base osteomyelitis or via anterior longitudinal ligaments of vertebrae<sup>13</sup>. Yaeun Suh reported a case where MOE resulted in odontoid destruction and spondylo discitis and fusion of C5-6 vertebrae resulting from haematogenous spread of infection<sup>14</sup>. USG guided popliteal nerve block seems to be the best choice for providing anaesthesia for these cases.

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Peripheral nerve block causes least systemic haemodynamic changes and provides good postoperative pain relief. USG improves efficacy of the block by direct visualization of nerve, spread of local anaesthetic simultaneously reducing dose of drug<sup>15</sup>.

**CONCLUSION:** In the present case, the patient had MOE with PCM involving cervical spine and intervertebral disc prolapse of multiple segments. We managed this case successfully with USG guided popliteal nerve and femoral nerve block. In such patients when general anaesthesia or central neuraxial block is necessary thorough workup with multidisciplinary approach is mandatory.

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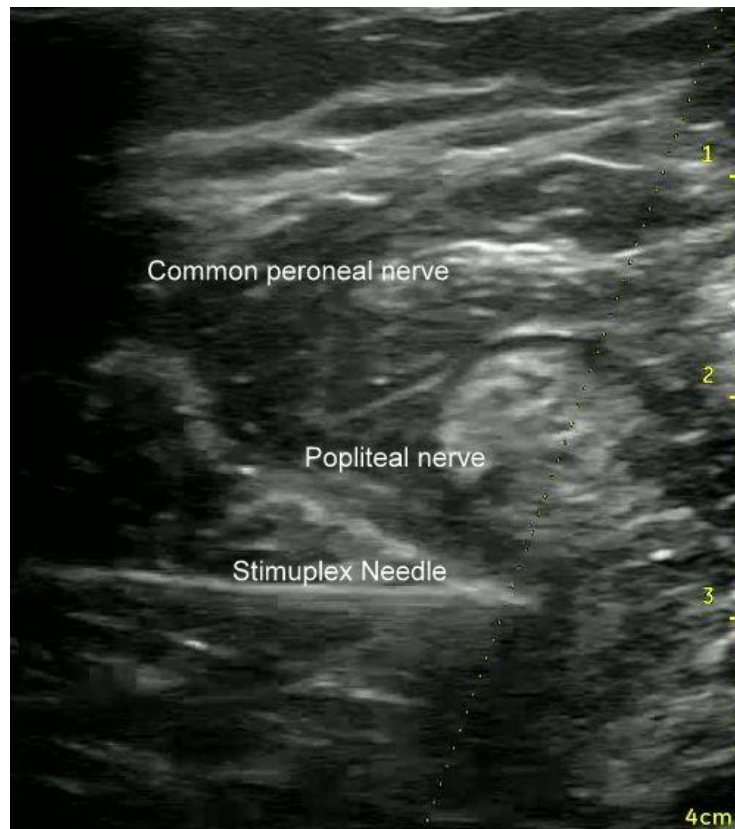


Fig-1 Popliteal Nerve block being performed under Ultrasound Guidance