Adenoidectomy is one of the most common procedures performed today. The indications in children include obstructive adenoids, recurrent or chronic sinusitis, recurrent or chronic otitis, and chronic adenoiditis. The adenoids enlarge during early childhood to a maximum size around 5-7 years of age, and then are expected to shrink to an asymptomatic size. The procedure is therefore uncommonly performed in adults. Enlarged adenoidal mass in adults warrants a work-up for tumor or malignancy. Otherwise, the indications for adenoidectomy in adults are the same.

Despite the frequency with which the procedure is performed, complications are rare; the most common being post-operative bleeding, dehydration, and anesthetic risks. Complaints of sore throat, otalgia, dysphagia, and neck pain are extremely common – neck pain and stiffness can be reported in up to 10% of individuals following adenoidectomy. The challenge for the surgeon is distinguishing these complaints from rare but ominous conditions in the cervical neck.

CASE REPORT (continued)

At 6-weeks post-op, his pain had worsened considerably; a MRI neck with contrast was attempted, however the patient was unable to tolerate lying flat. He was treated with Augmentin and steroids, and responded initially with marked improvement in symptoms, therefore a planned MRI with sedation was postponed. However, at 8-weeks post-op the symptoms had considerably worsened again, and he began to have fevers and chills. On exam, his nasopharynx was covered with mucopurulence, which was debrided. On the posterior nasopharyngeal wall, a small abscess cavity was unroofed and drained and cultures collected. He was admitted to the hospital and started on IV fluoroquinolone antibiotics and steroids. A cervical spine MRI with gadolinium demonstrated an extensive pre- and peri- vertebral phlegmon from the skull base to C2-C3, with epidural extension by the C1-C2 neural canal without impingement on the cord. A subsequent CT neck with contrast and cervical MRI with gadolinium four-days later demonstrated worsening ventral and left lateral epidural abscesses with cord effacement, and C1 and C2 vertebral body changes representing osteomyelitis (Figures 1 and 2).

Cultures grew mixed resistant organisms, and he was treated with vancomycin and ampicillin-sulbactam. He did not demonstrate any neurologic signs of cord compromise at any time, and neurosurgery decided that any surgical intervention for the epidural abscess posed an unacceptable risk of morbidity. The patient underwent serial nasopharyngeal debridement, and a drainage pathway for the infection remained patent.

His symptoms of pain and cervical motion began to improve, and an MRI 2-weeks later showed a decrease in size of the process. He was continued on 9-weeks of IV antibiotic therapy with tigecycline, and then switched to amoxicillin + Augmentin + doxycycline oral antibiotics for an additional 8-weeks. At follow-up 1 year later, he was doing well without complaint of pain or neck motion limitation. His nasal obstruction was also resolved.

Cervical complications of adenoidectomy are extremely rare, and include Grisel’s syndrome, subcutaneous emphysema, necrotizing fasciitis, and cervical osteomyelitis. These are frequently heralded by persistent severe neck pain and torticollis. In this case report, we describe what is to our knowledge the 2nd report of osteomyelitis following adenoidectomy, and the first report of an accompanying epidural abscess. Cervical osteomyelitis can be seen following tonsillolith and a number of other procedures, and also in association with trauma or distant infections.

The proposed mechanisms for development of cervical osteomyelitis include hematogenous spread, direct extension via valveless veins or lymph vessels, direct surgical inoculation, or direct spread of soft tissue infection. While any of these mechanisms are possible in this case, direct surgical disruption of the prevertebral space was not observed, and a soft tissue infection or abscess was only seen very late in the process. Given the proximity of the osteomyelitis to the surgical site, a direct extension mechanism rather than distant hematogenous spread is more likely. Therefore, the most likely mechanism is extension of the bacterial infection via venous drainage. Numerous venous tributaries drain the posterior superior region of the nasopharynx. Pharyngovertebral veins cross the prevertebral fascia and drain into the peri-odontoid plexuses, ultimately emptying into the upper cervical epidural venous sinuses, and is proposed as a possible pathway for the spread of inflammation from the pharynx to the vertebral column. This mechanism is possibly the major determinant of cervico-vertebral infection seen in association with many types of head and neck infections or procedures, which leads to Grisel’s syndrome or infection in the extreme.

The physical exam findings of persistent neck pain and stiffness, though common after adenoidectomy, warrants further investigation, which ideally is MRI or CT with enhancement, or at a minimum a cervical x-ray series including AP, lateral, flexion and extension. Early treatment with antibiotics can avert disastrous consequences, including epidural abscess, spinal cord compression, or vertebral column instability.

In summary, cervical complications from adenoidectomy (including Grisel’s syndrome, osteomyelitis, and fasciitis) are rare, but require a high-index of suspicion to successfully implement treatment early, which usually includes antibiotics amongst other interventions. The symptoms and signs of neck pain and stiffness after a procedure in the head and neck should prompt further investigation.

REFERENCES