

## Contribution of Rock Imaging in the Diagnosis of Surfer's Ear in Bamako: A Case Report

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### ABSTRACT

Surfer's ear or exostosis of the external auditory canal (EAC) is a slowly progressive disease caused by benign bone growth resulting from chronic exposure to cold water. It is uncommon, its prevalence was 6.3 per 1000 people. We report the case of a 37-year-old male subject referred by the Otorhinolaryngology department of the University Hospital Center "Gabriel TOURE" to the radiology and medical imaging department of the medical clinic "LES ETOILES" for a computed tomography (CT) scan of the petrous bones in the context of a bilateral intra-auricular mass. He had no particular history. The CT scan, performed without injection of contrast agent with axial and coronal reconstruction, had objectified a bony outgrowth at the level of the rounded bilateral tympanic bone with a wide implantation base concluding in surfer's ear. The aim of our work was to study the contribution of CT scan of rocks in the diagnostic management of surfer's ear.

### Keywords

Surfer's ear, Computed tomography, Rocks and Medical Clinic "LES ETOILES".

### Introduction

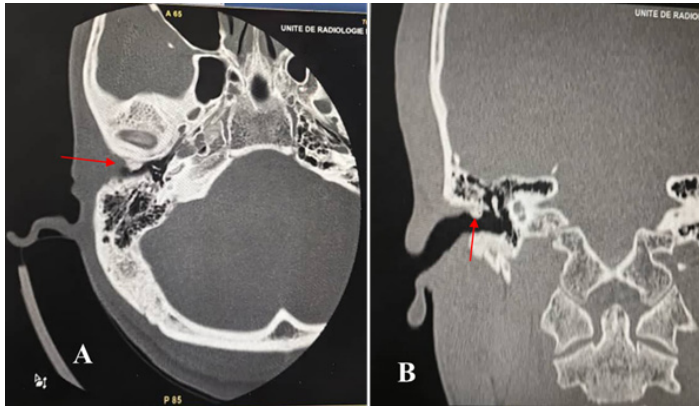
Surfer's ear or external auditory canal exostosis is a condition most commonly associated with surfing, but it can be seen in anyone with repeated exposure to cold water, such as swimmers, divers, kayakers, and participants in other marine activities [1]. Although generally asymptomatic and benign, external auditory canal exostoses can cause conductive hearing loss, recurrent otitis externa, otalgia, otorrhea, and earwax impaction [2]. In the general population, the prevalence of external auditory canal exostoses is 6.3 per 1000 people [1,3]. External auditory canal exostoses are more common in coastal areas where water exposure is common, particularly those with cooler climates and colder water temperatures [3]. Surfers are at potentially higher risk of developing exostoses [4]. Imaging, particularly CT scans of the

rocks, can help to suggest the diagnosis and, above all, assist in the surgical planning of patients [5].

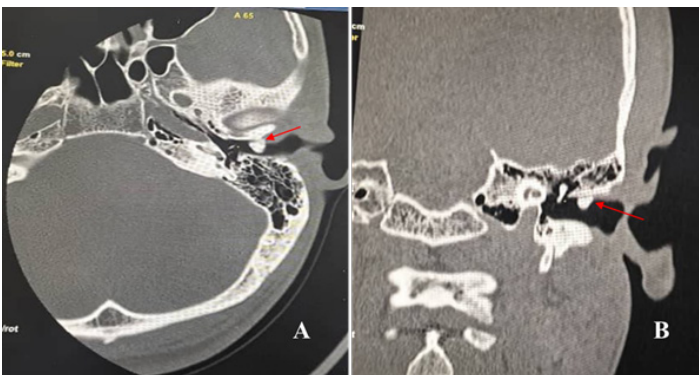
### Observation

This was a 37-year-old male patient residing in Bacodjikoroni bada in the district of Bamako (a district located on the banks of the Niger River) for more than 10 years; with no known medical or surgical history. He had consulted the Otorhinolaryngology (ENT) department of the University Hospital Center (CHU) "Gabriel TOURE" for the appearance of a progressive intra-auricular mass. The patient's profession was a worker. He was referred by the ENT department of the CHU "Gabriel TOURE" to the radiology and medical imaging department of the Medical Clinic "LES ETOILES" for a CT scan of the rocks in front of the bilateral auricular mass for the purpose of better diagnostic management. The equipment used was a GE (General Electric) multi-bar scanner of the Optima 64 Barrettes type, year 2015. It was performed in helical acquisition with millimeter slice (1 mm thick) and coronal

and axial reconstruction centered on the two rocks. This CT scan had objectified a bony outgrowth in the external auditory canal (EAC), osteocondensing, nodular with a large implantation base at the level of the tympanic bone reducing the lumen of the external auditory canal bilaterally (Figure 1 and 2). This CT aspect was suggestive of surfer's ear. The decision for surgery was made and the patient was lost to follow-up.



**Figure 1:** Axial and coronal reconstruction CT scan of the rocks without PDC injection showing a decrease in the lumen of the right EAC (A) and nodular osteocondensation of the right tympanic bone (A and B).



**Figure 2:** Axial and coronal reconstruction CT scan of the rocks without PDC injection showing a decrease in the lumen of the left EAC (A) and nodular osteocondensation of the left tympanic bone (A and B).

## Discussion

External auditory canal exostosis or surfer's disease is an uncommon benign bony tumor of the ear and can be observed in any person of any age who has been repeatedly exposed to cold water [1,4]. In our observation the subject was a young adult of 37 years, male, with no particular history (he was not a swimmer) but lived near the Niger River. External auditory canal exostoses are more common in coastal regions where exposure to water is common, particularly in those with cooler climates and colder water temperatures [3]. Our patient had lived on the banks of the Niger River for more than 10 years. External auditory canal exostosis is usually an asymptomatic disease but can have the following symptoms: conductive hearing loss, recurrent otitis externa, otalgia, otorrhea and earwax plugging [2]. Our observation had no particular symptomatology; there was no deafness or pain. The degree of obstruction of the canal caused by exostoses is generally proportional to the severity of the

symptoms [5]. There was a reduction in the lumen of the right and left EAC without real obstruction that could most likely explain the absence of symptomatology in our patient. The severity of exostoses is classified from 1 to 3 depending on the percentage of occlusion of the canal as observed on physical examination. An occlusion of less than 33% is mild (grade 1), an occlusion of 33% to 66% is moderate (grade 2), and an occlusion greater than 66% is considered severe (grade 3) [6,7]. Our observation was classified as grade 1 because the degree of stenosis was estimated at 29%, therefore less than 33%. For a more in-depth assessment, a CT scan of the external auditory canal with thin slices of less than 1 mm can be performed [6]. We used a CT scan of the petrous bones with a thin slice of one millimeter and coronal and axial reconstruction for the diagnosis and measurement of the degree of obstruction, which seemed more reproductive to us. In general, the scanner is reserved for surgical planning and is not necessary for all patients with exostosis of the external auditory canal [5]. However, CT scanning is valuable and provides better contrast resolution and is the examination of choice in the exploration of the EAC. It should be performed using thin slices (1 mm). This exploration is done without injection. The 2D sagittal reconstruction allows the study of exostoses of the EAC in the antero-posterior plane. A radiological study by scanner of the external auditory canal in both planes – coronal and axial – is useful in cases of subtotal stenosis. It allows the lesions to be located in relation to the plane of the tympanic membrane, which can help in the surgical strategy. CT scan also informs the surgeon about the state of the middle ear (otitis, cholesteatoma, etc.) and the mastoid [8,9]. In our patient, there was no otitis or mastoiditis. Radiography is of little use in the assessment of EAC exostosis and Magnetic Resonance Imaging (MRI) does not generally provide additional information [8]. The differential diagnosis of surfer's ear is made with EAC osteoma, which is also a generally unique, unilateral, pedunculated bony outgrowth on the tympanosquamous or tympanomastoid suture [8,10], lateral to the isthmus of the meatus (at the level of the osteocartilaginous junction), in the area where the skin covering is much thicker with a great vascular richness. It is accepted that osteomas do not have any contributing factors. Our patient had bilateral involvement and did not have a pedicle at the level of the exostosis. The patient went missing after a proposal for surgery, which could be explained by lack of financial means or fear of the therapeutic decision.

## Conclusion

External ear canal exostoses are benign and generally asymptomatic tumors. They can be managed medically by frequent ear cleaning to improve symptoms and prevent complications. CT is the key and first-line examination in the diagnosis of surfer's ear.

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