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RADIO "LOGICAL" REFLECTIONS

A nearly perfect sphere

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PRESENTATION OF A CLINICAL CASE

An eleven year old boy named Sofiane, was referred for treatment of a class II division 2 malocclusion with overbite, cross-bite of 14 and 26 (Fig. 1a and b). He presents signs of mouth breathing with an elongated face, dark circles under his eyes and a labial incompetence at rest (1c) along with allergies and asthma.





Figures 1 a and b
Frontal and profile intraoral views in occlusion.



Figure 1c
Frontal view of the patient's face.

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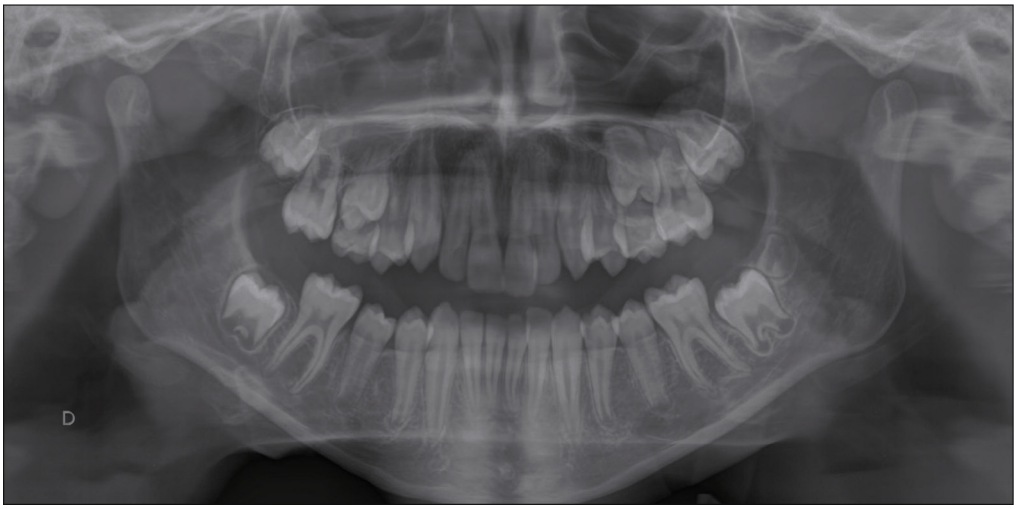


Figure 2
Digital panoramic xray before treatment.

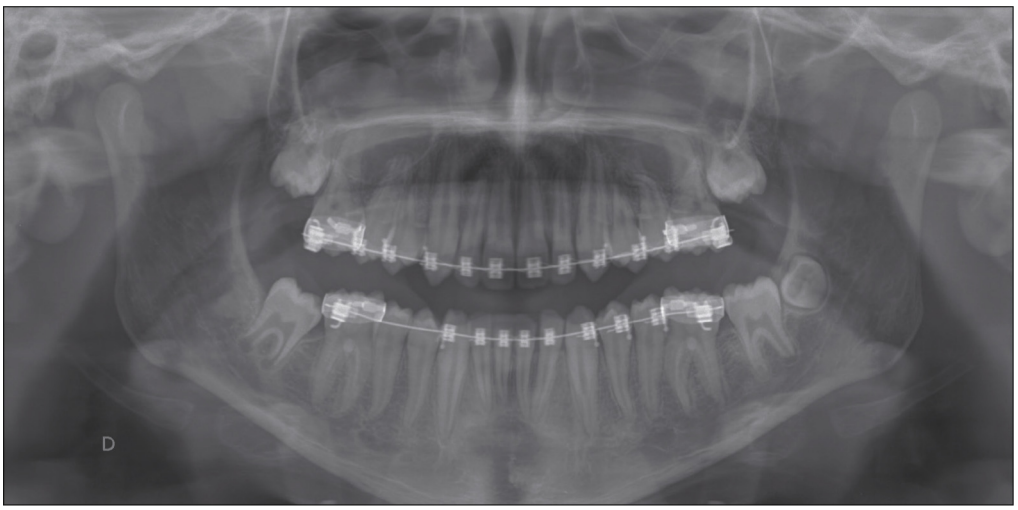


Figure 3
Digital panoramic xray during treatment.

DESCRIPTION OF THE XRAY RECORDS

The xray records consisting of two panoramic xrays (Fig. 2 and 3) and of a lateral cephalometric xray show a complete dentition except for the buds of 18, 28 and 48, indicating that his dental age corresponds to his

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Figure 4
A lateral cephalometric xray taken in the course of treatment.

chronological age. The bone and dental structures present no abnormalities; on the first panoramic film, the right maxillary sinus presents with a diffuse opacity in comparison with the left side whereas a rounded image with soft tissue density, is projected on the lower left, upto the mid-level of the sinus, next to the still immature roots of 26 and 27.

On the panoramic xray taken in the course of multibracket treatment, we observed a projected opacity in the right sinus, with soft tissue density, and its upper extremity appears spherical. This same spherical image is seen on the lateral cephalometric xray, with an approximate diameter of 2 centimeters extending from the second molar to the second premolar, close to the middle nasal turbinate, but not beyond it.

In addition, we observed adenoidal hypertrophia and a coronal mesial tipping of 47 that appears blocked under the cervical curve of 46.

WHAT DIAGNOSIS IS SUGGESTED?

Polyps are pediculated growths, with a base of varying width, that arise from the mucosa of the maxillary sinus ostia towards the nasal cavity and may remain solely intrasinus. Pale and translucent in appearance, they vary in size ranging up to several centimeters in diameter. Nasal and sinus polyposis (NSP) is chronic nasal inflammation and its cause is still unknown. NSP affects less than 2 % of the population, and presents with bilateral rhinological symptoms, such as nasal obstruction, rhinorrhea, as well as the loss of the

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sense of smell (anosmia) and of taste (aguesia) in progressive forms of this disease. It is sometimes associated with asthma, cystic fibrosis and intolerance to aspirin (also called Widal syndrome) or an allergy.

The polyps must be bilateral and more or less symmetrical, as in the case described above. The presence of unilateral polyps should not be diagnosed as nasal sinus polyposis; rather, they indicate the presence of a local inflammatory growth that may be caused by a fungal ''ball'' infection, a dental infection or a tumor.

These polyps are discovered fortuitously most of the time with xrays[1].

The incidence of polyps increases with age, affecting approximately 2 to 4% of the population[2], but is quite rare in children. When polyposis appears before the age of 16, certain predisposing factors are present, such as cystic fibrosis, primary ciliary dyskinesia or immunodeficiency. Facial malformations with a widening of the nasal pyramid have been described in the context of invasive nasal sinus polyposis in children, and less frequently in adults, leading to Woakes[3] syndrome.

NSP is classified in different stages, based on their relationship to the nasal turbinates[4]:

- **stage 0: normal mucosa;**
- **stage II: edema or small polyp;**
- **stage III: polyposis not extending beyond the lower edge of the middle turbinate;**
- **stage IV: obstructive polyposis or close to it.**

HOW SHOULD WE PROCEED AND WHAT POSSIBLE IMPACT WILL IT HAVE ON ORTHODONTIC TREATMENT?

An ENT must perform the clinical examination of a patient with nasal sinus polyposis because it requires an exploratory and diagnostic endoscopy of the nasal fossae with a rigid or flexible transnasal endoscope.

The evaluation of nasal sinus polyposis is in essence based on a radiographic examination, ideally a tomodensity scan that does not require an injection, in order to assess the morphology, the position and the more or less invasive nature of the polyps (for example associated with a deformation or a thinning of the bony walls). The radiological exam can be completed by functional exploratory examinations (lung capacity test to check for asthma, skin testing for allergies). Unilateral polyps should not lead to a diagnosis of nasal sinus polyposis.; they can be a sign of either an infection or the presence of a tumor in the ipsilateral sinuses.

Treatment for nasal sinus polyposis is first and foremost medical. It consists of local corticosteroid therapy, occasionally combined with systemic corticosteroids for short term cures. Surgery is offered if there is corticosteroid resistance following the failure of two to three systemic corticosteroid treatments when combined with symptoms that the patient considers disabling; based on the location of the affected sinuses, it consists of a nasal

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meatotomy for the maxillary sinuses or an ethmoidectomy for ethmoid sinusitis. The procedure is performed endoscopically and the objective is nasalization of the all of the sinuses of the face in order to avoid fluid retention problems[5].

Considering the mass of the polyps of this young patient, with a disabling nasal obstruction (''a cold all year long, with a runny nose''), and the periorbital pressure associated with anosmia, we decided on surgery after unsuccessfully trying corticosteroid treatment.

CONCLUSION

At the time of the initial radiological examination, the fortuitous discovery of sinus images is not uncommon. Although the diagnosis must be made by an ENT, a referral can be made early with a routine examination using panoramic or facial images taken by the orthodontist. With the development of cross sectional imaging (CSI), different types of abnormalities can be detected, affecting as much as 46.8% of the orthodontic population (thickening of the nasal mucosa, polyp formations or severe sinusitis) according to Pazera *et al*[1].

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