

# Effects of nintedanib, as a treatment for interstitial lung disease, on pathologic changes in the oral cavity

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## PURPOSE

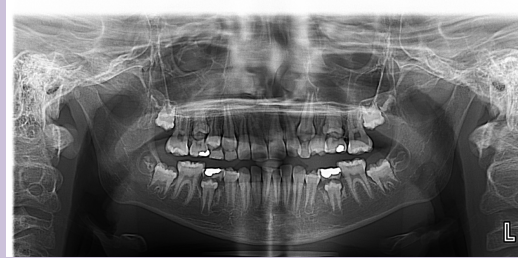
The purpose of this research project was to determine if nintedanib, administered in a double blind, randomized, placebo-controlled trial over 24 weeks, caused any bony or pathologic findings on dental exam involving panoramic radiograph and intraoral examination.

## INTRODUCTION

This project was done as a part of a study spearheaded by the pulmonology department at Boehringer Ingelheim Italia S.P.A. The study was done in 24 countries, this research project focuses on one patient who completed the study at Children's Hospital of Pittsburgh. Interstitial lung disease is a group of lung conditions that causes scarring or fibrosis of the lung tissues that can cause the patient to have shortness of breath and coughing. There are currently no approved therapies for the treatment of fibrosing interstitial lung disease in children. This study was conducted as a double blind, randomized, placebo-controlled trial to evaluate the dose-exposure and safety of nintedanib per os on top of standard of care for 24 weeks, followed by open label treatment with nintedanib of variable duration, in children and adolescents (6-17 years old) with clinically significant fibrosing interstitial lung disease. The main objective of the study is to evaluate dose-exposure and safety of nintedanib in children and adolescents with fibrosing interstitial lung disease. A secondary objective was to monitor potential severe/irreversible effects on dentition and bony changes that may present to maxilla and mandible, which were identified via panoramic and clinical examination.

## METHODS

A double blind study was conducted on one twelve-year-old female participating in treatment at Children's Hospital of Pittsburgh for her interstitial lung disease. She was followed by the dental team for 52 weeks. A panoramic radiograph was taken at baseline, 24, and 52 weeks. The panoramic radiograph will also be taken every 48 weeks until the end of study. A clinical dental examination was performed at 12,24,36,52 weeks. During dental examination, teeth that were present in the mouth were charted, as well as teeth that were missing or unerupted. Caries were charted. The patient is currently being treated for routine dental care at a general dentist in Philadelphia, PA. The data for this study was collected from examinations, and panoramic radiographs were reviewed after each visit.



Panoramic radiograph: 10/23/20



Panoramic radiograph: 04/06/21



Panoramic radiograph: 10/15/21



Panoramic radiograph: 04/15/22

## RESULTS

In 52 weeks, there were no pathologic changes noted to the mandible or maxilla. Review of four panoramic radiographs show these results. The patient did have caries that were being treated by an outside dentist. These did increase in size over the course of the 52 weeks. This is to be expected for untreated caries. No hard tissue changes were otherwise noted.

## DISCUSSION

Interstitial lung disease is a broad term that is used for a wide array of lung diseases. Treatment for interstitial lung disease is something that is very new and not well researched. Based on the results from this study, there were no effects present on the bony structures of the mandible and maxilla. However, this is not to say that there will not be long term effects that surface years later. As this drug becomes more popular in the treatment of interstitial lung disease, more long term research needs to be done on the potential for bony changes in the mandible and maxilla. In the future, all children should have a dental home where they can monitor for these changes. Participants in the study should also have strict protocol with dental follow up after the cessation of the drug to make sure no changes arise.

## CONCLUSIONS

There is need for more research to be done on treatments for interstitial lung disease. While this study was in collaboration with pulmonology departments all over the world, the goal of this particular study was to determine if the nintedanib had any effects on a single patient being treated at Children's Hospital of Pittsburgh. Over the course of 52 weeks, there were no changes noted during intraoral examination as well as radiographic examination with panoramic radiograph. We concluded that the nintedanib did not have any effects and/or pathological changes in the mandible, maxilla, or oral cavity.

## REFERENCES

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- 2.Deutsch GH, Young LR, Deterding RR, Fan LL, Dell SD, Bean JA, Brody AS, Nogue LM, Trapnell BC, Langston C. et al. Diffuse lung disease in young children: application of a novel classification scheme. *Am J Respir Crit Care Med* 2007; **176**:1120–1128.