

# Compound Odontoma Associated with Tooth Movement Disturbance and Its Management

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## ABSTRACT

Odontomas are the most common benign tumors of odontogenic origin. The cause of it is unknown but it is said to include infection or local trauma. There are two main types of odontomas based on their resemblance to normal teeth which are complex and compound odontoma. In this paper, we report a case of compound odontoma which was related to the malalignment of teeth in a 25-year-old female military personnel. Patient was initially seen by an Orthodontist to realign her teeth. However, the Orthodontist noted the presence of an odontoma in a routine radiographic investigation which might interfere with future Orthodontic treatment. Patient was then referred to an Oral Surgeon for excision of the lesion. Surgical removal of the compound odontoma was done and the biopsy specimen sent for histopathological examination confirmed the diagnosis. Patient was then able to proceed with her orthodontic treatment.

**KEYWORDS:** Odontoma, Compound Odontoma, Tooth Movement, Orthodontic, Surgical Removal

## INTRODUCTION

The term odontoma was first used by Paul Broca in 1867 as tumors formed by the overgrowth of transitory or complete odontogenic tissue.<sup>1</sup> They consist of enamel, dentin, cementum and pulp and is said to be a very slow-growing tumor with non-aggressive behavior.<sup>2</sup> This enamel and dentin were usually be laid down in an abnormal pattern because the organization of odontogenic cells failed to reach the normal state of morphodifferentiation.<sup>3</sup> According to the World Health Organization classification, odontomas are subdivided into complex and compound odontoma.<sup>4</sup> The difference between complex and compound odontoma is the structures in compound odontoma is composed of all odontogenic tissues in an orderly pattern that results in many teeth-like structures compared with complex odontoma which composed in an irregular mass bearing no morphologic similarity to teeth.<sup>4</sup> The etiology behind odontomas remains unknown but it is believed to be triggered by various pathological conditions such local trauma, inflammatory and/or infectious processes, hereditary anomalies, alterations in the genetic component that is responsible for controlling dental development.<sup>3,5</sup>

Orthodontics is a special discipline dedicated to the investigation and practice of moving teeth through bone.<sup>6</sup> Tooth movement occurs as a result of a force being placed on a tooth such as orthodontic brackets. There are three phases involved which is initial tipping, lag phase and progressive tooth movement.<sup>7</sup> These phases rely on coordinated tissue resorption and formation in the surrounding bone and periodontal ligament.<sup>6</sup>

We present a case of a military personnel who was referred from an Orthodontist who suspected the presence of compound odontoma on lower right anterior region of mandibular that might hinder her orthodontic treatment as it interfered with the planned tooth movement.

## CASE PRESENTATION

A 25-year-old female military personnel sought treatment with an Orthodontist to align her “crooked” teeth. The patient had no significant medical history and had not reported any oral trauma or infections. Intraoral examination showed 43 to be disto-lingual rotated while 42 is normal in arch. The overlying mucosa was of normal colour and no bulge was noted clinically on inspection and palpation.

The patient was then subjected to a routine Orthopantomogram (OPG) prior to diagnosis and treatment planning. OPG taken revealed a radiopaque aggregation of tooth-like structures between the roots of 43 and 42 which was embedded near the mandibular symphysis region (Figure 1). Early diagnosis of compound odontoma was made.

## The Treatment Plan

Due to the location of the odontoma which interfered with any orthodontically planned tooth movement, a decision to remove the lesion was made. Patient was then referred for surgical removal of odontoma under general anesthesia at 94 Hospital Angkatan Tentera. The lesion was surgically exposed via a crevicular incision from 41-45. A mucoperiosteal flap was then raised to approach the apex of 43 and 42 while avoiding trauma to the papillae and gingival margin. To uncover the odontoma, bony window was made with a surgical bur under continuous irrigation of normal saline at the identified region (Figure 2). Coupland elevators were then used to remove the odontoma and the defect was filled with bovine synthetic bone graft. Flap was repositioned and closed with 4/0 Vicryl and the biopsy specimen was sent for histopathological examination and diagnosis to the laboratory (Figure 3 and 4).



Figure 1: Orthopantomogram (OPG) taken by the Orthodontist Showing the Location of the Compound Odontoma on Right Side of Mandibular Region between 42 and 43

## RESULTS

No untowards incident occurred post-surgically. Based on the histopathology laboratory findings, the specimen was confirmed to be compound odontomas. After 6 months, patient was able to continue her orthodontic treatment and has been bonded with braces with good prognosis in tooth movement.

## DISCUSSION

Odontomas are lesions mostly affecting children and young adults and most of them are discovered in the second decade of life, generally as a result of a clinical and radiologic examination<sup>8</sup>. In this case, it is asymptomatic and only found out during routine OPG prior to Orthodontic treatment for this patient. Radiographically, compound odontomas presents as an irregular radiopaque image with variations in contour and size, composing of multiple radiopacities corresponding to the small malformed or rudimentary teeth<sup>9</sup>. Unlike compound odontomas, complex odontoma appear as disorganized irregular masses<sup>9</sup>. Thus, radiographically this patient is diagnosed as having compound odontoma.

Although the etiology is unknown, local traumas, infections and genetic complications have been suggested, in our case, we could not identify the cause. According to Tomizawa et al (2005),



Figure 2: Bony Window Made to Uncover the Odontoma



Figure 3: Flap Stured with 4/0 Vicryl

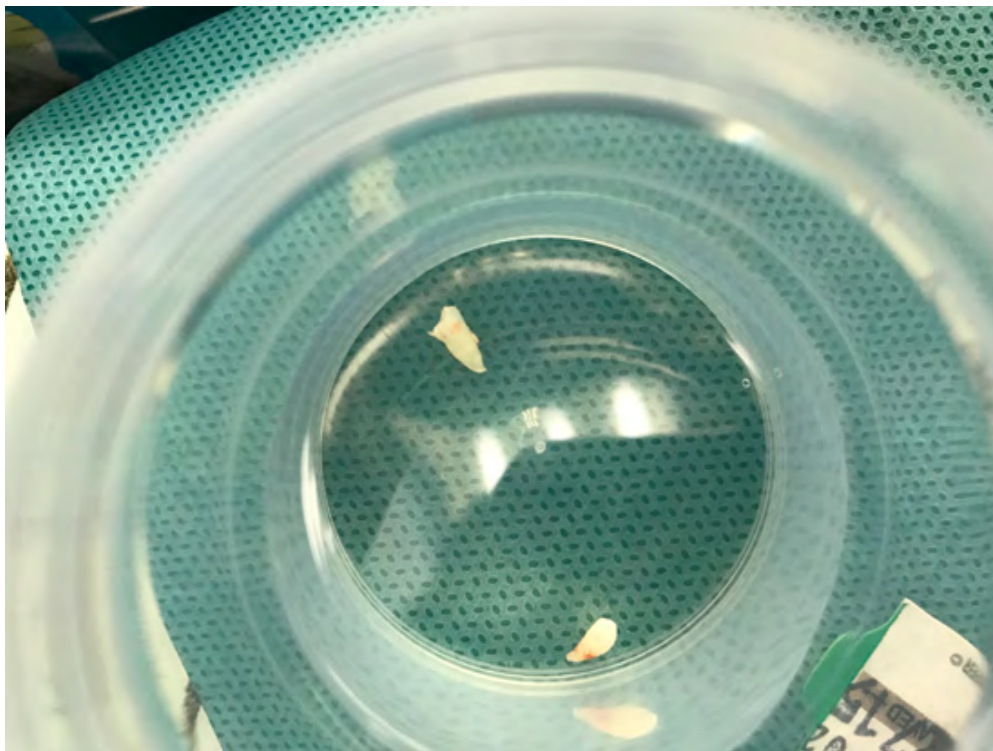


Figure 4: Specimen that was Removed and Sent to the Lab for Histopathological Examination



odontomas can cause disturbances in tooth eruption in both primary and permanent dentition<sup>8</sup>. However, odontomas are mostly associated with permanent teeth and rarely with deciduous teeth<sup>10</sup>.

In a more recent study by Boffano et al in 2012, the ratio for compound odontomas with male-to-female ratio is 0.81:1 odontomas can cause disturbances in tooth eruption in both primary and permanent dentition<sup>8</sup>. However, odontomas are mostly associated with permanent teeth and rarely with deciduous teeth<sup>10</sup>. and 1.13:1 for complex odontomas<sup>11</sup>. As for location, compound odontomas occurred more often at the mandible with a predilection for the anterior region. However, complex odontomas were diagnosed more often at the posterior region of mandible<sup>11</sup>.

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Histologically, odontomas are composed of dentin, cementum, pulpal tissue and enamel. Mature enamel is lost during the decalcification process and cannot be seen on conventional haematoxylin and eosin stained slides. The compound odontomas recapitulates the organization of normal tooth while the complex odontomas appears as a disorganized mass of hard odontogenic tissue<sup>12</sup>. Based on histopathological lab findings, the specimen from this patient is compound odontomas.

Surgical removal via conservative enucleation technique is usually the choice of treatment for compound odontomas and can be removed without difficulty if it's a small-sized odontomas and depending on their proximity to neighboring structures. Whereas large odontomas can be problematic due to sacrificing large amount of bone<sup>9,13</sup>.

## CONCLUSIONS

In our case, the patient was not aware of the presence of this benign tumor until a radiographic examination was done. Thus, in any case of delayed eruption, dentition anomaly or jaw deformation in children and adolescents, it is very important to investigate the presence of possible odontomas by radiographs. Complete surgical removal is the accepted treatment with histologic examination to confirm the diagnosis.

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