

1 **DOI: <https://doi.org/10.47391/JPMA.877>**

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3 **Compound odontoma in a nine-year-old boy associated with**
4 **impacted permanent central and lateral incisor — a case report**

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13
14 **Abstract**

15 Odontomas are one of the most common tumours of odontogenic origin. They are
16 usually asymptomatic but may be associated with retained primary teeth or
17 missing permanent teeth. Though the exact aetiology is unknown, the postulated
18 causes include trauma, infection, inheritance and genetic mutation. Early
19 diagnosis and management will result in fewer complications. Conservative
20 surgical excision is the treatment of choice. This case report presents a treated
21 case of compound odontoma associated with delayed eruption of the permanent
22 central incisor in a nine-year-old boy.

23 **Keywords:** Compound Odontoma

24
25 **Introduction**

26 Odontomas may be defined as “tumours formed by the overgrowth of transitory
27 or complete dental tissues.”¹ Odontomas are a common type of benign
28 odontogenic tumours. They are considered to be hamartomas rather than a true

29 neoplasm.² They arise from the differentiated epithelium and mesenchymal cells
30 that give rise to ameloblast and odontoblasts.³ These tumours are mainly formed
31 from enamel and dentine, and contain variable amounts of cementum and pulp
32 tissue.² Odontomas have been classified into compound odontoma and complex
33 odontoma. In complex odontomas, dental tissues are arranged in a disorderly
34 manner while in compound odontomas, the tissues are organised in a similar
35 pattern as in the tooth.⁴ Approximately 10 percent of all odontogenic tumours of
36 the jaws are compound odontomas.⁵ They are most commonly found in anterior
37 maxilla and resemble tooth-like structures, while complex odontomas are found
38 in posterior mandible.⁶ According to Hitchin,⁷ odontomas originate because of an
39 inherited genetic mutation or any interference with the genetic control of the
40 development of the teeth. He also suggested that the persistence of remnants of
41 lamina between the tooth germs may also be an aetiological factor. Odontomas
42 are managed by conservative surgical excision.⁸ Prognosis after treatment is very
43 favourable, with rare chances of recurrence.⁹

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45 **Case Report**

46 A nine-year-old boy presented to the Department of Paediatric Dentistry, PIMS,
47 Islamabad, with the chief complaint of non-erupting upper front tooth and
48 associated swelling in the anterior upper jaw. (Fig.1). His permanent maxillary
49 left central incisor erupted two years ago. Medical history of the child was not
50 significant. There was no history of fall or trauma to the jaw. On clinical
51 examination, his maxillary right permanent central and lateral incisors were
52 absent and a firm, non-tender swelling was present labially with protruding white
53 spicules. A periapical radiograph was taken which revealed the presence of
54 multiple, radiopaque masses confined to the area of maxillary permanent central
55 and lateral incisors. (Fig 2). The permanent incisors were present but their
56 eruption was impeded by these calcific structures. A provisional diagnosis of an
57 odontoma was made. Surgical enucleation was planned. Parents were educated

58 about the condition and the treatment plan. Informed consent was obtained. After
59 local anaesthesia, a crestal incision from the mesial of maxillary permanent left
60 central incisor to the mesial of maxillary permanent right lateral incisor was made
61 and a full thickness mucoperiosteal flap was reflected. (Fig 3.). Multiple, tooth-
62 like small odontoids were observed which confirmed the clinical diagnosis of
63 compound odontoma. About seven odontoids were excised ranging from 3 to
64 10mm. (Fig 4). Careful curettage was performed to ensure that no remnants were
65 left and the area was thoroughly irrigated with 0.9% saline. After achieving
66 haemostasis, the flap was sutured back into its position. The tooth-like masses
67 were submitted for histopathological examination. The decalcified section
68 showed the presence of dentinal tubules and pulp space. Pulpal tissue was absent.
69 (Fig 5). The diagnosis of compound odontoma was confirmed.

70 On the seventh post-op day, the sutures were removed. Healing was uneventful
71 with no complaint of pain or swelling. The patient was scheduled for follow-up
72 to observe the eruption of permanent incisors. Two months after the surgery,
73 partial eruption of the impacted permanent central incisor was observed. (Fig 6).
74 The tooth appeared to be slightly rotated. The patient is under follow-up to
75 observe the eruption of central and lateral incisors. Option of orthodontic
76 treatment (2x4 appliance) was discussed with the parents to make space for lateral
77 incisor if no eruption is seen in the next 3-6 months.

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79 **Discussion**

80 Odontoma is a dental anomaly that mostly goes unrecognised unless associated
81 with symptoms such as delayed eruption or is incidentally detected on
82 radiographic examination.¹⁰ Compound odontomas are more common than
83 complex odontomas.¹¹ They are usually found in the anterior region of the maxilla
84 (61%), while complex odontomas have a predilection for mandibular molar
85 region.¹² In the current case, compound odontoma in the anterior maxilla was
86 encountered in a nine-year-old patient. The patient presented with swelling and

87 delayed eruption of the permanent tooth. Mostly odontoids are asymptomatic but
88 may impede the eruption of permanent teeth.¹³ The same was seen in the current
89 case in which the odontoids were impeding the eruption of maxillary permanent
90 right central incisor. Odontomas can also manifest as a part of some syndromes
91 such as Gardeners syndrome, Hermann syndrome, basal cell nevus syndrome,
92 etc.¹⁴ but the current case had no such association.

93 In a study by Lee & Park,¹⁵ it was found that compound odontoma usually
94 consists of 4 to 21 odontoids and the size varies between 5 to 30 mm. In this
95 patient, almost seven odontoids were found. Odontomas are easily enucleated,⁸
96 so conservative surgical excision was planned for this patient.

97 The World Health Organisation classifies odontoma under 'benign tumours
98 containing odontogenic epithelium with odontogenic ectomesenchyme, with or
99 without dental hard tissue formation'.⁴ Histologically, odontomas comprise
100 varying amount of enamel, dentin, pulp and cementum.¹⁴ Similar findings were
101 observed in the present case in which enamel and dentine was organised around
102 the pulp space as in the teeth.

103 It has been found that the removal of the odontoma mass results in the
104 spontaneous eruption of the unerupted tooth in 45% of the cases. The determining
105 factors include the morphology of the tooth, its location in the jaw, age of the
106 patient and the space available in the dental arch.¹⁶

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108 **Conclusion**

109 As odontomas are one of the most common odontogenic tumours of the jaw so
110 its early diagnosis and management is very important. The presented case
111 demonstrated the successful management of typical presentation of a compound
112 odontoma. Routine radiographs are of utmost importance in the case of delayed
113 eruption, as their early diagnosis might overlook the possible complications.

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116 **Disclaimer:** None to declare.

117 **Conflict of Interest:** None to declare.

118 **Funding Sources:** None to declare.

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120 **References**

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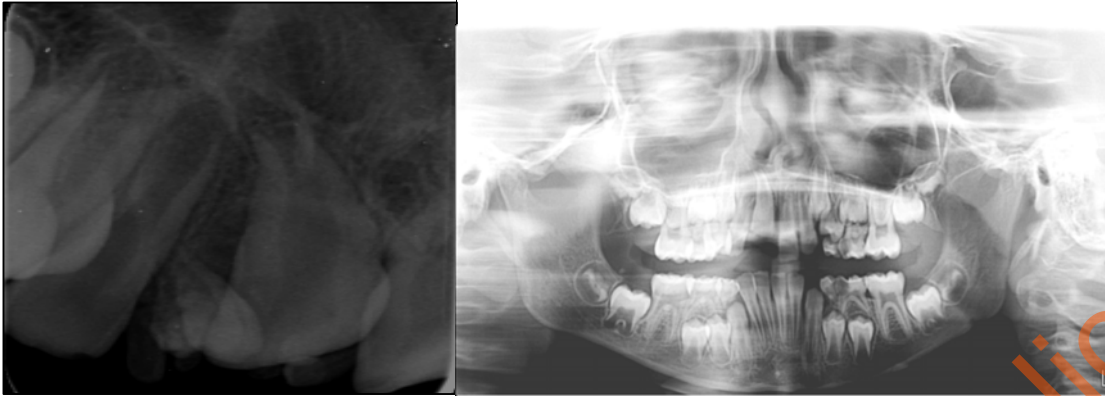
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Figure 1: Clinical picture of 9-year-old boy presenting with complaint of delayed eruption and swelling.



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171 **Figure 2: Periapical radiograph and OPG showing multiple calcified masses in anterior**
172 **maxilla.**

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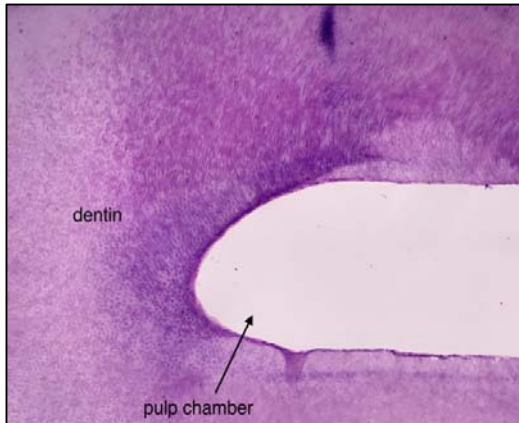
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177 **Figure 3: Surgical exposure of anterior maxillary region for enucleation of odontoma**

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182 **Figure 4: Seven odontoids excised measuring between 3 to 10 mm**

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Figure 5: Decalcified sections showing dentinal tubules and pulp space.



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Figure 6: Two-month follow-up clinical picture showing eruption of permanent right central incisor.

Provisionally Accepted for Publication