

# Angulations Of Impacted Mandibular Third Molar : A Radiographic Study in Saveetha Dental College

**M.P. Santhosh Kumar** M.D.S.  
Reader, Saveetha dental college  
Saveetha university  
Chennai.

**Shamara Aysha**  
Final year B.D.S.  
Saveetha dental college,  
chennai

---

## Abstract

### Aim :

The aim of this study is to evaluate the angulation of impacted mandibular third molars and also to evaluate the most common sex affected .

### Objective:

To determine which angulation is more common in impaction  
To determine the prevalence of mandibular third molar impaction based on gender

### Materials and Methodology:

The study was conducted on 110 subjects which consists of 58 males and 52 females. The study was conducted with orthopantomograms collected from the people who came to saveetha dental college situated in poonamalle, Chennai. The orthopantomograms were traced and the study was done for a period of three months. After three months, the data which was collected were analysed.

### Results and Conclusion:

According to the data analysed, the most common angulation in impacted mandibular third molar is mesially angulated tooth and the most common gender affected by mandibular third molar impaction is male population

---

## INTRODUCTION:

Tooth impaction has been a common phenomenon nowadays. Tooth impaction is a pathological situation in which a tooth is unable to erupt into its normal functioning position due to lack of space. ∴. The impaction can be mesioangular, distoangular, horizontal, transverse or vertically angulated .It is often associated with pain, pericoronitis, root resorption, cystic lesions, etc. (1) (2) However, there is considerable variation in the prevalence and distribution of impacted teeth in different regions of the jaw. Factors affecting the prevalence can be the age-group, timing of dental eruption, and the radiographic criteria for dental development and eruption.

Various classifications have been given on impacted teeth such as WINTER'S classification, PELL AND GREGORY'S classification, KILLEY AND KAY, ARCHER'S classification of impacted maxillary teeth, etc. Winter's classification is classified based on the inclination of the impacted tooth to the long axis of the second molar into distoangular, mesioangular, horizontal, vertical and transverse. This classification is used for the study as it is simple and easily understandable.(3) Although removal of impacted third molars is the most common oral surgical procedure, many investigators have raised up question for the necessity of removal for asymptomatic patients. (2)(5) Such comments are based on the view that long-term retention of impacted teeth has little risk of pathological change in the tooth itself, or of adverse effects on adjacent structures. The aim of this study is to evaluate the position of impacted third molars and also to evaluate the most common sex affected using the Winters classification. (4)

## MATERIALS AND METHODOLOGY:

The study was conducted for 110 subjects who came to saveetha dental college for dental treatment. Among the subjects, 58 were males and 52 were females. The study was conducted with orthopantomograms collected from the people who came to saveetha dental college situated in poonamalle. The orthopantomograms were traced and the study was done for a period of three months. After three months, the data which was collected was analysed.

Consecutive panoramic radiographs and clinical records of 110 patients who attended the Saveetha Dental College and Hospital between March 2015 to May 2015 were retrieved for this study. The minimum age for inclusion was 17 years because the accepted view is that third molars normally start to erupt by that age. Patients referred to Oral and Maxillofacial Surgery from external sources for major pathologies associated with third molars were excluded from this study. A tooth was defined as impacted when the tooth was obstructed on its path of eruption by an adjacent tooth, bone, or soft tissue. A tooth was defined as embedded if it was covered by bone but no adjacent tooth was obstructing its eruption path. When an impacted third molar was identified, the presence/absence and development/ eruption of the patient's other third molars were also assessed. The depth of impaction was measured using Winter's lines, while the angulation of impaction was measured using long axes of the impacted and adjacent teeth, WINTER'S classification As described by Schersten et al. 5 Pathologies associated with impacted teeth included: (1) caries of the impacted and/or adjacent teeth; (2) periodontal bone loss of the adjacent tooth of more than 5 mm below the cemento-enamel junction; (3) root resorption of the adjacent tooth; and (4) an increase in the pericoronal space of the dental follicle of more than 4 mm around the impacted tooth. Although it is possible to

observe the profile of soft tissue in relation to third molars, there are currently no standardised clinical criteria for the assessment of soft tissue associated with impacted teeth. These difficulties in the accurate recording of the clinical condition of soft tissue should be recognised and addressed to aid future studies. Following the radiographic evaluations, patient records were studied to determine whether they had attended the hospital because of the impacted teeth. The signs and symptoms related to the impacted tooth or teeth were recorded. All patients were examined using a standard chart established for teaching purposes, which included the eruption status of all existing teeth, and the presence of caries, and periodontal disease . Data collected were entered into a spreadsheet (Excel 2000; Microsoft, US) and analysed.



Figure 1: Mesioangular 48



Figure 2: Distoangular 38



Figure 3: Horizontal 48



Figure 4: Vertical 38

**RESULTS:**

A total of 110 panoramic radiographs of patients aged 17 to 50 years were examined which consisted of 58 males and 52 females.(TABLE 1 ) The 21 to 30 years age group had the highest prevalence of tooth impaction (47%), but this decreased with increasing age (TABLE 2). The male to female ratio of the study group was 1:1.2 (58:52). Of the 110 panoramic radiographs, mandibular third molars were most commonly encountered. Analysis of the developmental stages and eruptive status of third molars in patients with impacted tooth/teeth showed that the distribution of impacted teeth was similar between the left and right sides. According to the number of sides involved, there were 31 patients with one impacted third molar, 48 patients with two, 23 with three, and 8 patients with all four sides involved. (TABLE 3) The radiograph was also analysed based on the angulations using winters classification. In this study, more than 50% of impacted mandibular third molars were mesially angulated or horizontal against the second molars and the pattern was bilaterally symmetrical. (CHART 1)

**Table 1**

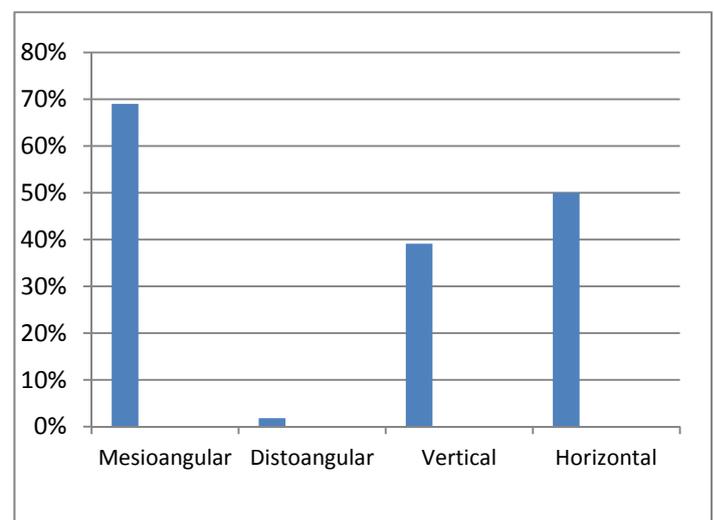
Gender	Frequency
Male	58
Female	53

**Table 2**

Age group (years old)	Frequency
17-20	32
21-30	52
31-40	23
41-50	3

**Table 3**

No of sides involved	Frequency
1	31
2	48
3	23
4	8



**Figure 1**

**DISCUSSION:**

The use of dental panoramic tomography (DPT) for the study of impacted teeth is limited to hospital dental patients and large dental practices because of associated costs and ethical considerations. (1) (2) A further shortcoming associated with the use of DPT for the study of impacted teeth and associated pathologies is the validity of the assessment when the radiograph is used as the only diagnostic tool.(6)(7) To ensure diagnostic validity in this study, radiographic findings were verified with clinical records, which were collected on standard forms as part of the routine examination process. In this study, clinical data were collected from the only dental teaching hospital in Saveetha Dental College, which has a policy of using DPT for all new patients. 47% of patients in this study were aged between 21 and 30 years. This may reflect increased dental awareness in this group of patients. However, the relatively high proportion of patients in their third decade may also have increased the overall prevalence of impacted teeth in this study. The pattern of impacted tooth types seen was similar to previous reports with the most common being third molars, then upper canines, and others. (8-16)

The distribution of angulation and depth of impaction in the impacted lower third molars seen in this study is similar to that noted by Kramer and Williams. (12) They reported that 75% of impacted lower third molars were in mesio-angular and horizontal angulation. The angulation of an impacted tooth against the second molar has potential clinical implications, as outlined by Yamaoka et al. (19) For mesio-angular and horizontal impacted lower third molars partially exposed in the oral cavity, their occlusal surfaces form plaque accumulative crevices against the distal surfaces of the second molars. (21-23) This may be clinically relevant to the present group, as more than 40% of impacted lower third molars were less than 5 mm deep in bone. In fact, the prevalence of periodontal disease and caries in lower second molars (8.8% and 7.4%, respectively) seen in the present study is higher than the corresponding figures of 4.5% and 3%, respectively, reported by Stanley et al. ( 17-20)

**CONCLUSION**

Most common type of angulation in impacted teeth is mesioangular impaction and is most commonly found in males according to this study. Periodontal diseases and caries of the lower second molars adjacent to impacted third molars were found in most of the cases. The prevalence of root resorption and follicular enlargement was low overall.

**REFERENCES**

- Morris CR, Jerman AC. Panoramic radiographic survey: a study of embedded third molars. *J Oral Surg* 1971;29:122-5.
- Aitasalo K, Lehtinen R, Oksala E. An orthopantomographic study of prevalence of impacted teeth. *Int J Oral Surg* 1972;1:117-20.
- Alattar MM, Baughman RA, Collett WK. A survey of panoramic radiographs for evaluation of normal and pathologic findings. *Oral Surg Oral Med Oral Pathol* 1980;50:472-8.
- Ahlqwist M, Grondahl HG. Prevalence of impacted teeth and associated pathology in middle-aged and older Swedish women. *Community Dent Oral Epidemiol* 1991;19:116-9.
- Schersten E, Lysell L, Rohlin M. Prevalence of impacted third molars in dental students. *Swed Dent J* 1989;13:7-13.
- Brown LH, Berkman S, Cohen D, Kaplan AL, Rosenberg M. A radiological study of the frequency and distribution of impacted teeth. *J Dent Assoc S Afr* 1982;37:627-30.
- Dachi SF, Howell FV. A survey of 3874 routine full-mouth radiographs: II. A study of impacted teeth. *J Oral Maxillofac Surg* 1961;14: 1165-9.
- Eliasson S, Heimdahl A, Nordenram A. Pathological changes related to long-term impaction of third molars. A radiographic study. *Int J Oral Maxillofac Surg* 1989;18:210-2.
- Haidar Z, Shalhoub SY. The incidence of impacted wisdom teeth in a Saudi community. *Int J Oral Maxillofac Surg* 1986;15:569-71.
- Hattab FN, Rawashdeh MA, Fahmy MS. Impaction status of third molars in Jordanian students. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1995;79:24-9.
- Hugoson A, Kugelberg CF. The prevalence of third molars in a Swedish population. An epidemiological study. *Community Dent Health* 1988;5:121-38.
- Kramer RM, Williams AC. The incidence of impacted teeth. A survey at Harlem Hospital. *Oral Surg Oral Med Oral Pathol* 1970;29: 237-41.
- Mead SV. Incidence of impacted teeth. *Int J Orthod* 1930;16:885-90.
- Peltola JS. A panoramatomographic study of the teeth and jaws of Finnish university students. *Community Dent Oral Epidemiol* 1993; 21:36-9.
- Sandhu SS, Kapila BK. Incidence of impacted third molars. *J Indian Dent Assoc* 1982;54:441-4.
- Shah RM, Boyd MA, Vakil TF. Studies of permanent tooth anomalies in 7,886 Canadian individuals. I: impacted teeth. *Dent J* 1978;44: 262-4.
- Stanley HR, Alattar M, Collett WK, Stringfellow HR Jr, Spiegel EH. Pathological sequelae of "neglected" impacted third molars. *J Oral Pathol* 1988;17:113-7.
- Stermer Beyer-Olsen EM, Bjertness E, Eriksen HM, Hansen BF. Comparison of oral radiographic findings among 35-year-old Oslo citizens in 1973 and 1984. *Community Dent Oral Epidemiol* 1989;17: 68-70.
- Yamaoka M, Furusawa K, Yamamoto M. Influence of adjacent teeth on impacted third molars in the upper and lower jaws. *Aust Dent J* 1995;40:233-5.
- Hong Kong Annual Digest of Statistics. 1998. Hong Kong: Census and Statistics Dept; 1998.
- Nitzan D, Keren T, Marmary T. Does an impacted tooth cause root resorption of the adjacent one? *Oral Surg Oral Med Oral Pathol* 1981; 51:221-4.
- Kahl B, Gerlach KL, Hilgers RD. A long-term, follow-up, radiographic evaluation of asymptomatic impacted third molars in orthodontically treated patients. *Int J Oral Maxillofac Surg* 1994;23:279-85.
- Sewerin I, von Wowern N. A radiographic four-year follow-up study of asymptomatic mandibular third molars in young adults. *Int Dent J* 1990;4