Synodontia or fusion is union of two independently developing primary or secondary teeth. In the case reported here, clinical and radiographic examination suggested fusion between maxillary lateral incisor and a supernumerary tooth with the resultant loss of eruption space for permanent canine. Since the teeth exhibited separate pulp chambers without any pulpal involvement, surgical separation followed by odontoplasty was done. Follow-up revealed the tooth to be asymptomatic and sufficient space for eruption of canine was created. The case report highlights the surgical management in case of fusion and timely intervention to prevent periodontal, endodontic and orthodontic complications.

Keywords: Fusion, supernumerary, surgical separation.
A complaint of abnormally shaped upper front teeth. The patient had a non-significant medical history and no case of fusion was reported in the family. Intra-oral examination of the patient exhibited normal age specific dentition with class I occlusion.

A supernumerary tooth was present in the region of left lateral incisor and appeared to be fused to it (Fig. 1). Facial and lingual aspects of both lateral incisor and supernumerary teeth were found to be caries free. No discomfort was present on vertical and horizontal percussion or on palpation in the surrounding area. Thermal and electric pulp testing was done on left lateral incisor, right lateral incisor, mandibular lateral incisor and on supernumerary teeth. Intra-oral periapical radiograph showed that fusion between maxillary left lateral incisor and supernumerary teeth was beyond the level of crown but the exact level of fusion could not be clearly demarcated. Radiograph also revealed the blocking out of permanent canine by the supernumerary tooth (Fig. 2).

Treatment was recommended in order to prevent periodontal disease, development of dental caries, to improve the esthetic status of the patient and to provide a normal eruptive pathway for canine. Initially the fused teeth were separated in the coronal level using long, thin diamond bur. After this, an elevator was used to try and separate the supernumerary tooth from the lateral incisor. However, this was not successful thus indicating the level of attachment much below the anticipated level, it was then decided to separate the fused teeth by raising a full thickness periodontal flap.

The treatment plan was explained to her family and with their consent; the periodontal flap was raised after anaesthetizing the area. Roots of the fused teeth were separated using a thin tapering diamond bur (Fig. 3) and Glass Ionomer cement was placed in the defect seen on the root of the lateral incisor after sectioning (Fig. 4). Odontoplasty was performed on this root to establish an anatomy consistent with a normal lateral incisor. The periodontal flap was then replaced and sutured (Fig. 5). Patient was called for observation after one week and the sutures were removed. Esthetic rehabilitation of the lateral incisor of the patient was done after one month (Fig. 6). Patient
is on recall appointments and the tooth is asymptomatic without any pathological root resorption or any sign of pathosis of periapical tissues. Postoperative radiograph exhibits normal periodontal and periapical tissues with sufficient space for the eruption of canine (Fig. 7).

**Discussion**

Fusion is often confused with the process of gemination. Gemination occurs when, during the proliferative stage of dental development, a single tooth germ attempts to divide by invagination. These two can be differentiated by the below parameters:(10)

- **Morphology:** gemination results in mirror images of the coronal halves, whereas fusion takes place at an angle causing a crooked appearance.
- **Anatomy:** pulpal anatomy is very useful in diagnosing the type of double teeth. Fused teeth would mostly have separate pulp chamber and root canals while geminated teeth usually have one big pulp canal.

- **Location by jaw:** fusion is common in mandible and gemination in maxilla but fusion between supernumerary and normal tooth is more common in maxilla.
Crowding: fused teeth would more often cause ectopic eruption and gminated teeth would cause more of crowding. However, when a normal tooth is fused with a supernumerary tooth, crowding and even impaction of other teeth may result. So this factor is not a good diagnostic feature.

Number of teeth: fusion is counted as one tooth and thus diminishes the number of teeth whereas number is increased in gmination. According to Mader, the ‘two tooth rule’ may be helpful in differentiating fusion from gmination. If the resulting dental structure is counted as two teeth and the normal number of teeth are present in the region, the case probably represents an example of fusion. If, however, the abnormal dental structure is counted as two teeth and if an extra tooth is present in the region, then the case may represent an example of gmination or fusion between a normal and a supernumerary tooth.

All the above factors like the angled appearance of teeth, its pulpal anatomy having two distinct root canals and according to the rule of two along with the radiographic findings confirmed the diagnosis of fusion between maxillary lateral incisor and a supernumerary tooth.

Several different approaches for the treatment of these abnormalities are available, but the morphology of fused teeth varies so greatly that one can only decide on individual basis. Various methods include selective grinding, surgical separation or extraction followed by prosthesis. Surgical separation has been successfully reported in past by many authors. (11-14) Stillwell and Coke(12) suggested separating the fused teeth when they were retained in the mouth after esthetic restoration was done. Clem and Natkin(13) recommended the removal of one part of fused teeth due to esthetic, periodontal and orthodontic problems. In a case reported by Oncag et al(14) where fusion between mandibular lateral incisor and a supernumerary tooth was present, they separated the teeth and endodontically restored it. In our case the level of fusion, separate pulp canals of fused teeth, vitality of tooth, availability of space for eruption of canine and esthetics were achievable so we decided to go for surgical separation.

It has been found that the squeal of such teeth may result in delayed eruption, ectopic eruption or even impaction of permanent teeth; hence the proper diagnosis by clinical and radiographic methods and intervention at appropriate time is of paramount importance.